NANYA



2020 CSR REPORT

Green Memory Creates Sustainability

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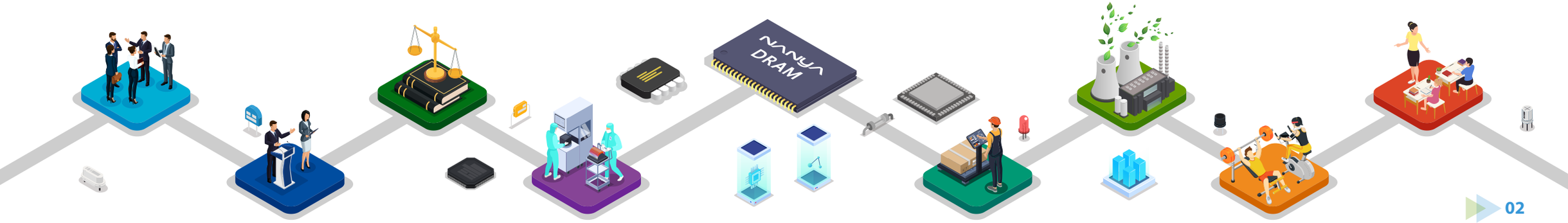
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PRESIDENT'S MESSAGE

Implementing Sustainable Development Through Innovation

To all caring stakeholders of Nanya:

Nanya Technology has delivered its eighth consecutive profitable years successfully, despite that, the world was ravaged by COVID-19 pandemic and international trade conflicts in 2020, which imposing serious challenges across many industrial sectors globally. The company has built up its strength in corporate vision, ability to adapt, and cooperate competiveness in the DRAM industry. We would like to thank our stakeholders for their persevering support and affirmation. After 25 years of challenges and hardships, Nanya's team has constructed sound foundation in the DRAM industry and through innovation. The team has accumulated many years of research and development experience and has successfully developed next generation technologies and products. As we move forward, "innovation" will be the main driving force behind Nanya's sustainable development.

▸ Innovation

"Innovation" is Nanya's long-term strategic goal and core value, which is the foundation of our developments for advanced process technologies and new generation products, and well positions us as a key memory supplier. We rooted the spirit of innovation into "sustainable development". The implementation of sustainable management activities, including talent development and retention, green product lineup deployment, Artificial Intelligence (AI) green manufacturing, sustainable supply chains, and social participation makes us be all of one mind to realize Nanya's commitment to sustainability. As a part of this transformation, we have actively responded to the United Nations Sustainable Development Goals (SDGs) by setting long-term sustainability goals for 2025. We have laid the path to sustainability through practical action for the betterment of society.

▸ Employees

We deeply believe "Employees" is the foundation of a company's innovation, operation, and sustainable development. We have implemented various methods to deepen the core values and management ideals of "integrity and responsibility", "efficiency and innovation", and "sustainable management", and plan to unite our employees, while building a business that is a source of pride. In 2020, we established the "Semiconductor Industry Excellence Training" and "Dynamic Memory Core Technologies", and launched the "Intelligence and Talent Institute" program, which theemployee participation ratio of "Special Purpose Dynamic Memory Product Development and Sales Project" reached 85%. Through these program, we hope to enhance employees' domain knowledge to expand the growth momentum of Nanya.

▸ Environmentally friendly products

DRAM has becoming a critical component for the intelligence age. We have developed advanced and high performance "environmentally friendly products" to satisfy the needs of the market and our customers. Besides the continuous optimization of product performance, we are also focused on the optimization of product power usage. In our 2020 sales strategy, our energy-saving products accounted for 84% of our total revenue through our focus on product customization for different applications. We have helped customers save around 600 million kWh of electricity over the year, allowing our innovative "green products" and technologiesto make quantifiable contributions to the environment.

▸ In accordance with Industry 4.0

Nanya has introduced "AI smart manufacturing" to improve our automated production, as well as integrate cloud based big data processing. We are expected to develop more than 20 "innovative AI applications" every year and gradually implement AI technologies throughout all settings of the company. Our aim is the comprehensive improvement of production efficiency and capability through the implementation of AI as the driving force behind the improvements. Since 2019 we have: developed over 50 AI applications, started our 3-year AI talent cultivation, and implemented plant-wide seed-talent training in 2020. We project that 400 AI specialists will complete training in our plant by 2021, creating a digitized and competitive organizational environment.

The company continues to respond to threats of climate change that include strengthening our climate resilience to reduce the possible operational impacts caused by disasters and actively reducing our greenhouse gas emissions. We also incorporate green management into our corporate operations. 29 "energy-saving action plans" were implemented in 2020, which saved more than 24 million kWh of electricity in total. For 2021, we have planned 31 energy-saving action plans to continue our efforts in carbon reduction and low-carbon emission operations. Regarding wastewater, we will utilize each drop through a complete wastewater recycling chain and maintain our water recycling ratio over 95%.

Join hands with business partners

In addition to following our own path to sustainability, Nanya is also collaborating with our upstream and downstream partners to move forward as one towards sustainability. We are guiding 304suppliers towards our ideas of sustainability and 100% of our partners have co-signed the Nanya Corporate Social Responsibility Guarantee. We have assisted our suppliers in implementing sustainable improvements through guidance and audits, which have resulted in tangible improvements that have been completed acrossour supply chain. In 2020, Nanya hosted the first ever Nanya supply chain seminar and has incorporated ESG issues into our audit management. We are working towards expanding the influence of sustainability by partnering with all our suppliers.

Social participations

With regard to social participation, we launched the 4U (For You) program. We selected “talent cultivation”, “environmental preservation”, “humanistic care”, and “community harmony” as the main themes for our program. Additionally, we also launched the “Youth Cultivation FOCUS Project” which uses academia-industry cooperation, technical talent cultivation, lectures, seminars, and other plans to nurture and develop talent for the company and the Taiwan semiconductor industry. In 2020, Nanya invested more than NT$40 million in social participation, which accounted for 92.87% of total business and operation related charitable investments. We also organized 51 different seminars with around 3,060 participants. Furthermore, we established the volunteer service team in 2021 to expand social participation by our employees and their families. Our aim is to create opportunities to share our value with the community.

Sustainability recognitions

In terms of affirmation and recognition for our efforts in sustainability, we were awarded the CDP Climate Change and Water Security “Leadership” grading and ISS ESG Prime grading in 2020, and the Semiconductors and Semiconductor Equipment bronze award of the 2021 S&P Global Sustainability Yearbook. Domestically, we received the “National Sustainable Development Award” from the Executive Yuan in 2020. We have been certified as a “Green Factory”, received “Excellence in Corporate Social Responsibility award”, and the “TOP 50 Sustainable Corporation award”, “Corporate Sustainability Report platinum award”, “Innovative Growth award”, “Information Security award”, “Supply Chain Management award”, “Social Inclusion award”, and “Climate Leader award” of the Taiwan Sustainability Association. Nanya has received a great deal of recognition and affirmation for our implementation of sustainable development, inspiring us to learn and improve on the path to sustainable development.

We will continuously promote 3 major strategies: “creating long-term value”, “strengthening partnerships”, and “implementing positive changes” to carry out the mission of “best DRAM partner for smart world”. As a member of the global semiconductor industry and the 4th largest DRAM company in the world, we will further strengthen our advantages on the basis of innovations for smart R&D as well as co-work closely with global partners and stakeholders to move towards sustainable development and exert influence on the environment, society, and economy for a better world.



President

SUSTAINABILITY PERFORMANCE

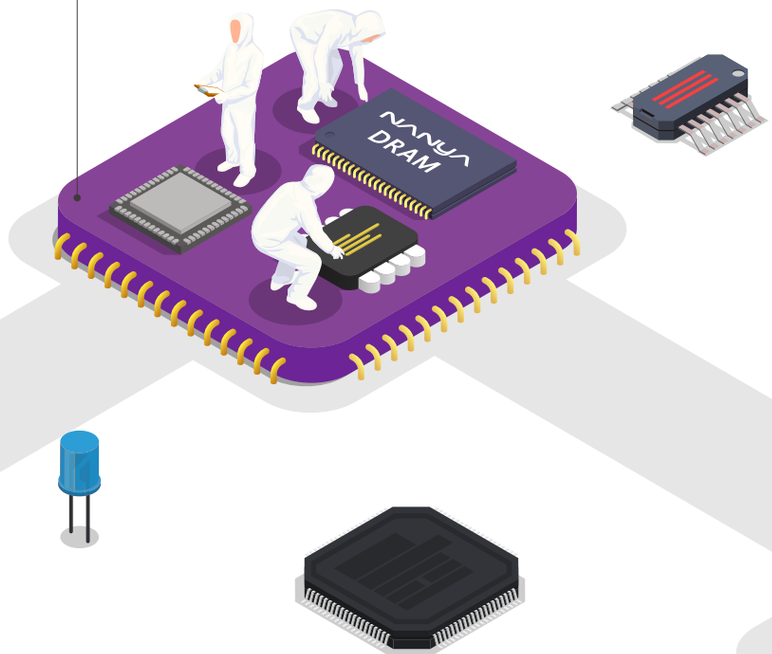
A Trustworthy Company

- **TOP 5%**
  7th Corporate Governance Evaluation of TWSE listed companies
- **Risk Management Committee**
  Established a functional committee under the Board of Directors to strengthen the risk management mechanisms
- **FTSE4Good TIP Taiwan ESG Index**
  Continuous inclusion as a constituent of the FTSE4Good TIP Taiwan ESG Index and a role model for corporate sustainability in Taiwan



The Best Partner for Our Customer

- **93.7 points**
  Customer satisfaction overall average score
- **207 cases**
  Rewards for improvement proposals
- **8.4%**
  R&D expenses accounted for 8.4% of revenue and R&D personnel accounted for 26% of employees



A Promoter of Shared Value

- **100%**
  Key suppliers' completion of self-evaluation questionnaire on sustainability issues
- **1st**
  Nanya Sustainability Supply Chain Conference held for the first time in 2020
- **24.6 million kWh**
  Electricity saved through energy-saving projects collaborate with suppliers



A Practitioner of Green Technology

- **100%**
  Coverage rates of greenhouse gas verification and climate change risk identification in our fabs
- **45.6%**
  Reduced volatile organic compounds (VOCs) per die compared with 2017
- **95.2%**
  Average process water recovery ratio



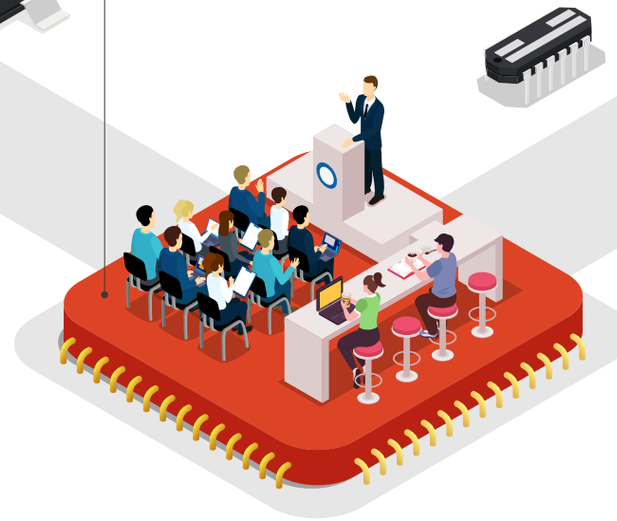
An Attractive Employer for Professional Talents

- **71%**
  Employee engagement survey average approval rate
- **72.1%**
  Internal employee substitution rate
- **100%**
  Coverage rate of contractor pre-entry safety and health training



An Active Participant in Giving Back to Society

- **92.87%**
  Core competence oriented welfare of social participations
- **3,060 participants**
  Joined Nanya's 51 speech projects
- **49,326 participants**
  Used fair trade coffee and assisted community development and economic growth in the Third World



RECOGNITION AND AWARDS

DJSI

2018-2019 named as one of component of the Dow Jones Sustainability Emerging Markets Index

S&P Global

Sustainability Award Bronze Class by S&P Global

National Sustainable Development Award

National Sustainable Development Award by the Executive Yuan

CDP

Climate Change A List
Water Security Leadership Level

FTSE4Good

FTSE4Good Emerging Markets Index

FTSE4Good TIP Taiwan ESG Index

ISS ESG

Prime Level by the Institutional Shareholder Services (ISS) ESG's Corporate Rating

MSCI

MSCI All Country World Index (ACWI)

Green Factory

2021 Green Factory Label By Industrial Development Bureau, Ministry of Economic Affairs

Corporate Governance

Top 5% in the 7th Corporate Governance Evaluation, Taiwan High Compensation 100 Index, Taiwan Employment Creation 99 Index

TCSA

TOP 50 Corporate Sustainability Award, Corporate Sustainability Report Award - Platinum Award (IT and Electronic Manufacturing Industry), Growth through Innovation Award, Information Security Award, Supply Chain Management Award, Social Inclusion Award, Climate Leadership Award

CSR Award

CommonWealth Magazine Corporate Social Responsibility Awards

TTQS

Talent Quality-management System (TTQS) Gold Certificate (Enterprise Version)

Asia300

Asia 300 Power Performers of the Nikkei Asian Review

Taiwan iSport

Sports Administration, Ministry of Education Certified as Taiwan i-Sports Company

Healthy Workplace

Healthy Workplace Best Practice Award organized by the Ministry of Health and Welfare, Health Promotion Administration - Badge of Accredited Healthy Workplace

1 Operation and Governance

P09. About Nanya Technology
P11. Major Products and Operating Performance



ABOUT NANYA TECHNOLOGY

Focusing on DRAM

Nanya Technology Corporation (Nanya) holds innovation as our core value which is realized in the company's dedication to research and develop, design, manufacture, marketing, and sales of Dynamic Random Access Memory (DRAM). Nanya's commitment to research and development has enabled the company to accumulate extensive DRAM expertise and intellectual property. A true leader in corporate citizenship, Nanya has proactively implemented green manufacturing technology. Nanya has harnessed the power of artificial intelligence (AI) to significantly upgrade production capacity and efficiency. The result is a company that provides industry leading DRAM solutions in a way that is environmentally friendly to our planet.

Being the Best DRAM Partner for Smart World

DRAM is a critical component of the smart world. Smartphones and servers used in data centers have been the primary drivers of DRAM development and demand. In the 5G and AI era, demand will continue to grow as the applications of DRAM use further diversify with the boom of various smart-connected devices.

Providing value added products and services to customers is paramount at Nanya. Nanya's focus on innovation has resulted in the successful development of 10nm class DRAM process technology which will enable the next three generations of DRAM solutions including DDR5 and LPDDR5 products. Sampling for 1Anm-based products will begin in the second half of the year along with pilot production of DDR5. Nanya will also accelerate the development of the next generation 1Bnm process technology. Combined, Nanya will provide customers with a complete product lineup to meet the rising needs of the 5G era and smart world.

Creating Positive Influence on ESG

Nanya has built a strong constitution with a sustainable spirit and is committed to enhancing corporate governance; complying with regulations; creating value for shareholders; maximizing employee benefits; actively participating in social welfare; promoting green technology and environmental sustainability; striving for sustainable development. Nanya has posted profits for eight consecutive years. In 2020, Nanya's consolidated revenue amounted to NT$61.01 billion with a net income of NT$7.69B and earnings per share of NT$2.51.

As one of the key members of the semiconductor industry, Nanya deeply understands the impact of environmental disasters and water shortages on company operations. Through the integration of green management, Nanya has enhanced climate resiliency, reduced carbon emissions, launched several energy saving projects and deployed a sophisticated water recovery and recycling process. This is just the beginning. Nanya will continue to contribute our innovation and strength to pursue the sustainability of the environment.

Employees are the most valuable assets for our sustainable business. Nanya implements systematic and multidimensional talent cultivation programs; provides support for employee career development; establishes a wide range of incentives to attract and retain excellent talent. To fortify the development of long-term semiconductor expertise, Nanya enables industry-academia collaboration, high-tech talent cultivation, seminars and lectures, internships and other education programs.

Nanya's dedication in Environment, Social, and Governance (ESG) areas has resulted in awards and recognitions including the Dow Jones Sustainability Emerging Market Index (DJSI), the CDP Climate Change A List, National Sustainable Development Award, Talent Quality-management System (TTQS) Gold Certificate, FTSE4Good TIP Taiwan ESG Index, Top 5% of TWSE listed companies for the third time in the 7th Corporate Governance Evaluation, affirming the path to sustainable development.

Nanya will continue to put our three strategies



Company locations (including overseas branch offices)



- 12-inch Wafer Fabrication Plant & Headquarters
- Design Center
- Sales Office & FAE

Nanya Global Sales Regions: US, Europe, Japan, China, Taiwan, and Asia-Pacific Region

▸ Participation in Associations and Non-profit Organizations

As a member of the global semiconductor industry, Nanya not only pursues the greatest achievement on its core business, but also actively participates in external exchange activities related to its core business and sustainable development in order to cooperate with other enterprises in the industry in moving towards common good. To this end, we have conformed to changes in the international situation and in the industrial chain, establishing a Public Affairs Participation Group under the Sustainable Development Committee of Nanya. The group is responsible for assessing and reviewing decisions on company's participation in public affairs. Moreover, we execute policy formulation of all participation in related industries and participation in industrial unions or chambers of commerce in accordance with the Regulations Governing Nanya's Participation in Public Affairs to ensure the Company's rights and obligations.

In addition, our Director Wen-Yuan Wang is the incumbent Chairman of the Chinese National Federation of Industries. The federation of industries, joined by all industrial groups of the Republic of China (R.O.C), aims to coordinate relationships among members, enhance common interests, plan the improvement and promotion of industries, and improve economic development. Our Independent Director Shu-Po Hsu is the incumbent Chairman of the General Chamber of Commerce of the Republic of China. The chamber of commerce is the supreme organization of the R.O.C business world, aiming to promote domestic and foreign trade, improve economic development, coordinate relationships among members, and enhance common interests. Therefore, both of them can assist the Company in making recommendations to government agencies, if needed.

Public Affairs Participation Guidelines
https://www.nanya.com/Files/1087

Membership fees of associations and non-profit organizations

Unit:NT$ thousands

Our role	2020	2019	2018	2017
Taiwan Semiconductor Industry Association				
Director	320	320	320	320
Taiwan IC Industry & Academia Research Alliance				
Member	100	100	100	100
Center for Corporate Sustainability (joined in 2018)				
Director	280	280	280	-

MAJOR PRODUCTS AND OPERATING PERFORMANCE

▸ Product Information

Nanya is one of the key suppliers in DRAM industry, carrying products from standard DRAM, consumer DRAM, mobile DRAM, automotive / industrial-grade DRAM, and customized DRAM. With the seamless efforts from the R&D team, Nanya is able to bring along new generation of DRAM devices in responding to market demand. We already completed a pilot production line for the 1A process, and will continue to dedicate our efforts to product trial runs and yield improvement in 2021. We expect to submit our lead product, an 8Gb DDR4, to customers for qualification and begin small-scale production in the second half of 2021. We are currently designing and developing the second next generation DDR5 and expect to begin a pilot run in the second half of 2021. The development of 1B process technology and products will be accelerated in 2021, and a trial run of the first products is expected for the third quarter of 2021.

In 2021, we will continue to optimize our 20nm product portfolio. Besides obtaining more qualifications from server and PC OEM customers with our 3200Mbps DDR4 to increase sales volume, we will also accelerate the promotion of 20nm low-power products. Our highest specification product, LPDDR4X 4267Mbps, is currently in the qualification process, and future target markets include portable products, automobiles, and industrial applications, effectively increasing product value and sales flexibility.

DRAM Market Mainstream



▸ Market Overview

Steady growth in DRAM demand: DRAM is a key component in all smart electronic products, and smartphones and servers/data centers are currently the main fields of application. The future development of 5G and AI, as well as smart consumer electronics products, will continue drive diverse applications of DRAM and also increase DRAM usage. The shipment of 5G phones will increase each year along with more DRAM content. Networking and edge computing required by 5G base stations around the world will also increase DRAM usage. Servers/data centers will have even greater demand for DRAM to meet the high-bandwidth, low-latency, and big-data requirements of 5G and AI. Demand from laptops, tablet PCs, TVs, and SSD will remain strong due to the development of work from home, distance learning, and smart homes. Furthermore, smart products such as self-driving cars, gaming consoles, smart cameras, smart wearable devices, and smart robots will continue to sustain demand.

Growth on the DRAM supply side will remain stable and maintain a balance between supply and demand: based on production capacity and capital expenditure plans announced by the three major DRAM suppliers, major companies have been conservative in increasing production capacity and capital expenditures over the past two years, so supply-side growth in 2021 will mainly rely on process transition, and bit supply growth is expected to be limited. Furthermore, according to analysis of research institutes, the scale of mass production by the Chinese DRAM maker will still not affect the overall balance of supply and demand in the market.

Based on the above, bit supply growth by suppliers will be limited in 2021, while demand will see higher growth due to the development of 5G smartphones and data centers. Hence, the overall DRAM industry is expected to see healthy development.

▸ DRAM Application Trend



Mobile Device

- Global smartphone shipments in the year of 2020 declined drastically due to the COVID-19 pandemic. The demands are expected to resume growth in the year of 2021.
- The mainstream of DRAM content per mobile device on the market still remains 6-8GB. The content of iPhone also increases to 6GB.



Server

- Digital transformation stimulates the mid- to long-term demand growth of cloud computing. Expect the demands for server from Hyperscale data center continue to grow steadily in the year of 2021. In addition, the demand of edge computing emerges as the new driving force of sever market, and will evolve and develop with the deployment of 5G infrastructure.
- DRAM demands rise from inventory replenishment and release of new processors. DRAM content per server gradually increases with the time being.



Personal Computer

- Remote business drove sales boom in notebook in the year of 2020. Expect the notebook shipment will continue to hike in the year of 2021.



Consumer Electronics

- Sales for consumer electronics such as new game console, TV, smart watch, networking, video and monitoring system, automotive and industrial devices are expected to have stable growth in the year of 2021.

Business Development Plan

Short-term Plan

- 1. Optimize the 20nm product portfolio and expand the 8Gb DDR4 promotion
- 2. Complete the validation at server manufacturers and first tier data center providers for bigger pie in server DRAM markets
- 3. Enlarge customer base and shipment of 20nm-based products including 4Gb/ 8Gb LPDDR3, 2Gb/ 4Gb/ 8Gb LPDDR4/ 4X. Intensify focus on better penetration into sub-segments like smart phone, wearables, smart speakers, portable devices and enterprise SSD.

Long-term Plan

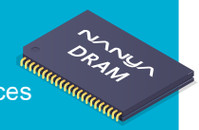
- 1. Continue the migration to advanced process nodes, and provide more product mix to meet customers' demand for different density budget
- 2. Prioritize consumer, mobile and server markets as the major market domain
- 3. Extend services to versatile packages from DRAM discrete, KGD (known good die), and MCP (multi-chip packages). Additional, offer automotive/ industrial grade products and customization services to add Nanya's product values and to strengthen competitiveness to its peers.

Total Production and Percentage of Production from Owned Facilities

2020

Total Production
1,357,648 thousand pieces

Production from Owned Facilities (%) **100%**



Operating Performance

Nanya's consolidated revenue was NT$61.01 billion, net income was NT$7.69 billion, and earnings per share was NT$2.51 in 2020. The overall DRAM market did not meet the Company's expectations in 2020 due to the impact of COVID-19 on global economic development. Moreover, the US-China trade conflict affected deliveries to certain customers in China. A substantial appreciation of NTD also affected revenues and profits. The Company continued to operate normally and generate profits despite disadvantageous external factors. We optimized our product portfolio and invested even more resources to accelerate the development of 10nm class process technology to enhance the Company's future competitiveness.

After the outbreak of COVID-19 in 2020, sales of smartphones, which account for the highest percentage of DRAM applications, declined, while cloud/data center/server markets fluctuated. However, demand from remote work and online teaching/shopping increased sales of laptops, tablet PCs, SSDs, and networking equipment and made up for the lower demand from smartphones. Demand for consumer applications, such as TV and automobiles, gradually began to grow in the fourth quarter. Because making strategic adjustments to our product portfolio and lowering inventory levels, the Company's revenue still grew by 17.9% and bit shipment grew over 30% compared with the previous year. However, a part of the growth was offset by the decrease in average selling price and the appreciation of NTD.

Nanya's gross profit in 2020 was NT$15.69 billion and gross margin was 25.7%, down 6.2 percentage points compared with the gross margin of 31.9% in the previous year. This was mainly due to the decrease in average selling prices and appreciation of NTD. After deducting operating expenses, the Company's operating income was NT$8.43 billion. Net cash inflows from operating activities reached NT$22.61 billion, mainly due to net income and depreciation. After deducting capital expenditures of NT$8.48 billion, free cash flow reached NT$14.13 billion.

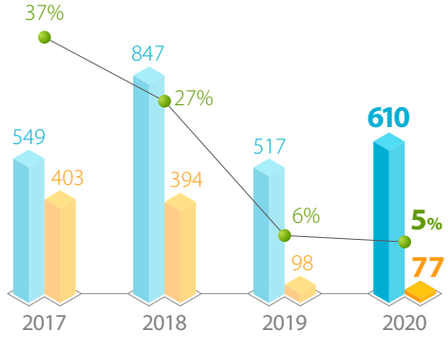
Nanya strives to maintain a stable dividend policy. As of 2020, the Company has distributed cash dividends for six years in a row. Moreover, a cash dividend of approximately NT$1.29 [Note] per share was proposed by the Board of Directors in 2021.

Financial Performance During the Last Four Years

	2020	2019	2018	2017
Market Capitalization (NT$100 million) Calculation based on the stock price at the end of each year	2,685.2	2,563.2	1,706.8	2,258.5
Operating revenue (NT$100 million)	610.1	517.3	847.2	549.2
Operating Income (NT$100 million)	84.3	95.2	393.6	187.9
Return on Equity (%)	5.0	6.2	26.5	37.0
Cash Dividend (NT$100 million) Disclosure according to the attribution year of dividends (dividends are to be distributed in the following year)	40.0[Note]	46.0	217.0	108.8
Cash Dividend per Share (NT$)	1.29[Note]	1.5	7.1	3.5
Employee Welfare Expenses (NT$100 million)	58.6	57.6	68.7	59.4

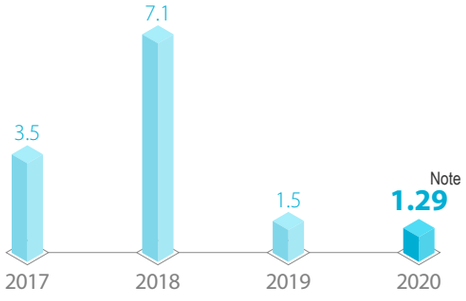
Note:
1. The distribution of profits will be proposed at the 2021 AGM to seek the shareholders' approval.
2. In the event of any change in the number of outstanding shares resulting from the transfer of the treasury shares or exercise of the employee stock options, the cash dividend per share will be adjusted.

Financial Performance



- Operating Revenue (NT$100 million)
- Net Income (NT$100 million)
- Return on Equity (%)

Cash Dividend



- Cash Dividend per Share (NT$)

Note:

1. The distribution of profits will be proposed at the 2021 AGM to seek the shareholders' approval.
2. In the event of any change in the number of outstanding shares resulting from the transfer of the treasury shares or exercise of the employee stock options, the cash dividend per share will be adjusted.

▸Tax Policy and Information

Nanya particularly formulated the Nanya Technology Corporation Tax Policy to efficiently control tax risks, create the Company's long-term value, pursue sustainable development, and implement corporate social responsibility to completely ensure the rights of the Company and its investors.

Nanya Technology Corporation Tax Policy

- Inter-company transactions are based on the arm's length principle, in compliance with transfer pricing guidance published by the relevant authority.
- The company analyzes the operating environment needs to assess tax risks; make major operating decisions with consider the impact of taxation.
- Develop a relationship of mutual respect with tax authorities based on trust and good faith.
- Full compliance with all applicable laws and regulations.
- Disclosures in financial reports are made in accordance with applicable regulations and reporting requirements.
- Shall not adopt tax havens or tax structures that are meant for tax avoidance.
- Shall not transfer profits to lower tax jurisdictions.

Tax performance during the last four years

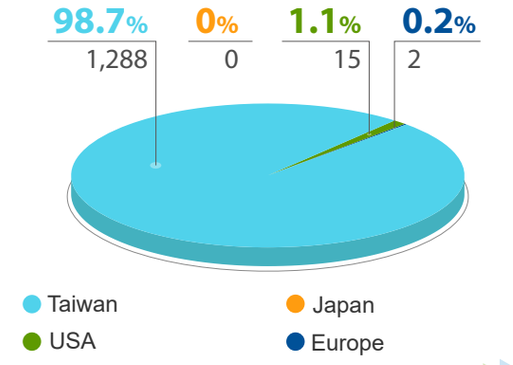
Unit: NT$ million

2020	2019	2018	2017
Net income before tax			
8,991	11,225	41,584	41,831
Income tax expense			
1,305	1,401	2,223	1,536
Effective tax rate			
14.51%	12.48%	5.35%	3.67%
Payment of income tax			
1,484	2,019	1,487	1,906
Cash tax rate			
16.51%	17.99%	3.58%	4.56%

Note: Quantities audited and verified by certified public accountants

2020 income tax expense by country

Unit: NT$ million



2 Corporate Sustainability

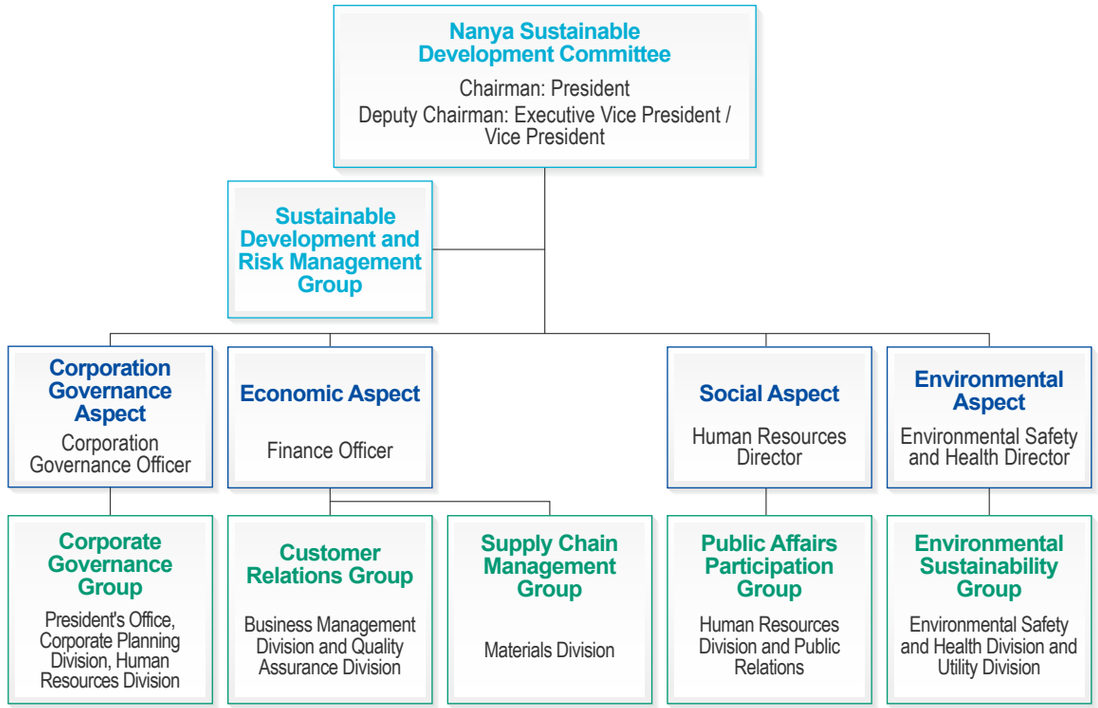
P15. Governance and Organization
P17. Materiality Analysis
P25. Sustainability Commitments and SDGs
P26. Sustainable Impact Valuation



GOVERNANCE AND ORGANIZATION

Since Nanya established Sustainable Development Committee in 2018, we have been pushing forward activities related to sustainable development step by step, becoming a solid partner in improving the challenges faced by the world. The Committee, chaired by the President, and with senior management ranked Assistant Vice President and higher as committee members, reports to the Board of Directors annually on the Company's sustainable development strategies, vision, goals, implementation policies, and results, linking up each functional organization to promote corporate sustainability. In the meantime, a dedicated organization, the Sustainable Development and Risk Management Group, was established under the President's Office to serve as the Secretariat. The organization is responsible to convene the Sustainable Development Committee meetings quarterly, plan and control various action plans, and integrate and supervise the execution progress and results on the aspects of corporation governance,economics, society, and environmental sustainability, ensuring the effectiveness of horizontal and vertical communication to specifically implement sustainable development.

Nanya Sustainable Development Committee



Four aspects

The corporation governance, economic, social, and environmental aspects are led by corporation governance,finance, human resources, and safety and health supervisors respectively.

Four meetings

The Committee reports to the President quarterly on the implementation and results of sustainable development affairs, establishing key projects and performance indicators.

Five working groups

Five working groups are set up, including corporate governance, customer relations, supply chain management, public affairs participation, and environmental sustainability.

In 2020, Nanya Sustainable Development Committee continued to work on three main aspects, i.e., CSR work planning, risk management assessment, and legal and regulatory response. In the meantime, the committee reported projects to the board of directors for discussions to strengthen internal awareness and reforms, and move towards the vision of sustainable development. In regard to risk management, a material sustainability topic, the board of directors deeply realized that risk events, including the international political and economic situation, climate change, regulations, and diseases, were changeable, so the Risk Management Committee was established under the board of directors in 2020. Through the functional committee, the board of directors may identify risks for review and management when faced with complex situations so that controllable risks are included in daily operations, and uncontrollable risks are monitored for preparation and response.

Key points reported to the board of directors in 2020

Main highlights of corporate social responsibility in 2019

- Constituent of the DJSI Emerging Markets Index
- A 3.5% rise in annual average process water recovery rate compared with 2018
- Zero industrial safety incident for four years in a row
- Award for A- Leadership in the CDP's Climate Change Evaluation
- Reduced volatile organic compounds (VOCs) emissions per unit capacity by 16% compared with 2018

Sustainable development organization and sustainability strategies

An overview of sustainable performance, recognition, and awards in 2019

Results of 2019 and goals for 2020

Continued to promote participation in the DJSI evaluation, the Taiwan Corporate Sustainability Awards, and the Excellence in Corporate Social Responsibility Awards by CommonWealth Magazine

Internalized the DJSI evaluation, and reinforced corporate operations

Items promoted in 2020 by the Sustainable Development Committee, the Risk Management Committee, and the Regulatory Compliance Platform

CSR work plans
(Sustainable Development Committee)

- Improved wastewater recovery rate
- Evaluated the establishment of renewable energy plants, and implemented the purchase of green energy in accordance with the Use and Purchase of Green Energy Plan for 2020-2025 made in 2019
- Deepened ISO 50001 Energy Management System, and promoted energy action management improvement projects
- Continued to promote the LCA inventory mechanism and hotspot improvement programs following the inventory
- Executed the supplier sustainable risk assessment and guidance
- Truly executed customer satisfaction evaluation through a third party
- Optimized corporate governance
- Continued to participate in domestic and international sustainability evaluations (DJSI, CDP, Taiwan Corporate Sustainability Awards, Excellence in Corporate Social Responsibility Awards by CommonWealth Magazine, and Corporate Social Responsibility Awards by Global Views Monthly)

Risk management assessment
(Risk Management Committee)

- Sales and marketing risks
- Risks of wafer manufacturing and back-end packaging and testing
- Operation supporting risks
- Human resources risks
- Privacy management risks
- Information security Risks
- Quality risks
- Environmental health and safety risks
- Corporate strategy and finance risks
- Emerging Risks

Review and response of legal and regulatory compliance
(Regulatory Compliance Platform)

- Reviewed known legal and regulatory compliance
- Response measures to new regulations

▸ Sustainability Strategies

Nanya has formulated three major strategies, which are creating our value for the long term, strengthening relationship with our partners, and developing positive impact of our business, to drive six main themes that will implement corporate sustainability management, laying foundations for six sustainable roles so as to create sustainable influence.



MATERIALITY ANALYSIS

Nanya conducts materiality analysis annually, and the results of the analysis allow us to understand the sustainability topics concerning our stakeholders. Moreover, the results serve as the basis for the compilation of our corporate social responsibility report and corporate sustainability governance, so the stakeholders are able to understand the performance of Nanya's practice regarding corporate sustainability. We also hope that during the process of promoting corporate sustainability, we could adjust our methods whenever necessary, and move towards a sustainable enterprise.

▸ Materiality Analysis Process

We follow the GRI Standards to establish a systematic materiality analysis method. Through a three-stage process, i.e., identification and selection, deciding priority, and confirmation and review, we identify our own material sustainability topics, and set long-term sustainability goals in response to these topics.



IDENTIFICATION AND SELECTION

This stage includes identification of major stakeholders and selection of sustainability topics. With regard to identification of major stakeholders, we followed the GRI Standards and the AA 1000 Stakeholder Engagement Standard (SES), and identified seven major categories of stakeholders, including: employees, shareholders, customers, suppliers, the government, communities, and the media. With respect to selection of sustainability topics, we consider internal and external factors that might impact our corporate sustainability. Therefore, based on the international sustainability regulations and standards, industry-specific topics, sustainable evaluations, communication with stakeholders, and internal operational goals, a total of 20 issues were selected as Nanya's sustainability topics, and were also served as the analysis basis for the second stage of deciding priority. Compared with the 19 sustainability topics of the previous year, on the environmental aspect, we added "Climate Change", and adjusted the title "Emission, Waste Recycling and Reuse" to "Waste and Recycling".



DECIDING PRIORITY

Based on two major principles: the stakeholders' level of concern, and the degree of impact on operations, Nanya prioritized these 20 sustainability topics in this stage. In terms of a survey of the stakeholders' level of concern, in order to gather representative samples, we conducted a survey among the seven categories of stakeholders online or through paper questionnaires on their level of concern. In regard to the degree of impact on operations, we assessed the degree of impact of each topic on aspects related to operations, such as revenue, customer satisfaction, cohesion of employees, brand image, and cost.



CONFIRMATION AND REVIEW

Based on the analysis results of the stage 2, we drew a materiality matrix, and decided material topics. Our senior executives discussed and confirmed these material topics before deciding that 15 were our material topics, and the other 5 were potential sustainability topics, which would be disclosed optionally in the report. In relation to disclosure standards, we adopted the GRI's value chain presentation to make the stakeholders understand the positive and negative impact on the value chain resulting from different topics, while serving as the basis for the Company to strengthen its corporate sustainability management.

01 IDENTIFICATION AND SELECTION

Identification of 7 major categories of stakeholders

We adopted the AA 1000 Stakeholder Engagement Standard (SES), and held the CSR consultation meetings to identify seven major categories of stakeholders, including: employees, shareholders, customers, suppliers, the government, communities, and the media. In addition, we gathered and analyzed the concerned issues and identified the communication channels to include the stakeholders' concerns into the daily work and annual plans of our corporate social responsibility.

Selection of 20 sustainability topics

To display the complete sustainability context, we gathered 20 sustainability topics through various channels, including: communication processes of stakeholders, international guidelines/regulations/trends (GRI Standards, SBSC, SDGs), industry-specific topics (RBA, SASB), sustainable investment evaluations (DJSI, CDP, MSCI Sustainability Indexes, FTSE4GOOD Emerging Index), and internal goals of organizations.

02 DECIDING PRIORITY

Distribution of 660 questionnaires to investigate level of concern

In addition to the interactions with stakeholders through daily operation, before publishing the report, we conducted questionnaires among the identified seven major categories of stakeholders. At last, we collected a total of 660 valid questionnaires, analyzing the topics concerning each category of stakeholders.

Collection of 37 questionnaires to weigh impact on operations

While information was being disclosed, the impact on the organizational operation should be considered. We incorporated five major factors, including revenue, customer satisfaction, cohesion of employees, brand image, and cost, into our consideration, and asked our management team and employees to help evaluate the impact that each topic might have on the operation. At last, we collected a total of 37 questionnaires for analysis, understanding the key topics under different operational factors.

03 CONFIRMATION AND REVIEW

Confirmation of 15 material topics

Based on the analysis results in the Stage 2, we understood the distribution of sustainability topics in the materiality matrix. Our management team discussed these topics and finally decided 15 material topics, completing the Nanya's CSR materiality matrix of 2020. The following procedure was to further decide the boundary of information disclosure and the planning of management policies.

Confirmation of 20 material themes

According to the 15 material topics, our employees internally decided the stages that each topic might have significant impact on within the Nanya's value chain. These 15 material topics corresponded to the 18 topics in the GRI Standards and two specific topics belonging to Nanya, making a total of 20 main themes to be the basis for report compilation.

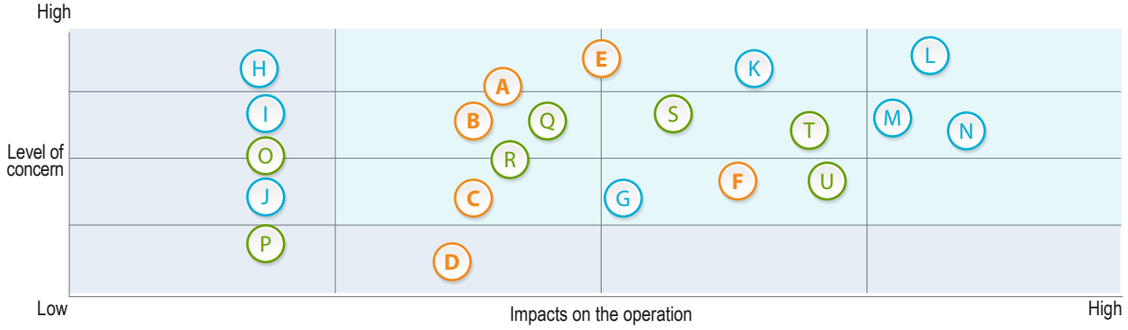
Stakeholder Engagement

Communication method	Communication frequency	Topic of concern	2020 communication outcome	Reference section
Employees Significance to Nanya: Employees are considered as the most important asset of Nanya. We regard our employees' happiness as our responsibility, so we collaborate with our employees to implement the vision of healthy and happy workplace through comprehensive salaries and benefits, training and development, and a two-way communication system.				
▸ Internal announcements ▸ Meetings: Convene regular meetings, such as all-hands meetings/executive meetings/production line operator meetings/various training and education courses ▸ Two-way communication platforms: Living garden, Nanya newsletter, and feedback ▸ Electronic questionnaires: Course satisfaction, activity satisfaction, and Employee Engagement Survey ▸ Communication meetings with union representatives: Discussions on labor and management issues	▸ Publish announcement when needed. ▸ All-hands meetings are held twice a year; executive meetings and production line operator meetings are held quarterly. ▸ Other meetings are held whenever necessary. ▸ Two-way communication platforms: Electronic newsletters are sent every two months, and feedback is replied within five days. ▸ Communication meetings with union representatives are hold when needed.	▸ Occupational Health and Safety ▸ Talent Development ▸ Talent retention and employee care	▸ Two all-hands meetings were held. ▸ Four executive meetings were held. ▸ Four production line operator meetings were held. ▸ A total of three Nanya newsletters were sent. ▸ One in-person communication meeting with union representatives was held, and a diversity of channels were used for communication.	▸ Harmonious workplace
Shareholders Significance to Nanya: Capital investment is a form of trust and support projected from the shareholders of Nanya. The Company has set up a dedicated unit for investor relations. Through providing transparent information on corporate operation and management strategies and financial policies to our investors, we achieve the goal of increasing the value of our shareholders' investment.				
▸ Regular shareholders ・A shareholders' meeting is held annually. ・An annual financial report is published pursuant to regulations, and is distributed at the shareholders' meeting. ・Shareholders are able to inquire via phone or e-mail.	▸ Market Observation Post System (MOPS) - information is updated from time to time ▸ Shareholders' meeting - at least once a year	▸ Business Integrity	▸ Updated information on the MOPS: over 300 items ▸ Held one shareholders' meeting ▸ Held four online institutional investor conferences ▸ Participated in 15 forums and seminars ▸ A total of 123 irregular institutional investor visits on site or via phone	▸ Integrity and Transparency
▸ Institutional shareholders ・Institutional investor conferences and global conference calls are held quarterly. ・Participation in domestic and overseas seminars held by investment institutions ・Participation in investor forums held by brokers irregularly ・Institutional investor visits on site or via phone	▸ Institutional investor conferences - held once every quarter ▸ Participation in forums or seminars at least twice every quarter ▸ Irregular institutional investor visits via phone or on site			
Customers Significance to Nanya: Customers are the best operational strategic partners of Nanya. Through joint efforts to create new thinking and technologies, we are able to grasp application trends of the industry and enhance the value of our products.				
▸ Technical support services ▸ Customer meetings and distributor meetings ▸ Regular technical support ▸ Annual customer satisfaction survey ▸ Customer training and education	▸ As per customers' request ▸ Once in one or two months per customer ▸ Once in one or three months per customer ▸ Once a year ▸ As per customers' request	▸ R&D and Innovation ▸ Business Integrity ▸ Customer Service	▸ Completed 955 cases of customer platform parameter measurement service ▸ Completed 91 sessions of customer technical exchanges and courses ▸ Completed customer satisfaction survey with 100% coverage of customers, and the score of satisfaction reached 93.7 points	▸ Integrity and Transparency ▸ Innovative technology

Stakeholder Engagement

Communication method	Communication frequency	Topic of concern	2020 communication outcome	Reference section
Suppliers Significance to Nanya: Suppliers form a significant link in the product production of Nanya. Through mutual trust partnership and a supplier management system, Nanya on works with suppliers to build a sustainable value chain.				
▸ Real-time supplier information platform ▸ Regular face-to-face review reports or meetings ▸ Supplier surveys, audits, and consultation are held in January, April, July, and October each year. ▸ Annual evaluation of suppliers' stability of delivery and product quality	▸ In addition to the regular audits in January, April, July, and October each year, irregular communication is conducted when necessary.	▸ Sustainable Supply Chain Management	▸ In regards to delivery and stock management, regular and irregular review meetings were held every month - 82 key material suppliers. 248 non-critical material suppliers ▸ Collected 304 SAQ questionnaires with 100% response rate ▸ Audited 20 suppliers with high risk, and the improvement rate reached 100%	▸ Responsible Procurement
Government Significance to Nanya: Nanya continuously pays close attention to the up-to-date regulations of the government. In the face of the government's legal and regulatory requirements, we expect ourselves to exceed the statutory standards and actively respond to the policies proposed by the government.				
▸ Documents ▸ Legal and regulatory briefings ▸ Submit related reports or responses as required by the competent authorities and regulations ▸ Financial reports ▸ Communicate with the competent authorities through the industrial park, computer associations, etc.	▸ Submit reports to the competent authorities as required, basically around once per month	▸ Business Integrity ▸ Greenhouse Gas Management	▸ Periodically submitted related reports or responses in accordance with regulations of the government. ▸ Actively responded to the policies proposed by the government and made recommendations through associations.	▸ Integrity and Transparency ▸ Green manufacturing
Society Significance to Nanya: A happy society is the most important cornerstone of corporate sustainable development. Local prosperity and local value preservation should not be contradictory but complement each other. Nanya expects itself to gain a firm foothold in business operation while it also actively engages in cultivating local connections, which will be integrated into local community reconstruction. This is an important subject when Nanya is considering its social responsibility.				
▸ Talent development: Conform with the education system and cultivate outstanding semiconductor talent. ▸ Environmental protection: Connect different types of NPOs and promote environmental protection ideals. For example, promoting the Earth Hour Event, doing one thing for the Tamsui River, and cleaning the beach ▸ Humanistic care: Improve social welfare by working with local art and charity groups ▸ Good neighbor: Participate in public affairs in the neighborhood communities and build a harmonious and mutually beneficial living sphere.	▸ On average, monthly participation in various social engagement and activities ▸ Communicate and assist when necessary	▸ Greenhouse Gas Management ▸ Eco-friendly Products ▸ Social Engagement	▸ Held 51 campus activities and seminars with industry experts with a total of 3,060 participants ▸ A total of 170 employees participated in environmental conservation activities, clearing 1,763 kilograms of garbage, 41 kilograms of exotic species of plants, and 3,361 pieces of disposable garbage. ▸ Subsidized five public interest groups, and purchased 336 kilograms of fair trade coffee ▸ Invested approximately NT$1,350,000 in manpower, material resources, and sponsorship	▸ Green manufacturing ▸ Common good
Media Significance to Nanya: The media is an important channel for the Nanya's external communication, so we have a spokesperson and an agent system. Moreover, we have set up a dedicated unit for public relations. Multiple communication channels and consistency in conveying the corporate messages to the media allow the media professionals who care about the Company to understand the latest information.				
▸ Press releases ▸ Quarterly press conferences ▸ Nanya's official website ▸ Interviews with the spokesperson	▸ At least once per month	▸ Business Integrity ▸ Social Engagement	▸ 27 press releases ▸ Held four press conferences ▸ Updated the official website from time to time	▸ Integrity and Transparency ▸ Common good

Nanya material topic matrix



A. Talent Development
B. Human Rights
C. Social Engagement
D. Employee diversity
E. Talent retention and employee care
F. Occupational health and safety
G. Business Integrity
H. Privacy protection
I. Information security
J. Economic performance
K. Risk management
L. R&D and Innovation
M. Sustainable Supply Chain Management
N. Customer Service
O. Climate change
P. Green factory
Q. Water Management
R. Waste and recycling
S. Greenhouse Gas Management
T. Energy Management
U. Eco-friendly Products

● Social aspect ● Economic aspect ● Environmental aspect

Note:Information Security in the sustainability management aspect, and result-oriented Economic Performance are potential sustainability topics, but their information and performance are still disclosed in the report.

Material topics, GRI topics, and impact boundaries

	Material topics	GRI topics	Value chain: Product Design	Procurement	Manufacturing	Testing	Customers	Corresponding section
Economic aspect	Business Integrity	Anti-corruption (205) and Anti-competitive Behavior (206)		★	●	●		Integrity and Transparency
	R&D and Innovation	R&D and Innovation*	●					Innovative technology
	Customer Service	Customer Privacy (418)					★	Innovative technology
	Sustainable Supply Chain Management	Procurement Practices (204), Supplier Environmental Assessment (308), and Supplier Social Assessment (414)		★				Responsible Procurement
	Risk management	Risk management*			●	●		Integrity and Transparency
Environmental aspect	Greenhouse Gas Management	Emissions (305)			●	●		Green manufacturing
	Eco-friendly Products	Energy (302) and Emissions (305)	●	★	●	●	★	Green manufacturing
	Energy Management	Energy (302)			●	●		Green manufacturing
	Water Resource Management	Water and Effluents (303); Effluents and Waste (306)			●	●		Green manufacturing
	Waste and recycling	Effluents and Waste (306)			●	●		Green manufacturing
Social aspect	Talent Development	Training and Education (404)			●	●		Harmonious workplace
	Occupational Health and Safety	Occupational Health and Safety (403)			●	●		Harmonious workplace
	Talent retention and employee care	Market Presence (202) and Employment (401)			●	●		Harmonious workplace
	Social Engagement	Local Communities (413)			○	○		Common good
	Human Rights	Non-discrimination (406), Forced or Compulsory Labor (409), and Human Rights Assessment (412)		★	●	●		Harmonious workplace

Note:*Specific topics of Nanya

Degree of involvement: ● Direct relation ○ Indirect relation ★ And commercial relation

Nanya sustainability goals

Economic aspect

Topic	Significance to operation	Long-term goals (2025)
Business Integrity	We will build a sound corporate governance system and implement various business ethics policies and risk management mechanisms between suppliers, customers, and stakeholders to maintain the important cornerstone of corporate sustainable operation and value creation.	▸ KPI 1: Material violations of regulations: 0 cases ▸ KPI 2: Corruption cases: 0 cases ▸ KPI 3: Workplace violence: 0 cases ▸ KPI 4: Violation of employee and labor ethics 0 cases ▸ KPI 5: Antitrust cases: 0 cases ▸ KPI 6: Violation of trade secrets 0 cases
R&D and Innovation	In order to maintain competitive advantages, we will research and develop advanced process technologies, and design new products of the next generation. Moreover, we will make forward-looking market plans, provide customers high value-added solutions, and establish high intelligent product lines to enhance efficiency.	▸ KPI 1: Introduce 10nm technology into mass production ▸ KPI 2: Finish building high-performance production lines with AI-assistance
Customer Service	We aim to provide comprehensive customer service. Through regular communication and visits, we are able to understand customers' opinions about our products and services, which help us grasp customers' needs. Thus, we will make improvements to enhance customer satisfaction as well as market image.	▸ KPI 1: Customer satisfaction score: 90 points and above. ▸ KPI 2: Customer participation in platform parameters measurement services: 950 cases ▸ KPI 3: Customer technical exchange and courses: 84 sessions
Sustainable Supply Chain Management	We will promote sustainable performance of suppliers, improve resilience of supply chains, manage and control supply chain risks, and cooperate with suppliers to become the best partners in order to jointly move towards a sustainable future.	▸ KPI 1: Use of non-conflict minerals for wafer product lines: 100% ▸ KPI 2: Key suppliers' completion of the RBA self-evaluation questionnaire: 100% ▸ KPI 3: Completion rate of deficiency improvements by suppliers with high sustainability risk in audits: 100% ▸ KPI 4: Percentage of suppliers signing Supplier Code of Conduct: 100% ▸ KPI 5: Accumulative percentage of auditing and counseling key suppliers for three years: 100% ▸ KPI 6: Create at least two supplier sustainability counseling projects a year
Risk management	We will establish and maintain effective risk management mechanisms and constantly improve them, lower operation cost to ensure corporate sustainable profits, and create a quality working environment to achieve the goals of corporate sustainable operation.	▸ KPI 1: Regular quarterly meetings and annual reports to the Board of Directors ▸ KPI 2: Annual risk assessment items: 200 items ▸ KPI 3: Stress test: 7 aspects each year ▸ KPI 4: Education and training: 100% of all employees

Nanya sustainability goals

Environmental aspect

Topic	Significance to operation	Long-term goals (2025)
Water Management	Through daily management, reductions and water recovery, we maximize the use of water resources and lower environmental pollution and production cost, while setting up response mechanisms for water shortage to mitigate the production impact risks resulting from water shortage.	▸ KPI 1: Compared with the figure in 2017, a 35% decrease in the average unit water consumption (ton/k-pcs) by dividing total water consumption from 2018 to 2025 with the total production capacity of the year. ▸ KPI 2: Annual average process waste water recycling rate: More than 97% ▸ KPI 3: Other losses in production caused by restricted water supply: 0 wafer (slice)
Waste and Recycling	We will recycle waste to improve the effective use of resources and reduce other problems deriving from pollution. Moreover, we will provide waste to other industries for reuse, achieving the advantages of environmental impact reductions and circular economy development.	▸ KPI 1: Waste disposal companies on-site audits and consultation rate > 80% ▸ KPI 2: Non-compliance with environmental laws and regulations cases: 0 cases ▸ KPI 3: Reduce VOC emissions per die by 40% compared with the base year of 2017
Greenhouse Gas Management	We will include climate change risks into overall considerations of operations, and predict the probability of risk occurrence and levels of influence. We will also formulate risk response and mitigation plans, and crisis handling mechanisms in order to issue warnings as early as possible to mitigate the impact of climate risks on our operations.	▸ KPI 1: Reduce unit greenhouse gas emissions by 25% from 2017. (Per die) ▸ KPI 2: Reduction rate of PFCs emissions during process reaches a minimum of 90%
Eco-friendly Products	We use complete advanced processes to provide competitive advantages of optimized energy consumption, efficacy, and chip sizes. In addition, we manufacture more advanced, more energy-saving, more eco-friendly, and hazardous substance free products for our customers, while lowering the environmental impact of the products.	▸ KPI 1: 100% of products conform to relevant regulations and customers' hazardous substance free (HSF) specifications ▸ KPI 2: Complete product life cycle inventory on 100% products ▸ KPI 3: No PFOA related substance in 100% process chemicals
Energy Management	We will improve the efficiency of energy use, promote energy saving measures, reduce greenhouse gas emissions, as well as lower environmental pollution to improve our image in society, and lower manufacturing cost while meeting the requirements of customers or government policies.	▸ KPI 1: Energy conservation through energy-saving measures totals at least 80,000 MWh or higher (from 2017 to 2025). ▸ KPI 2: Production disruption caused by climate change disasters 0 days ▸ KPI 3: Annual renewable energy use reaches 22,000MWh or higher.

Nanya sustainability goals

Social aspect

Topic	Significance to operation	Long-term goals (2025)
Talent Development	As a human-oriented company, we establish an advantageous training and development system, reinforcing our employees' core technological capabilities to achieve the Company's annual strategic goals, and cultivate outstanding high-tech semiconductor talent.	▸ KPI 1: Percentage of key talent to total employees ≧ 6% ▸ KPI 2: Annual planned course completion rate ≧ 100% ▸ KPI 3: Internal employee substitution rate for job openings ≧ 65% ▸ KPI 4: Percentage of females to all supervisors ≧ 40%
Occupational Health and Safety	Employees are our important assets. Through continuous improvements in providing employees with a safe and healthy working environment, we aim to enhance the awareness of safety culture, strengthen self-inspection, and reduce employee occupational accidents.	▸ KPI 1: Disabling frequency rate < 0.17 ▸ KPI 2: Disabling severity rate < 5.9 ▸ KPI 3: Independent inspection rate > 94% ▸ KPI 4: Number of proposals engaging all employees for safety and health > 1800 proposals ▸ KPI 5: Occupational diseases caused by chemical exposures remains zero. ▸ KPI 6: Voluntary participation rate of health programs ≧ 54%
Talent retention and employee care	Employees are our important assets. We will continue to recruit high potential talent, and provide a friendly workplace, so our employees may continue to contribute to the Company while growing within the organization. Thus, we will maintain our competitive advantages.	▸ KPI 1: Retention rate of key talent ≧ 98% ▸ KPI 2: Voluntary turnover rate ≦ 5% ▸ KPI 3: Employee opinion survey average approval rate reaches 80% and above.
Human Rights	Value basic human rights, implement a human rights culture and training, establish principles of risk mitigation and compensation, and create a working environment that protects human rights.	▸ KPI 1: Implement human rights policies, and 100% employees complete training and eduction regarding the policies ▸ KPI 2: No major deficiencies are found in external audits or labor inspections
Social Engagement	Based on our core competencies and values, we gather internal resources, invest in diverse aspects, and cooperate with upstream and downstream partners to convey the power of beauty and benevolence, and help create a better society.	▸ KPI 1: Percentage of investments in business initiatives ≧ 85% ▸ KPI 2: Percentage of the number of volunteers to total employees ≧ 5% ▸ KPI 3: Accumulative semiconductor talent cultivated ≧ 1,000 people (an accumulation of five years starting in 2021)

SUSTAINABILITY COMMITMENTS AND SDGS

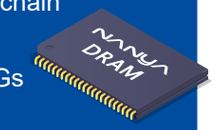
Reviewing our core competencies is the first step in response to the United Nations' Sustainable Development Goals (SDGs). Based on our 15 material topics, Nanya identified methods that might solve the problems faced by humans around the globe. We found that our practice in 12 sustainability topics might link to 10 of the SDGs, especially the SDG 8 Decent Work and Economic Growth, and the SDG 12 Responsible Consumption and Production. Nanya contributed the most to these two goals, because the two goals were in line with the key roles the Company played in innovation, green, and talent. Therefore, Nanya could use its core competencies and operations to make the most contribution to the SDGs.

Sustainable role	Nanya's material topics	4	6	7	8	9	10	12	13	16	17
A Trustworthy Company	Business Integrity									16.5	
Best Partner for Our Customer	R&D and Innovation				8.2	9.5					
A Promoter of Shared Value	Sustainable Supply Chain Management			7.3				12.4		16.5	
A Practitioner of Green Technology	Greenhouse Gas Management								13.3		
	Eco-friendly Products							12.4			
	Energy Management			7.3		9.4					
	Water Resource Management		6.4								
	Waste and Recycling		6.3					12.5			
An Attractive Employer for Professional Talents	Talent Development	4.4									
	Occupational Health and Safety				8.8						
	Human Rights				8.7		10.2				
An Active Participant in Giving Back to Society	Social Engagement				8.5				13.3		17.7

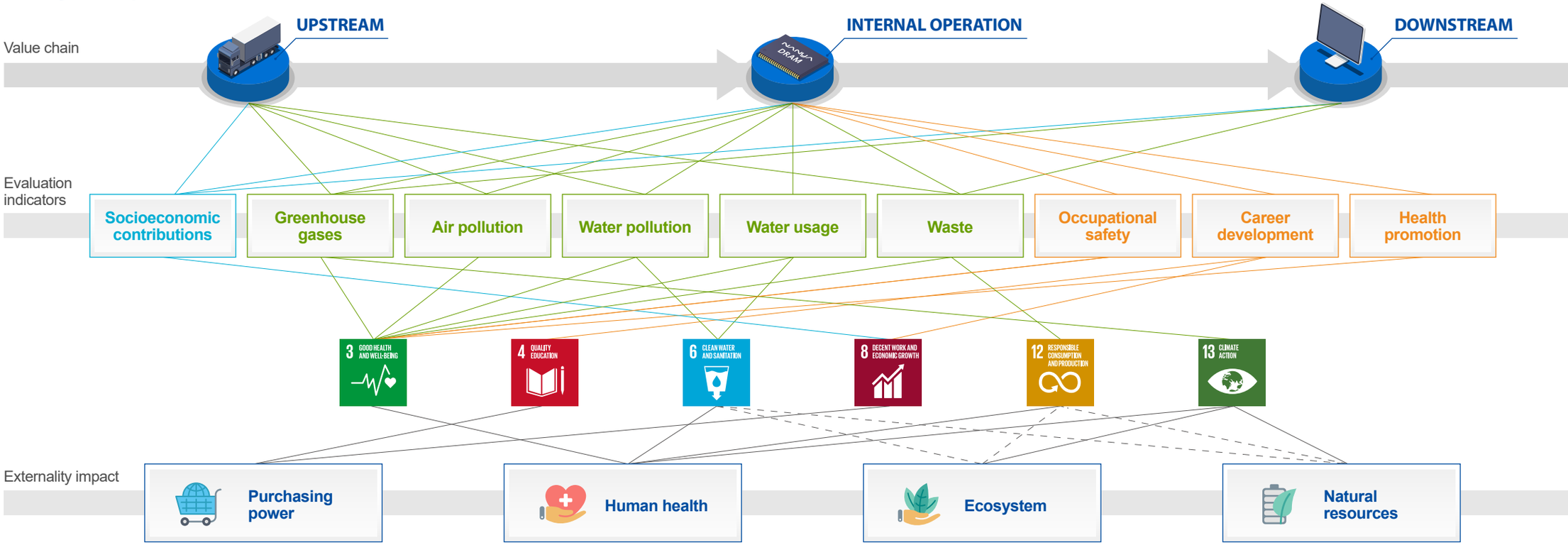
SUSTAINABLE IMPACT VALUATION

"Influence" is Nanya's original motivation of pursuing corporate sustainability, as only using the management thinking of the Triple Bottom Line (TBL), i.e., the economic, environmental, and social bottom line, could we show the substantive value created by corporate operations for stakeholders. We have cooperated with academic units to jointly develop management tools for sustainability impact valuation since 2017. Through the Impact pathway approach, we map out the externalities of the environment and society deriving from value chain activities, and monetize the impact to measure its potential effect on human well-being and socioeconomics. With the approach, we may provide decision-makers information for their consideration and comparison during the process of promoting corporate sustainability, and connect with the international sustainability management standards. The increasing demand for memory products drove the industrial chain development of electronic products. In addition, new generation DRAM products with low power consumption reduced the energy consumption in the use stage of end products. Therefore, a total of NT$231.8 billion Net Positive Impact(note1) was created in 2020, increased by 5% year over year. Nanya will continue to improve and strengthen the management framework of sustainable impact valuation to measure and manage the contributions to social welfare brought by business operations and value chain activities.

3 major phases in value chain
9 ESG topics
In connection with **6** SDGs

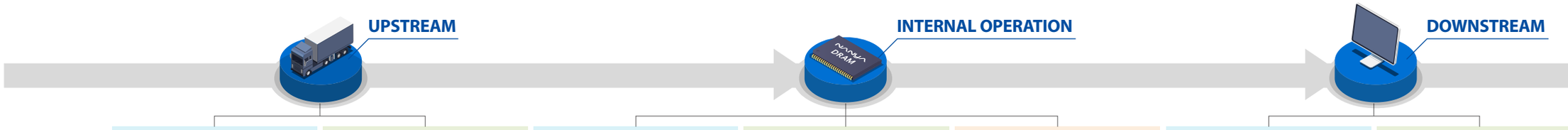


▸ Nanya's Impact Valuation Framework



Note1: Net Positive Impact = Positive Impact - Negative Impact

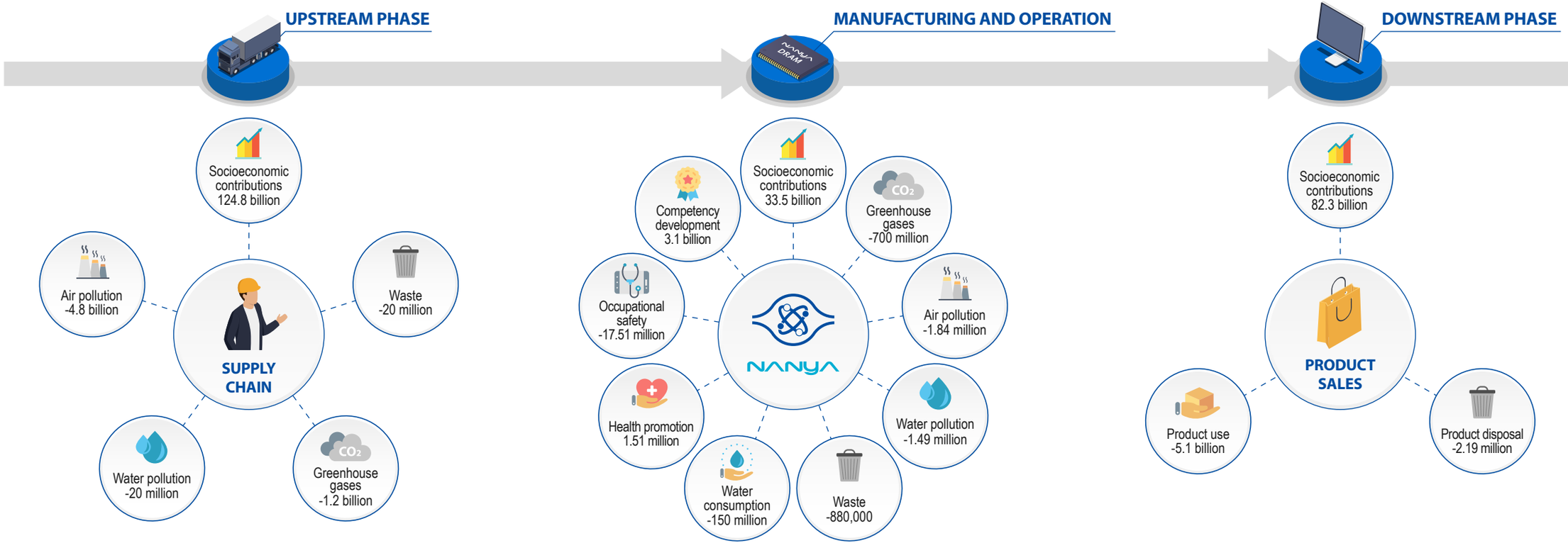
- - - - - Methodology is still under development, so it is excluded in the assessment.



	UPSTREAM		INTERNAL OPERATION			DOWNSTREAM	
Scope	Economic aspect	Environmental aspect	Economic aspect	Environmental aspect	Social aspect	Economic aspect	Environmental aspect
Operating activities	Supplier procurement	Supplier procurement	Financial income and expenses	Greenhouse gas emissions, Use of water resources, Discharges of air pollutants, Waste water discharges, Waste output	Employee competency development, Occupational incidents, Health promotion	Product sales	Product use, Waste disposal
Externality impact	Socioeconomic contributions	Social cost of carbon, Human health damage	Socioeconomic contributions	Social cost of carbon, Human health damage	Socioeconomic contributions, Social cost of work hours lost, Medical cost of disease avoidance	Socioeconomic contributions	Social cost of carbon, Human health damage
Methodological description	We adopt the Input-Output Analysis to evaluate the indirect economic value generated by interdependent relations between industries due to purchasing activities, and use the externality cost of our own operational pollutants per unit to evaluate environmental impact of greenhouse gas emissions, water pollution (COD), waste (incineration), and air pollution (PM2.5, NOx, SOx, NMHC, and Pb) in supply chains.		Economic aspect To evaluate the socioeconomic benefits created by operating activities for stakeholders, in addition to revenue, we also regard the expenses, such as salaries (employees), dividends (shareholders/investors), tax payment (the government), and depreciation (suppliers) as positive economic value. Environmental aspect We evaluate the human health damage and potential social cost resulting from water consumption, greenhouse gases, air pollutants, waste water discharges, and waste, but exclude the ecosystem quality degradation and resource depletion. Social aspect As the social aspect involves extensive facets, and methodologies of most topics are still in their infant stage, we merely consider the issues, such as the social cost resulting from occupational incidents, the economic contributions of employee competency development, and the promotion of health improvement activities to lower the risks of employees' health abnormalities.			We focus on the first five major end-product applications of DRAM products, and in terms of supply and demand between sales amount and customers' industry production value, evaluate the indirect economic value created by product sales and the environmental impact resulting from the stages of product use and disposal. Moreover, considering the difficulty in acquiring data, social externalities in the downstream are excluded from the assessment for now.	
Reference	Directorate-General of Budget, Accounting and Statistics (2015), Directorate-General of Budget, Accounting and Statistics (2020), Bureau of Energy (2020), US EPA (2016), UNEP/SETAC (2017), PwC UK (2015)		Economic aspect The Company's Annual Report Environmental aspect US EPA (2016), ReCiPe (2016), UNEP/SETAC (2017), PwC UK (2015), Environmental Protection Administration (2017), USEtox (2017) Social aspect Ho Jiune-jye (2005), Lee Chieh-hsien (2009), WHO (2008)			Directorate-General of Budget, Accounting and Statistics (2015), Directorate-General of Budget, Accounting and Statistics (2020), Bureau of Energy (2020), US EPA (2016), UNEP/SETAC (2017), PWC UK (2015)	

Note1: Methodologies mainly refer to ISO 14008:2019 and theWhite Paper: Operationalizing Impact Valuation (2017) for evaluation frameworks
Note2: Currency value conversion all considers the inflation coefficients of 2017, and the exchange rates of New Taiwan Dollar against foreign currencies.

2020 Nanya sustainable impact valuation results



240.6 billion

Value of socioeconomic contributions

4 times Socioeconomic contributions of supply chain

Our supplier procurement drove the supply and demand of the industrial chain, creating over NT$120 billion economic benefits and NT$6 billion environmental external cost.

>90%

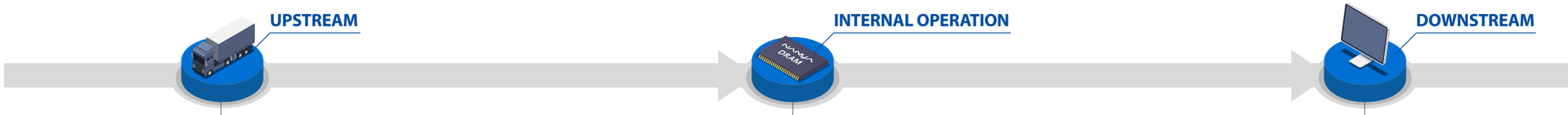
Environmental external cost comes from upstream and downstream in the value chain

↓27% Environmental external cost reduced compared with 2019

As our new generation DRAM products consume lower power, the social cost of carbon and impact on human health resulting from the electricity consumption of end products decrease, as well.

3.1 billion Social benefits of employee competency development

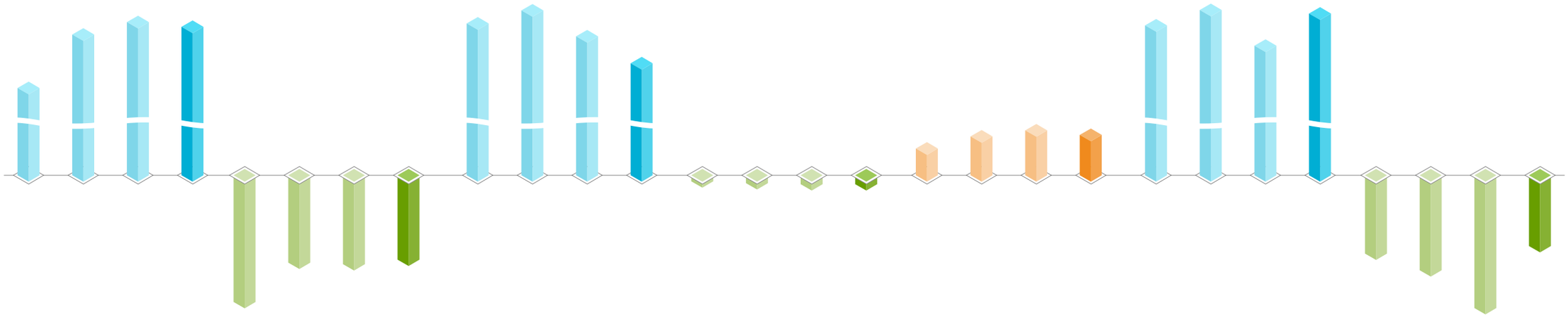
Social externalities mainly occurred in external benefits, such as increases in purchasing power and employment opportunities, created by employees when their salaries are raised because of competency enhancement.



UPSTREAM		INTERNAL OPERATION			DOWNSTREAM	
Economics: Value created with industrial chain procurement	**Environment:** Greenhouse gases, air pollution, waste water, and waste	**Economics:** Revenue, employee salaries, dividends, tax payment, depreciation, etc.	**Environment:** Water consumption, greenhouse gases, air pollution, waste water, and waste	**Society:** Occupational incidents, professional skill development, and health improvement	**Economics:** Economic value created by sales for the industrial chain	**Environment:** Environmental impact of end-product use and disposal

Unit: NT$100 million

	2017	2018	2019	2020
UPSTREAM	1,066	1,225	1,262	**1,248**
	-88	-62	-63	**-60**
INTERNAL OPERATION	619	712	527	**335**
	-6.7	-7.9	-8.6	**-8.6**
	22	30	34	**31**
DOWNSTREAM	722	853	549	**823**
	-56	-67	-92	**-51**



Note: Owing to adjustments of methodologies and updates on coefficients, historical evaluation results of upstream and downstream were adjusted correspondingly.

3 Integrity and Transparency

P31. Corporate Governance
P33. Risk Management
P42. Information Security
P46. Business Integrity

A Trustworthy Company

Nanya adheres to regulations and abides by moral standards. We continue to strengthen corporate governance and risk management mechanisms and use comprehensive education and training programs to improve the professional ethics of all employees and build common prosperity in the industry to become the most trustworthy company.

Constituent of FTSE4Good TIP Taiwan ESG Index

Continuous Inclusion as a Constituent of the FTSE4Good TIP Taiwan ESG Index and a Role Model for Corporate Sustainability in Taiwan

Top 5%

Top 5% in the 7th Corporate Governance Evaluation of TWSE Listed Companies

Risk Management Committee

Established a Functional Committee under the Board of Directors to Strengthen the Risk Management Mechanisms



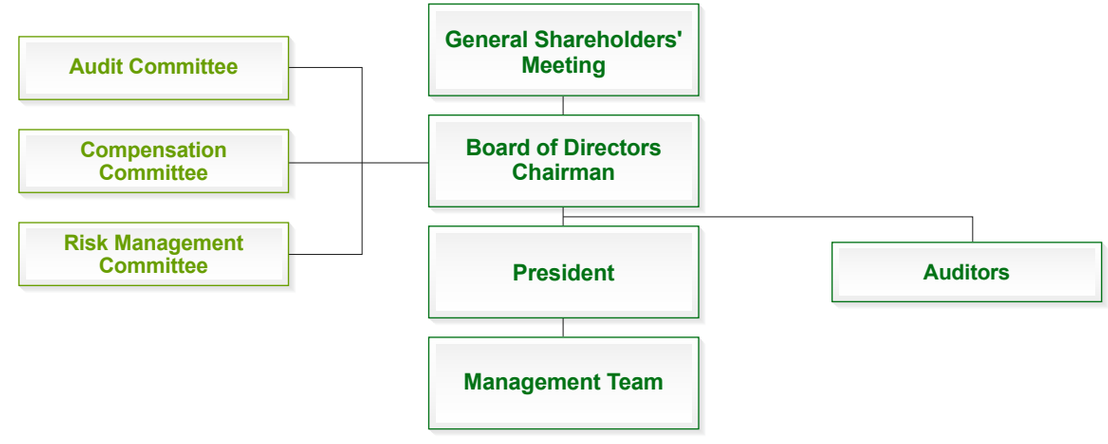
Strategies and Performance

2021 Goals	2020 Goals	2020 Performance
Risk Management	Risk management: Establish effective risk improvement mechanisms and procedures Loss management: Operating stress test and lowering operating costs. Effectiveness: Mobilize all employees for risk management training and regular drills for operating risks.	
Regular quarterly meetings and annual reports to the Board of Directors	4 times	4 times
Annual risk assessment items: 200 items	200 items	187 items
Stress Test: Implement 7 aspects each year	7 aspects	7 aspects
Education and training: 100% of all employees	100%	100%
Business Integrity	Focus on both internal and external operations: Implement regular internal education and training sessions and expand them to include external entities. Provide sufficient reporting channels and protection to cultivate professional ethics and legal compliance culture.	
Critical violations of regulations: 0 cases	0	0
Corruption cases: 0 cases	0	0
Employees' labor ethical training completion rate: 100%	100%	100%
Employees' antitrust training completion rate: 100%	100%	100%
Workplace violence: 0 cases	0	0
Violation of trade secrets 0 cases	New goal set for 2021	

Exceeded | Achieved | Partially achieved

CORPORATE GOVERNANCE

Nanya believes that through comprehensive and efficient corporate governance mechanisms, we are able to reinforce the Company's operations and protect the shareholders' interests. Nanya has been selected twice as a constituent of the Dow Jones Sustainability Indices (DJSI) Emerging Markets. Moreover, the Company was awarded a Bronze Class Medal in the S&P Global Sustainability Yearbook 2021. Currently, we are incorporated in the constituent stocks of the FTSE4Good TIP Taiwan ESG Index and the TWSE Corporate Governance 100 Index. We have also been ranked in the top 5% for the third time in the 7th Corporate Governance Evaluation of TWSE Listed Companies released in 2021. The aforementioned performance shows that our continuous efforts on corporate governance are recognized.



Operations of Board of Directors and Functional Committees

Nanya's Board of Directors complies with relevant laws and resolutions of the shareholders' meeting in its operations. The Directors possess professional knowledge, skills, and qualifications required for the performance of their duties, and they shall maximize the interest of the shareholders based on sustainable development of the Company. The main duties of the Board of Directors are to ensure information transparency and legal compliance, appoint senior managements, formulate earnings distribution proposals, and supervise and provide guidance for the Company's operations. Nanya has established the Codes of Ethics of Directors and Managers to require related personnel to uphold moral principles in the performance of their duties and prevent acts that damage the Company and its shareholders' interests. A total of 6 meetings of the Board of Directors were held in 2020, and the average attendance rate of the Directors was 100%, including attendance in person (94%) and attendance by proxy.

Diversity of Board Members

Nanya's Corporate Governance Principles stipulate that the composition of the Board of Directors shall be determined by taking diversity into consideration, including but not limited to gender, race and nationality. The Board of Directors consists of 12 members with different professional backgrounds and the members serve for a three-year term. Board members include 3 independent Directors, 2 female Directors (independent Directors and female Directors account for 25% and 17% of all members, respectively), and 8 Directors who do not serve as managerial officers of Nanya (they account for 67% of all members). The Chairman does also not serve concurrently as a senior executive officer of Nanya, which promotes the Company's sustainable governance by a clear division of duties. As of the end of 2020, 3 Directors were aged 50-59 and the others were over 60 years old. In addition, the average tenure of all Directors is 9 years.

Professional Courses for Directors

To strengthen the Directors' professional competencies, the Company arranges for all Directors to take training courses each year. In 2020, we arranged for the Directors to take courses in economics, corporate governance, risk management, and intellectual property management, etc. Each Director completed training courses for a minimum of 6 hours, and the total training hours for all Directors reached 94.5 hours with an average of 7.9 hours per Director. (Please refer to pages 51 to 52 in Nanya's 2020 Annual Report for the Directors' training situation)

In addition to different professional backgrounds, each Director has the experience as a senior manager, a government official, or a public representative, so Nanya's Directors possess diverse capabilities required to perform their duties. In 2021, the Company plans to arrange for the Directors to take training courses in sustainable development, corporate governance, or risk management in order to conform with the development trends in sustainability topics and corporate governance, and strengthen comprehensive competencies of the Directors.

In response to the Corporate Governance 3.0 - Sustainable Development Roadmap launched by the Financial Supervisory Commission, the Board of Directors established a risk management committee in November 2020 to reinforce and improve the duties and functions of the Board.

Functional Committees and Main Duties

Audit Committee

- The Committee consists of 3 independent Directors and Mr. Ching-Chyi Lai serves as the convener.
- 6 Audit Committee meetings were held in 2020 and the attendance rate of 3 Committee members was 100%.
- Authority and responsibility: The Committee supervises the Company's business execution and finances and reviews the financial books. It assists the Board of Directors in its supervisory duties and it is responsible for tasks specified in the Company Act, Securities and Exchange Act, and other relevant laws and regulations.

Compensation Committee

- The Committee consists of 3 independent Directors and Mr. Shu-Po Hsu serves as the convener.
- 2 Compensation Committee meetings were held in 2020 and the attendance rate of 3 Committee members was 100%.
- Authority and responsibility: The Committee formulates and periodically reviews the performance evaluation for the Director and managerial officers and the policies, systems, standards, and structures of their compensation.

Risk Management Committee

- The Committee consists of 5 Directors (including 3 independent Directors), and Mr. Ching-Chyi Lai serves as the convener.
- 1 Risk Management Committee meeting was held in 2020 and the attendance rate of 5 Committee members was 100%.
- Authority and responsibility: The Committee reviews the policies and frameworks of risk management, risk appetite and tolerance levels, oversees the operation of risk management mechanisms, reviews the management reports for material risk issues, and timely reports to the Board of Directors.

Performance Evaluation of Board of Directors and Functional Committees

To implement corporate governance and enhance the Board functions, Nanya's Board established the regulations of Performance Evaluation of the Board of Directors in August 2020. An internal Board performance evaluation shall be performed every year. In 2020, the performance evaluation was conducted on the Board as a whole, individual Directors, the Audit Committee, and the Compensation Committee. The evaluation result of the Audit Committee was "Excellent", and the others were "Good". Moreover, the performance evaluation results were reported to the Board of Directors in December 2020. Please refer to pages 27 to 28 in Nanya's 2020 Annual Report for the implementation situation of the performance evaluation.

Compensation of Senior Executives

The compensation of managerial officers of the Company includes monthly salaries and various bonus systems, pension systems, and evaluation systems approved by the Compensation Committee. They are reported to the Board of Directors for approval before implementation.The salary adjustment, bonuses, and other compensation of senior executives are determined in accordance with the Company's operations and personal performance and contributions. The Company included their economic, environmental, and social contributions and other corporate governance indicators for sustainable development. The Company also references salary standards in the industry and assigns the Human Resources Department to draft recommendations and report them to the Compensation Committee. The Committee Member shall review the recommendations and submit them to the Board of Directors for approval and execution.

Management Shareholding

March 29, 2021

Title	Name	Ownership(shares)
President	Pei-Ing Lee	884,098
Executive Vice President	Lin-Chin Su	145,601
Vice President	Joseph Wu	360,000
Vice President	Rex Chuang	2,000
Vice President	Yau-Ming Chen	0
Assistant Vice President	Wesley Chang	42
Assistant Vice President	Chi-Meng Su	0
Assistant Vice President	Mark Mao	0
Assistant Vice President	Jeff J.P. Lin	150,027
Assistant Vice President	Rex Chen	57,000
Assistant Vice President	Chuan-Jen Chang	53,048

RISK MANAGEMENT

To reinforce functions of the Board of Directors and risk management mechanisms, Nanya established the Risk Management Committee under the board in 2020. In accordance with the Risk Management Committee Charter, the number of committee members shall not be fewer than three members, and half of the members shall be independent directors. Currently, the Risk Management Committee consists of three independent Directors and two Directors.

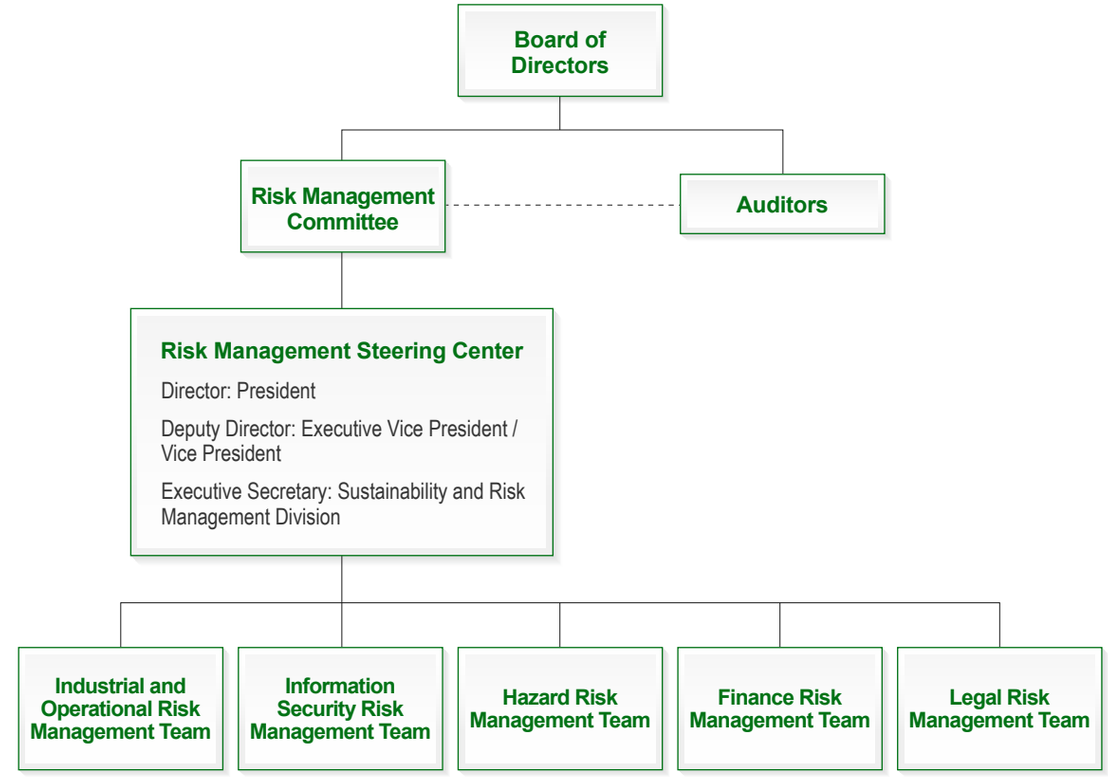
Nanya formulated the Risk Management Regulations, which was approved by the Board of Directors. In accordance with the Risk Management Regulations, the risk management policies are effective identification, analysis and assessment, control and action, ongoing supervision of various risks, and enhancement in risk awareness of the staff, with the aim of controlling risks within the tolerance level, and ensuring the integrity, effectiveness, and efficiency optimization of risk management.

Missions and Commitments

Risk Management Missions	Risk Management Commitments
▸ We will establish and maintain effective risk management systems and constantly improve them, lower operation cost to ensure corporate sustainable profits, and create a quality working environment to achieve the goals of corporate sustainable operation.	▸ All employees shall adhere to their commitments and managers in particular should lead by example and fulfill their supervisory responsibilities. • We shall ensure that employees of all levels receive adequate training and have the skills for performing various risk management tasks to ensure the normal operations of the Company. • The Company shall provide necessary resources to maintain the effective operations of risk management mechanisms and continue to implement improvements to reduce risks. • We shall strengthen communication with stakeholders, increase the risk management awareness of all employees, and fulfill our risk management policy.

Organization and Operations

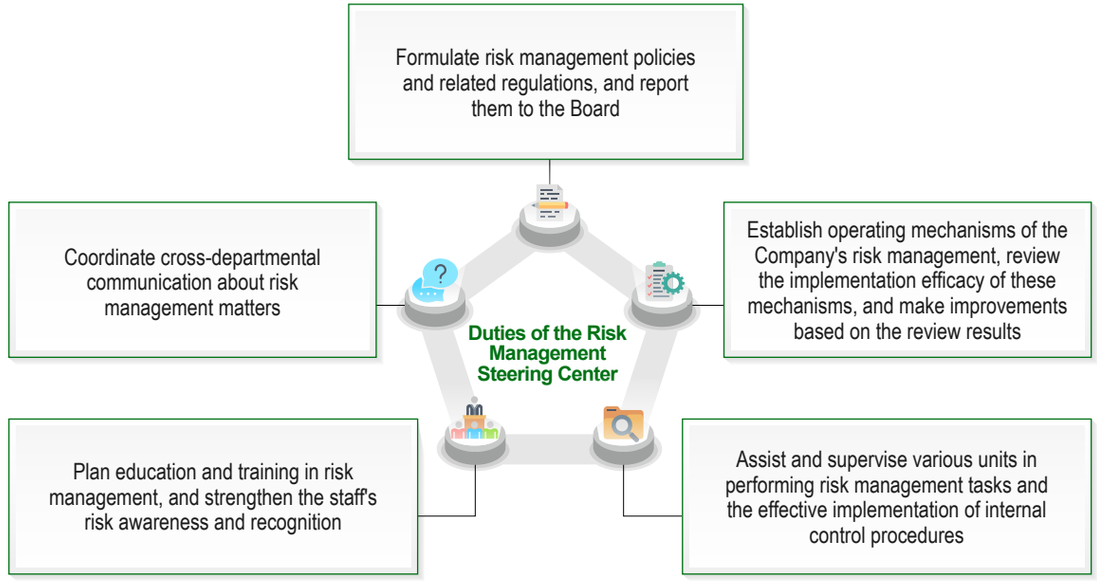
Our Board of Directors is the highest decision-making and supervision unit, responsible for approving risk management policies and related regulations. Moreover, the Risk Management Committee under the board assists in reviewing risk management policies and frameworks as well as risk appetite and tolerance, and supervises the implementation of various risk management systems along with the effective operation of the systems' mechanisms so as to reach the goals of risk management.



In accordance with the Risk Management Regulations, Nanya adjusted the organizational operation mode. The Risk Management Steering Committee in charge of the work was renamed as the Risk Management Steering Center. The President serves as the center's Director and members are assigned by each department head based on tasks. The Steering Center is responsible for promoting and supervising the work implementation of each risk management team as well as the entire risk control. Moreover, to conform with the Company's operational strategies, the Steering Center set up five functional teams, i.e., Industrial and operational, information security, hazard, finance, and legal, under its purview. Each risk management team not only shall gather risk information on internal and external environments to perform daily risk monitoring, but shall also constantly follow up and assess the risk level of risk factors, take improvement measures, and report implementation results of risk management to the Steering Center.

The Risk Management Steering Center shall meet quarterly to review the operational performance and business continuity plans of each risk management team to ensure the applicability, suitability, and effectiveness of the ongoing operations of these risk teams. The Risk Management Committee shall meet at least once a year and report the situation of risk management or major risk items to the Board of Directors in a timely manner.

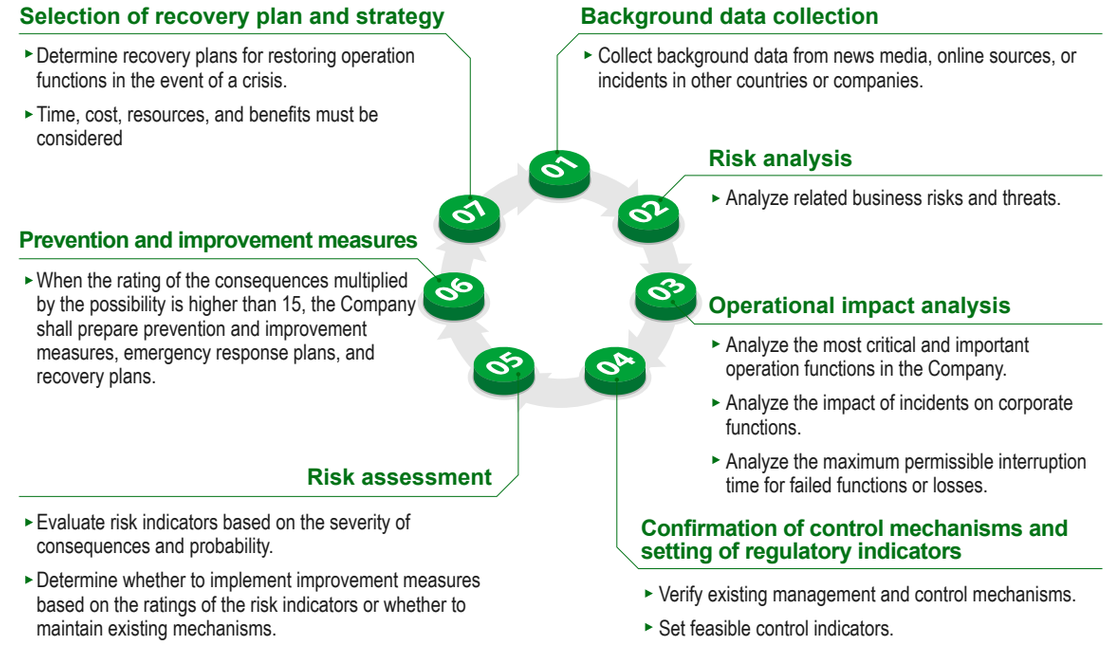
The Auditors shall annually check the implementation status of risk management policies and higher risk items at irregular intervals, provide suggestions for improvements in a timely manner, and follow up the improvement results.



Risk Management System

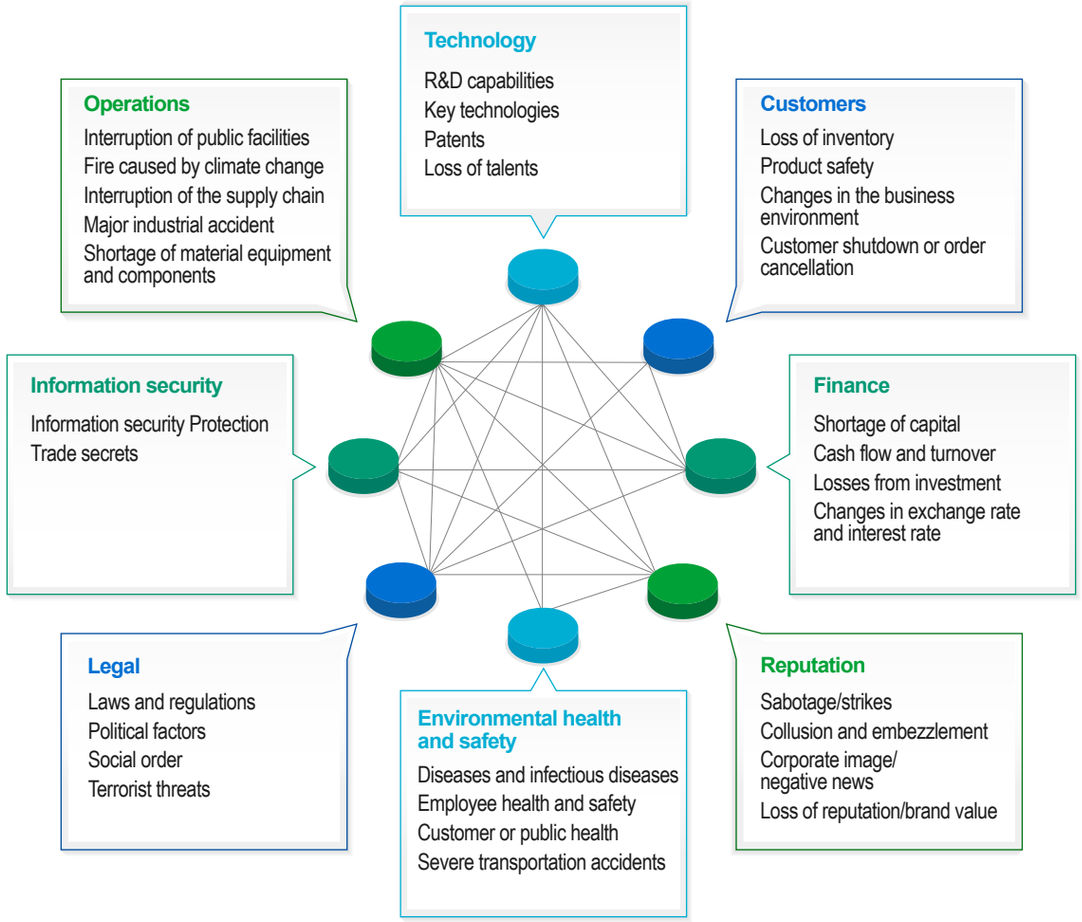
Nanya's risk management systems are used to identify and analyze risks currently faced by the Company, establish suitable risk limits and control procedures, and supervise compliance with various risks and risk limits. We adopt risk management systems and uncover the Company's potential risks and opportunities to effectively execute risk management and ensure normal operations of the Company. We create value for shareholders, employees, customers, and society to achieve sustainable development goals for the Company.

In accordance with the mechanisms and values of the ISO 31000 Enterprise Risk Management (ERM) Guidelines, Nanya formulated risk management policies and procedures in combination with our long-term goals of business strategy to serve as guiding principles. We shall annually review emerging risks in the near three to five years and follow them up. Through long-term planning and promotion, we aim to establish the staff's risk awareness and further internalize the awareness in daily management to ensure the normal operations of the Company.



Relevance of Risk Factors

In accordance with the Risk Management Systems, on the aspects of the Company's operations, technologies, clients, finance, reputation, environmental health and safety, legal, and information security, we confirmed the factors of potential risks, threats, and operational impacts in internal and external environments, and found the following highest relevance of risk factors after analysis: interruption of public facilities, natural disasters caused by climate change, interruption of the supply chain, major industrial accidents, and shortage of important equipment or components. These factors are shown to have the most extensive impacts on the Company's overall operations. We therefore use quarterly meetings to discuss related prevention and improvement measures on a regular basis to enhance our standard operating procedures. We also conduct regular drills for emergency response measures to effectively minimize risks.



Emergency Response Mechanisms and Measures

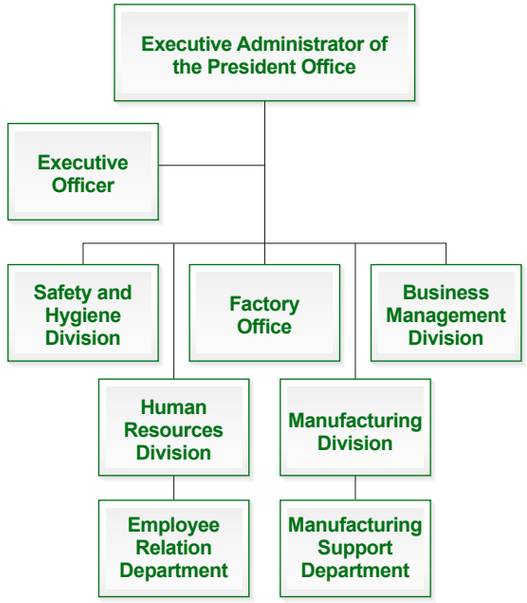
Nanya abides by the principles set forth in ISO 22301 for implementation in emergency response mechanism and measures in ISO 9001, ISO 14001, ISO 50001, ISO 27001, and ISO 45001, and obtained certificates. To reduce risks and damage of emergency incidents, Nanya has a complete set of operational norms and methods for handling emergency anomalies, covering manufacturing, supply chain and warehousing, information security, human resources and other aspects. We can immediately take response measures in the event of an emergency, mitigate the impact of the incident and quickly recover, and ensure normal operations to meet client needs. For example, raw material shortage, incidents that affect 10% of output (such as earthquakes, typhoons, toxic gases, fire alarms, labor shortages etc.), abnormal utilities systems, abnormal automation systems, abnormal outsourcing capacity, and large number of customer returns, all have specific treatment steps and improvement measures.

In addition, the emergency response to personnel safety, such as fire alarm, gas leakage, leakage, odor, earthquake and radiation leakage, emergency response measures, notification procedures and command systems are all in accordance with relevant environmental health and safety regulations. Nanya organizes at least one emergency evacuation drill and two fire safety drills each year to ensure the effectiveness of emergency response measures. We use quarterly meetings to discuss related prevention and improvement measures on a regular basis to enhance our standard operating procedures. We also conduct regular drills for emergency response measures to effectively minimize risks.

Response Measures for the COVID-19 Pandemic

As a multinational enterprise, after the unknown pneumonia cases occurred in Mainland China at the end of 2019, Nanya started to impose restrictions on business trips to Wuhan for related staff (including those of the Company's subsidiary in Shenzhen) on January 3rd, 2020. In response to the breakout of the COVID-19 pandemic, we swiftly established an Pandemic Response Task Force. The task force convened pandemic meetings every day to constantly monitor domestic and foreign pandemic situations, and promoted various pandemic prevention and response measures. Moreover, the task force controlled the physical conditions of staff and stakeholders at all times to avoid pandemic risk while tracking the situations of overseas subsidiaries, supply chains, and markets to ensure normal operations of the Company.

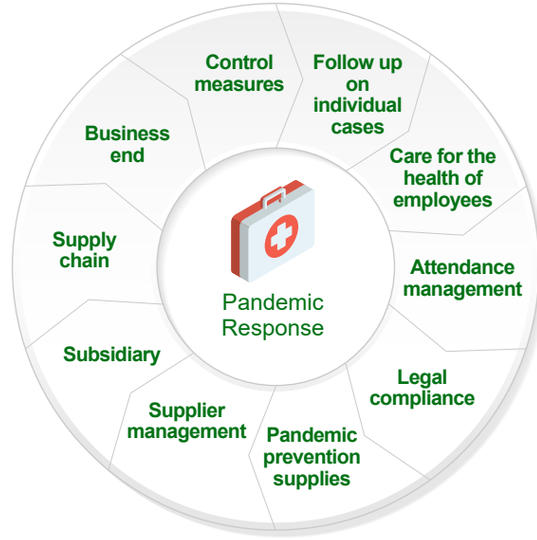
Framework of the COVID-19 Pandemic Response Task Force



Note:Established the Pandemic Response Task Force on January 30, 2020

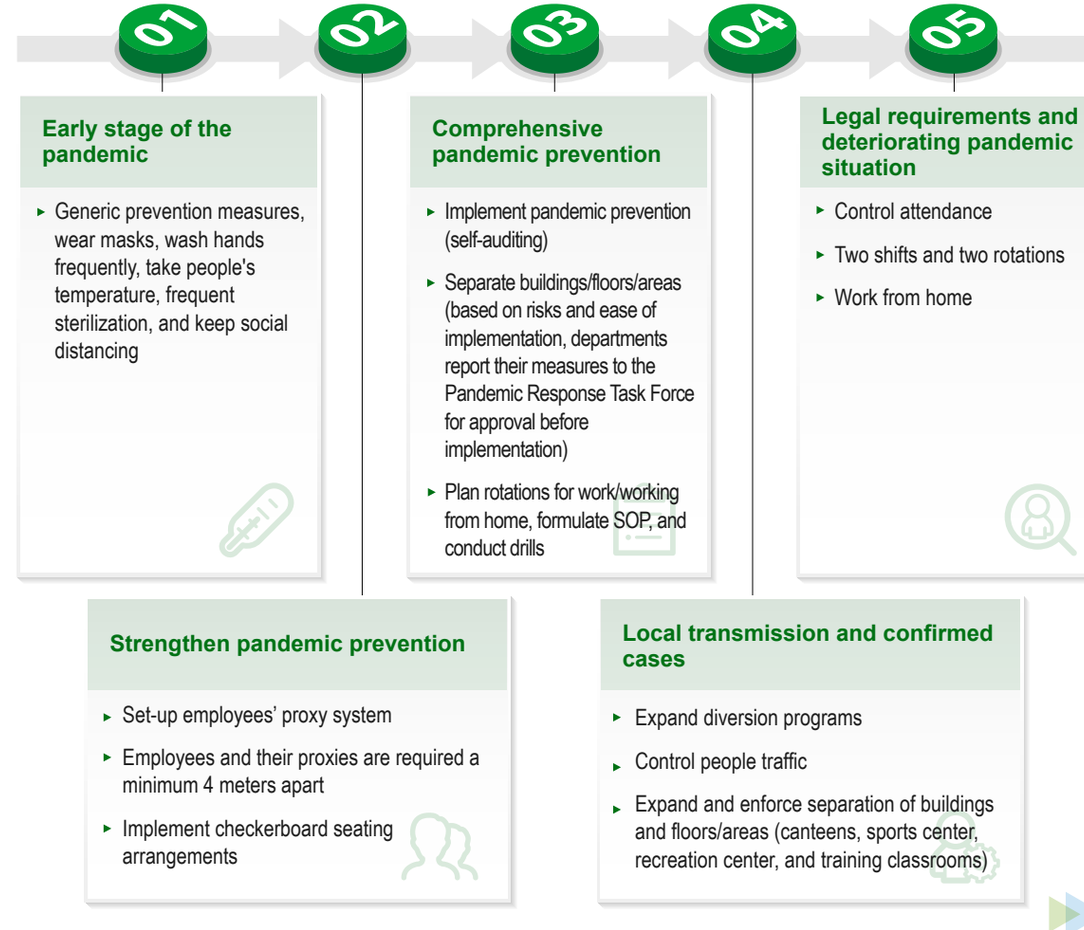
Nanya's pandemic prevention tasks include ten aspects, i.e., pandemic prevention control measures, tracking suspected cases of COVID-19, caring for the health of employees, attendance management, legal compliance, pandemic prevention supplies preparation, visitor and vendor personnel control, management of subsidiaries, supply chains, and the business end. With rigorous and prepared mentality, we hope that we can nip the occurrence of the pandemic within the Company in the bud with watertight preparedness.

Nanya pandemic prevention and response measures



With regard to staff and visitors, Nanya has actively responded to the pandemic situations of COVID-19 and implemented corresponding measures. To lower the risk of confirmed cases, all units and personnel have completed agent systems, and office area cubicles have been adjusted and enlarged. Moreover, departments can adopt flexible shifts and rotations for work based on the nature of business operations. Finally, the preparation schemes for off-site work, separate work groups, or working from home has been completed so they may be launched at any time depending on the development of pandemic situation and government regulations.

Nanya pandemic control steps



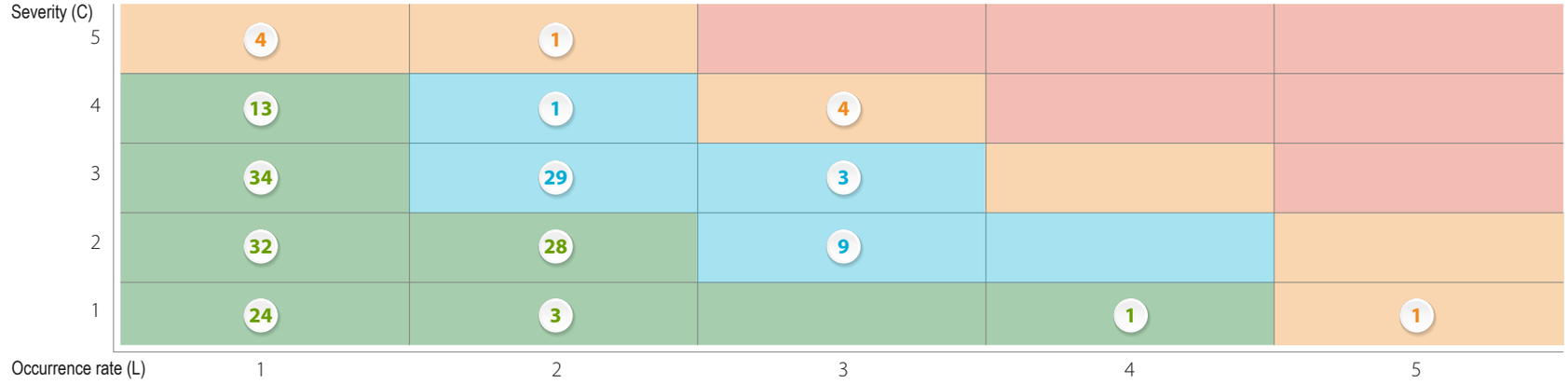
Risk Identification

Risk Identification Results

Nanya annually identifies risk items proposed by the Risk Management Steering Center. In 2020, we raised the risk identification standards and lowered risk appetite/tolerance. With stricter attitudes and practices, we took response measures against identified risk items based on risk levels. A total of 187 risk items were proposed, and the risk profile and the distribution of risk items and quantities were specified below after identification. Based on the statistics, zero item needed immediate improvement; 14 items required improvement plans (10 items if using original standards); 114 items should have indicators set up for monitoring (42 items if using original standards); and 59 items were kept under observation (135 items if using original standards).

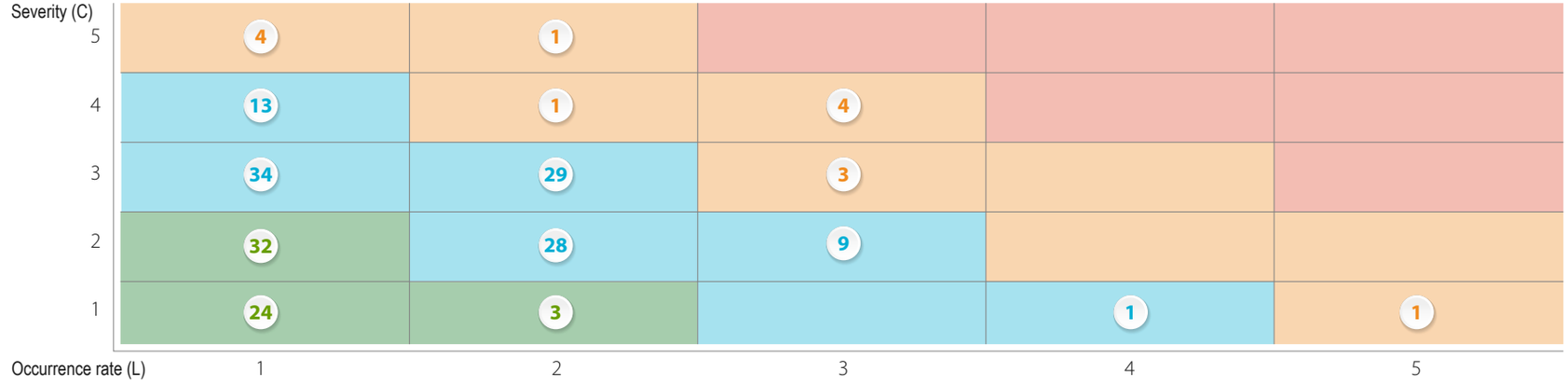
Statistics based on original evaluation standards

Distribution of risk items



Statistics based on new evaluation standards

Distribution of risk items



Evaluation criteria of severity: 1 = mild; 5 = severe
Evaluation criteria of occurrence rate: 1 = rare; 5 = always

Response measures:

- Kept under observation
- Set up indicators for monitoring
- Require improvement plans
- Immediate improvement

Response Measures to Risks

After the risk identification, items that required improvement plans were mainly on the aspects of operations, accounting for nine items, information security, accounting for three items, hazard, accounting for one item, and changes in exchange rate, accounting for one item. Each team had formulated response measures against these items, and the measures were implementing. Moreover, related handling mechanisms were established.

Legal Risk

- To conform with the Labor Incident Act, we had established an electronic attendance inspection system, which was launched in 2020, to implement related management systems.

Operational risk

- COVID-19: Established a pandemic management center; formulated pandemic prevention and management plans; set up reporting mechanisms and environmental disinfection operating procedures; and monitored real-time pandemic risks of each plant area through seat management, electronic supplier health declaration forms, pandemic prevention promotion, and regular audits We established an Pandemic Response Task Force, which convened meetings every day to monitor domestic and foreign pandemic situations, and promoted various pandemic prevention and response measures so as to ensure normal operations of the Company.
- Water resources: With self-owned seven backup wells that could provide 5,500 CMD, water tanks with capacity of 43,000 tons, and allocatable well water of 3,600 CMD from four wells of the Chang Gung Golf Club, Nanya could maintain 47 days of normal production at the plants under the situation that raw water supply was totally cut off.
- Manpower: Strengthened elite talent training, improved salaries and benefits, and maintained the employees' royalty to the Company Collaborated with high-quality universities and colleges on internships to prevent unstable manpower condition, and cooperated with manpower agencies for a long time to recruit short-term manpower immediately



Hazard Risk

- With the promotion of the ISO 14001 and ISO 45001 management systems, monthly Occupation Safety and Hygiene Committee meetings convened by management supervisors, and quarterly risk management meetings, we review potential environmental health and safety risks in operational activities and legal compliance. Meanwhile, with external verification institutions to periodically review our management, we continue the operations to mitigate related risks.
- In regard to low-risk hazards, we shall set up indicators for constant monitoring. For medium and high-risk hazards, improvement plans shall be proposed and implemented. Implementation situations of these plans have to be reported to management supervisors before plans are closed. In 2020, an environmental protection risk (medium-risk) occurred owing to abnormal process waste gas emissions. We found that possible causes were natural gas supply disruptions, so we decided to use liquefied petroleum gas tank trucks as backup for prevention after review.
- We have established a complete set of Business Continuity Planning (BCP) and Business Continuity Management (BCM) mechanisms. With sufficient planning, deductions, or drills, we hope that we can immediately take response countermeasures in the event of an emergency, mitigate the impact of the incident, and quickly recover to ensure the continuity of operations and meet client needs. In the future, we will continue to supervise each department's implementation of Enterprise Risk Management (ERM).

Information Security Risk

- In 2017, we established an Information Security Division, a dedicated department, to strengthen information security management.
- Established the Access Control List (ACL), network equipment, and implemented the Unified Threat Management (UTM), a information security protection and management system, to lower the risk caused by endpoint failures, the risk of cyber attacks or invasions by external hackers, and the risk of attacks on or destruction of the Operation Technology (OT) equipment
- Set up the APT protection system and the User Behavior Analytics (UBA) along with the Security Operations Center (SOC) for real-time monitoring in order to improve the security level of corporate networks and information systems, and the time spent on handling information security incidents while lowering information security risks

Finance Risk

The sales of DRAM products are mainly conducted in US dollars. Nanya established an offshore subsidiary at the end of 2018 to reduce the impact of exchange rates on the US dollar positions held by the parent company. In the future, we will continue to periodically review and manage the US dollar positions and implement the following practices:

- Convert the US dollar cash to the New Taiwan dollar and keep the lowest US dollar positions
- Evaluate the use of pre-selling Foreign Exchange Forward to lower the exchange rate risk of accounts receivable
- Evaluate the increase in debt denominated in US dollars to offset the exchange rate risk of accounts receivable for retention of reasonable US dollar net positions to reduce the impact of appreciation (depreciation) in New Taiwan dollars on profit and loss

Emerging Risks

Nanya pays close attention to changes in the economic environment. We identify long-term risks and opportunities and adapt our business strategies to ensure sustainability and long-term operating performance. Each risk management team gathers related domestic and international information to evaluate potential risks in the Company's long-term operations. They used questionnaires or evaluations in meetings of senior executives to identify three topics with the highest level of potential impact in the future and review mitigation and response strategies. The topics and strategies are reported to the Risk Management Steering Center for resolution and used as important references for formulating future business strategies.

Annual material emerging risk identification

- Gather related information on emerging risks from domestic and foreign sources
- Compile information on related risks and establish methods to identify emerging risks
- Conduct material emerging risk identification for senior executives

Material emerging risk assessment

- Locate potential issues related to material emerging risks
- Predetermine and analyze potential impact of various risk items
- Set material emerging risk management contact window

Manage material emerging risks

- Establish material emerging risk management strategies and plans
- Execute and monitor material emerging risks
- Performance follow-up and improvement conducted by each risk management team

Department heads gathered and compiled 15 emerging risks in 2020. They discussed and established five-point evaluation tables and questionnaires as investigation tools for senior executives (Assistant Vice President and above, including the President) to identify material emerging risks. As a result, three material emerging risks were identified, and Nanya had formulated response countermeasures while continuing to implement improvements with the aim of mitigating related impacts.

Emerging Risk 1

With stricter environmental protection regulations, uncertainty over obtaining a construction license increases, which may affect the timeline of plant construction.

- Considering resource integration, cluster effect, and production efficiency, land used for our current and future plant expansion will all be located in the industrial parks of New Taipei City. Unlike other semiconductor rivals who prioritize locations within science industrial parks where the environmental impact assessment has been accomplished for their new plant construction programs, our plant expansion programs shall be reviewed and supervised based on the environmental impact assessment required by environmental protection regulations.
- During our manufacturing process, Nanya has to consume a large amount of energy and resources (including water, electricity, and chemicals), emitting process waste (including waste gas and wastewater). Therefore, when receiving the environmental impact assessment for our expansion of production capacity or construction of new plants, we may not control the timeline owing to stricter standards of environmental impact assessment caused by the rise in environmental protection awareness. As a result, related business development may be affected.
- DRAM is a key component in all smart electronic products, so the growth of demand is stable. To satisfy market requirements and Nanya's long-term development, we have announced that we will construct new plants to continue implementing advanced processes and products as well as expanding production capacity. However, the construction of new plants will be checked based on the environmental impact assessment regulated by the government, and regulatory requirements, discussions on standards of the environmental impact assessment, and the time for standards achievement will affect the timeline of completing the construction.

Impact

- With ever stricter statutory criteria, additional costs may be required to install environmental protection equipment.
- Since administrative procedures become even more complicated, we may not know and master the application procedures. Therefore, the administrative procedures may be prolonged and the operations of existing plants or the planning of future plant (production capacity) expansion may be affected.

Mitigation actions

- Regularly review the content of environment impact assessment regulations to immediately grasp statutory requirements and future trends.
- Carefully choose consultancy companies that possess abundant experiences or keep good relationships with competent authorities to assist in program application procedures.
- Explain to the Environmental Protection Administration before submitting programs for the environmental impact assessment to reduce the number of reviews.
- Keep close contact with the Environmental Protection Administration after submitting programs; ask the EPA to give related instructions; and hold meeting to pre-review and review programs once necessary so as to shorten the time for response.
- Space shall be reserved in the planning of new plant design to conform with possible changes in regulations in the future.



Emerging Risk 2
Increasing costs of renewable energy procurement

- Some of Nanya's clients are corporate members of RE100, a global initiative. These clients have required in written form that products sold to them shall be green products. Therefore, we have to use renewable energy for production and manufacturing. As we expected that more clients would propose the same requirement in the future, we planned to prepare in advance and acquire more supplies of renewable energy power to enhance product competitiveness.
- On January 1st, 2021, the Executive Yuan promulgated the Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users Above a Certain Contract Capacity, which went into effect on the same date. Nanya has to complete the establishment of renewable energy power generation equipment for a contract capacity of 10% by 2025 or purchase renewable energy power and certificates to fulfill obligations.
- In the coming five years, if the installation volume of domestic renewable energy falls short of expectation, leading to a market where demand exceeds supply, Nanya's costs of power procurement may increase, or we have to build renewable energy power generation equipment, which may increase operating costs.

Impact

- Important clients may require Nanya to participate in their clean energy plans and provide green products, which may affect the Company's orders and revenue.
- To conform with regulations, we have to invest in the establishment of renewable energy power generation equipment or purchase renewable energy, which may lead to increase in operating costs.
- Development of green energy falls short of domestic corporate demands, which may affect product competitiveness.

Mitigation actions

- In accordance with the timeline set by the regulations, we planned as early as possible to purchase renewable energy from green energy suppliers or evaluate the feasibility of investing in the establishment of solar photovoltaic power generation equipment.
- Planned to achieve the establishment of renewable energy power generation equipment for a contract capacity of 8% by 2023 or purchase renewable energy power and certificates (the Early Bird Plan provided by the regulations).



Emerging Risk 3
Risk of talent retention and recruitment

- Owing to the COVID-19 pandemic and the China-US trade situation, Taiwanese enterprises have increased investments in Taiwan since 2020, leading to an increase demand for manpower.
- The semiconductor industry and the electronics industry have been flourishing, and foreign enterprises have also increased investments in Taiwan. Therefore, demand for talent has risen sharply.
- The Taiwan Semiconductor Manufacturing Company Limited raised fixed monthly salaries at the end of 2020. Other semiconductor companies and large enterprises of related industries have followed suit. Therefore, competition for talent has intensified.
- As the low birth rate in Taiwan is deteriorating on a year-by-year basis, the supply of qualified workforce is insufficient. (The population projections made public by the National Development Council showed that with the birth rate dropping and the population aging, Taiwan's working-age population, aged 15-64, peaked in 2015 and began to fall year by year.) After the expansion of our new plant completes, the demand for operating manpower will rise drastically. Therefore, Nanya will be faced with the risk of having difficulty in recruiting and retaining talent.

Impact

- Short-term: Because the number of job openings in the industry exceeds the number of job seekers, and our salary competitiveness is weaker than that of leading companies, the risk of turnover increases. The turnover rate has risen since last February.
- Medium- and long-term:
  - Fierce competition for talent capable of semiconductor design and technology increases the difficulty of recruitment.
  - After the expansion of new plants completes, we will need a large amount of manpower for production lines. Therefore, we may not hire enough workers in the short term, which leads to manpower shortage.

Mitigation actions

- Adjust salary structure to improve salary competitiveness.
- Strengthen staff retention measures, including talent development, employee benefits, and incentive rewards.
- Collaborate with universities and colleges, especially those located in northern Taiwan (geographical factors), to control human resources in advance.
- Based on the timeline of plant expansion, hire additional manpower and arrange training in advance.

Risk Culture Construction

To establish comprehensive risk management culture, Nanya established the Risk Management Committee under the Board of Directors to supervise the Company's implementation of various risk management systems along with the effective operation of the systems' mechanisms so as to reach the goals of risk management. In accordance with the defined scopes, organizations, duties, and risk management procedures stipulated in the Risk Management Regulations, the committee has fully implemented risk management tasks and planned to hold meetings twice in 2021 to review the implementation and operation of risk management.

The Risk Management Steering Center consists of three directors and managers (the President, the Executive Vice President, and Vice President Wu), who serve as the center's Director and Deputy Director to instill risk awareness in the management and enhance risk management. Moreover, the center annually reviews the performance of risk management implementation and emerging risks facing in the future. Nanya shall also include the results of risk management into annual performance evaluation items for the management (President and supervisors ranked Assistant Vice President and above). They shall execute operations based on the approval of the Board of Directors and use target management for supervisors to expand risk management measures and fully enhance the Company's risk awareness.

Nanya has formulated a variety of incentives provided to encourage employee proposals and innovation to uncover and improve potential risks. We conduct reviews and provide cash incentives based on the expected benefits, creativity, application scope, integrity, and quality contributions. We have established employee instant feedback mechanisms, including a 24-hour instant case report line, an information security line, a reporting hotline, and a reporting email. We have also used TV walls, posters, and computer wallpapers to instill the risk management culture and allow the risk management culture to take root in all employees. Our performance evaluation regulations have incorporated the risk management awareness and implementation status of employees into evaluation items of quarterly performance evaluation and year-end performance evaluation to serve as the basis for performance rating, promotion, bonuses, issuance of stock option while having risk management measures been implemented.

Number of improvement proposals put forward by employees and benefits

	2017	2018	2019	2020
Number of proposals (case)	47	51	225	**207**
proposal (case-closing) bonus (NT$ thousand)	62	128	583	**414**
Proposal benefits (NT$ thousand)	28,792	28,996	191,567	**69,652**

Number of proposals in each category

Process and equipment risks	28	19	105	**67**
Productivity and quality risks	12	23	91	**114**
Environmental safety and hygiene risks	6	4	13	**9**
Other risks	1	5	16	**17**
Total	47	51	225	**207**

Risk Management Education and Training

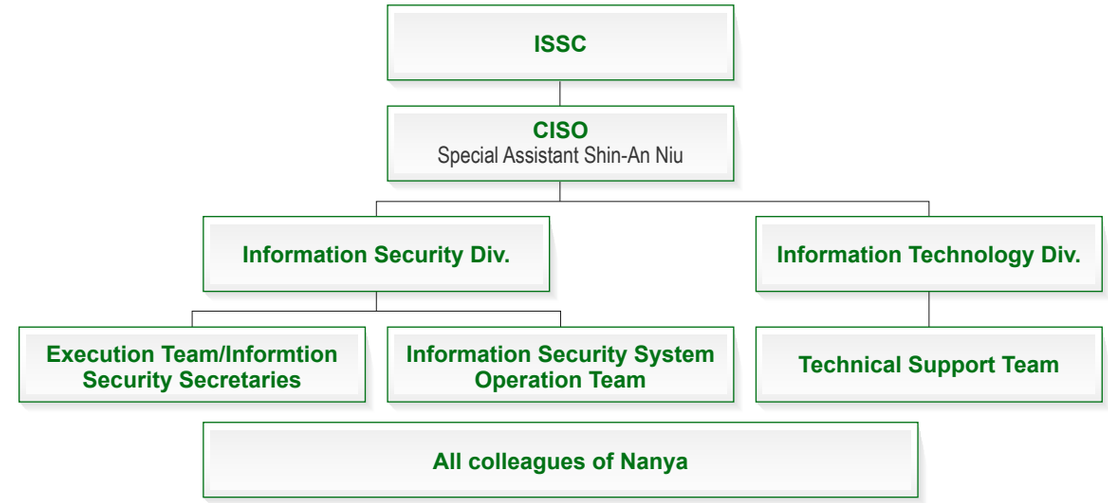
Nanya annually arranges for the directors in the management to attend corporate governance and risk management courses held by institutions approved by the government. Moreover, Nanya also planned to arrange for the Risk Management Committee members to attend risk management courses on the aspect of business strategies in 2021 so as to assist and strengthen the Company's risk management operations. In addition, we also compiles risk management education materials and requires employees to read on the computer system in order to improve risk awareness of all employees. The completion of employee risk management education and training achieve the goal of 100% coverage rate in 2020, with a total of 1,712 training hours. We hope that through the education and training, the staff could fully understand the Company's risk management operation status and implement the risk management awareness in daily management.

INFORMATION SECURITY

Nanya has actively promoted information security systems to ensure the security of the information of the Company and customers. In 2019, we obtained the ISO 27001:2013 Information Security Management System certification. The initial verification scope included the provision of information security management systems for the transferred DRAM manufacture technology information and the self-developed DRAM manufacture process technology information, as well as the related information flow include related server room maintenance, network service, and the development, operation and maintenance of information systems. This is in accordance with the Statement of Application version 1.1. The verification scope covered around 67% of the information systems at all plants (the IT's OA and network systems as well as the design and Mask Tape out systems of the R&D department were implemented; the public utilities systems and the CIM automation systems were incomplete) and all the staff so that information security control measures could be strengthened to ensure the smooth operations of the Company and we could earn trust from suppliers and customers.

We established an inter-departmental Information Security Steering Committee (ISSC) to advance information security management. The President serves as the convener and five level 1 supervisors were appointed as Committee Members. They include the Chief Information Security Officer (CISO) (Special Assistant Shin-An Niu) and heads of the Quality Reliability Assurance Division, Legal & IP Division, Human Resources Division, and Information Technology Division. Meetings of the Information Security Steering Committee (ISSC) are convened every week. The committee is mainly responsible for the planning, formulation, approval, and supervision of the Information Security policies, goals, and related regulations. In addition, the committee quarterly reports the results of the operations of the Information Security Management System to the Risk Management Steering Center. In addition, our four executive directors (President Pei-Ing Lee, Executive Vice President Lin-Chin Su, Vice President Joseph Wu, and Vice President Rex Chuang) also actively participate in the Company's quarterly information security meetings and annual information security management review meetings to ensure the effectiveness and benefits of the management.





Nanya's improvement timeline for information security management

01 The Company has obtained ISO 27001 information security certification that can satisfy customer demands and attain international information security management standards.

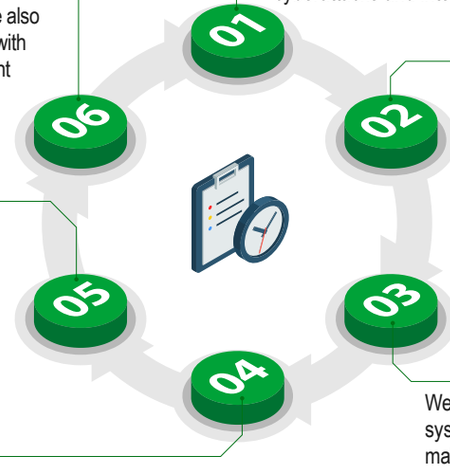
02 The Company has established the employee service guidelines and confidentiality requirements in the "Employee Handbook" to provide employees with guidance for their conduct.

03 Where the Company discovers a violation of laws by current or resigned employees, such violation shall be prosecuted to the fullest extent of the law. Since the Company's establishment of the Information Security Division in July 2017, there has been no violations of laws by resigned employees.

04 The employment statement signed by the Company's employees upon hiring include the confidentiality obligations for during and after employment.

05 In response to risks of poaching by competitors which may cause risks of inappropriate acquisition of the Company's confidential and sensitive business information, the Company has established the Information Security Division to take charge of planning, executing, auditing, and improving information security management.

Nanya's main measures for information security management



We adopted the defense-in-depth architecture with sensitive data encryption, endpoint protection, and network gateway protection, which are supported by network access control, document output management, and e-mail protection mechanisms. We also installed metal detectors for controlled information security products, so as to prevent external cyberattacks and internal leaks.

In addition to the Company, we have expanded our information security to the entire supply chain. Equipment must pass a security inspection when entering our factories before they may be used. We also signed an information security clause with vendors and their employees to prevent attacks through our supply chain.

Access control, system login identity authentication, password control, access right control, and periodic vulnerability scanning. We also installed anti-virus software, updated security patches, controlled USB access, and established a backup mechanism to strengthen endpoint protection.

Each year, we examine our information security measures and regulations, follow information security issues, and formulate response plans to ensure their appropriateness and effectiveness.

We installed an information security system to prevent computer viruses or malware from affecting information system services or accessing confidential data, and also prevent the theft of confidential data through social engineering.

We provide employees with annual information security education, training, and testing to raise their awareness of information security risks.

Information Security Risk Assessment and Drills

As different departments have different information system structures, we have performed risk evaluation and identification on these systems based on the severity of the impact of each system on key operation procedures so as to define the degree of severity of each system. The severity degrees are to serve as the basis for determining the frequency of post-disaster recovery exercises. The severity is classified into three degrees from important to minor (Degree 1 to 3). Description of each degree is explained below:

Degree 1	Degree 2	Degree 3
The suspension of operations of the system will suspend services provided with the primary functions.	The suspension of operations of the system will suspend services provided with the secondary functions.	The suspension of operations of the system will not affect the services provided or the system can continue operations with other remedial measures to provide services.
Recovery drill cycle **One year**	Recovery drill cycle **Two years**	Recovery drill cycle **No drills required**

The recovery drill cycle is also divided based on the severity degrees (annual, every two years, no drills required). Each department shall register the rating of the systems they are responsible for operations and maintenance in the list in the "information system severity degree classification" document. All Degree 1 systems are provided with multiple backup mechanisms placed in different server rooms in different buildings. All production information is provided with remote backup through encryption and the Company conducts recovery exercises each year to ensure the regular operations of the system. The Company has a total of 17 systems that required drills in 2020. We completed drills for 17 systems and the completion rate was 100%. Each information system management unit notifies the response units in the execution of response measures in accordance with the response procedures in the "Information System Response Plan" in the event of major anomalies.

Information Security Education and Objectives

Nanya has invested various resources in information security training to raise awareness in information security protection. Each year the company organized an Information Security Month event to consolidate consensus of all employees' information security protection, also each quarter we held social engineering practices. The company organizes training sessions for information security secretaries in information security monthly meetings and reports performance results in quarterly meetings. All employees in headquarters are entitled to complete the Confidential Information Management Procedure training to develop an information security culture, the training completion rate in 2020 was 100%.

2020 Information Security Training

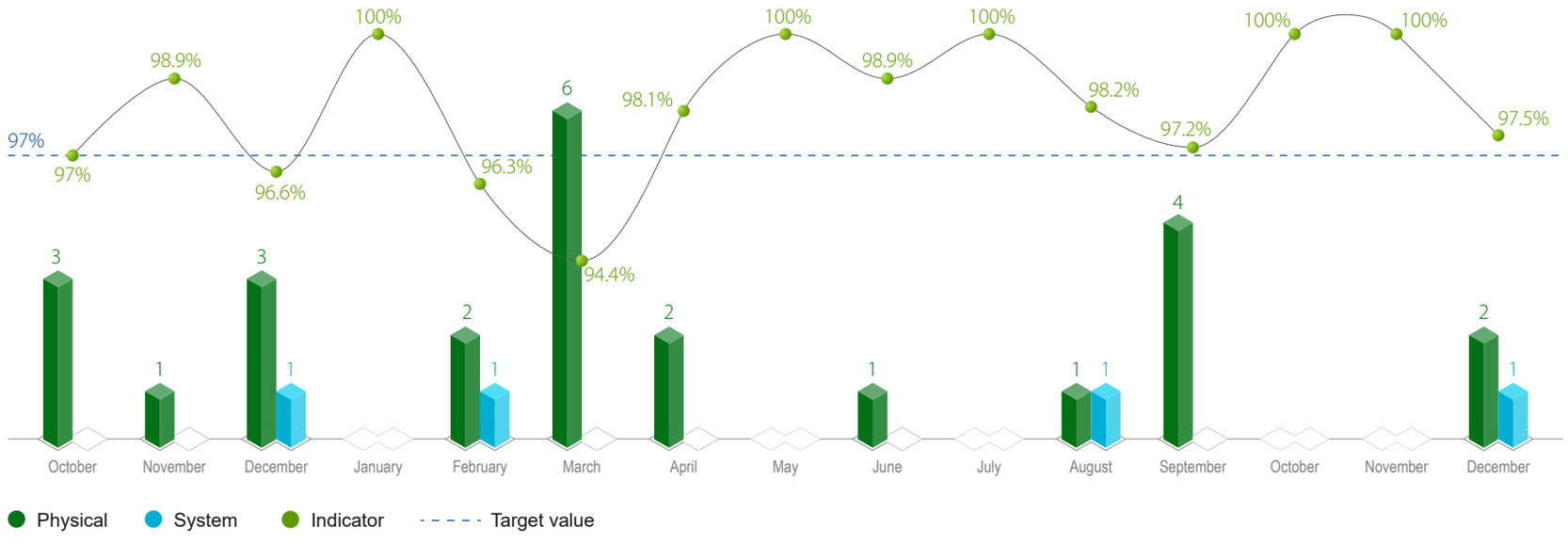
	Audience (department and title)	Head Count	Hours	Coverage Rate
Social engineering practices	All employees (excluding TA)	24,665	**2,055**	100%
Social engineering training	Employees who clicked on the link	26	**13**	100%
Information Security Month event-online questionnaire	All employees	3,222	**1,611**	94%
Education and training in Red Hat Linux (advanced management)	System administrator	58	**203**	100%
Information security seminars Talking about BEC phishing emails and the development of advanced threats and attacks	Mandatory for Information Security Secretaries	54	**81**	100%
Information security seminars Talk on trade secrets and information security protection	Information Security Secretaries, Information Security Division	42	**84**	100%
Information security seminars CyberSecurity - anti-hacking technology and practice	Information Security Division, Information Technology Division	46	**138**	100%
Manage a Windows host computer Foundation course	System administrator	34	**34**	100%
Total			**4,219**	-

Information Security Goals

To implement information security management and strictly review the implementation status, we set quantitative management goals for information security. In 2020, a total of nine information security goals were set on the aspects of confidentiality, integrity, and availability, and all the goals were achieved.

	Item		2020 Goals	2020 Achievements
Confidentiality	Information security indicators		≧ 97%	**98.4%**
	Number of unauthorized access or use of technology transfer documents		0 times each year	**0**
	(New) number of times AIP encrypted files being opened successfully without authorization outside of the plants		0 times each year	**0**
Integrity	Click rate and attachment opening rate in social engineering practices (%)		< 0.5%	**0.2%**
	Deployment completion rate of OA Client Hot-Fix (%)		≧ 99%	**99.3%**
	(New) implementation completion rate of OA active anti-virus protection operations (%)		100%	**100%**
Availability	OA System Down Time (Year)		< 1 min	**0/0**
	R&D database Down Time (Year)	Design	≤ 1 time, < 24 hours	**0/0**
		Technology Development	≤ 1 time, < 24 hours	**0/0**

Information security indicator[note1]



The information security indicator is the monthly statistical indicator for information security violations. It is calculated based on the weight of the risks and threats of violations. A higher value indicates a lower number of information security violations or a lower level of information security threats.

Information Security Risk Protection

We understand that information security is at risk at all times. The company's computers are fully deployed with a SEP (Symantec Endpoint Protection) anti-virus system, which is matched with the MAC address (Media Access Control Address) access control of the cleanroom production machines to prevent computer virus attacks. We also use Tenable's Nessus vulnerability scanning tool to find possible major vulnerabilities and risks in online systems, applications, and computers, to provide system administrators with scan results and virus prevention reports, as a reference for necessary system updates and upgrades, and real-time update of system vulnerabilities rated as high-risk and above to increase system security and stability.

Results of information security management

	2017	2018	2019	2020
Number of violations of information security regulations	0	0	0	0
Number of violations of the information security of customers' personal data	0	0	0	0
Total number of customers affected by information leaks	0	0	0	0
Fine	0	0	0	0

BUSINESS INTEGRITY

Nanya upholds the corporate culture and spirit for "diligence". We use ethical, honest, fair, transparent, and responsible business philosophies to strengthen legal compliance. We established the "The Code of Ethics of Directors and Managers" for senior executives and the "Ethical Corporate Management Principles" and "Antitrust and Competition Legal Compliance Principles " for employees. We established the digital transaction platform for suppliers and a comprehensive auditing system to implement ethical governance and prevent violations of laws. Nanya maintains neutrality in politics and encourages employees to perform their civic duties.

Antitrust

To ensure employees understand and abide by the Antitrust Law and reduce the risks of violations, Nanya established the "Antitrust Policy", "Antitrust and Competition Legal Compliance Principles" and the "Antitrust and Competition Legal Compliance Operating Procedures" to strictly require employees and managers to abide by laws and regulations and report the compliance status to the Board of Directors. We also organize regular training courses for related employees and require them to sign the compliance handbook. As of the end of 2020, the Company had one antitrust litigation in process. Please refer to page 154 in the 2020 Nanya Annual Report.

Anti-Corruption

All employees must abide by Nanya's "Human Resources Management Regulations". Any abuse of powers, embezzlement, bribery, acceptance of commissions, once verified, shall result in termination of employment without exception. The direct supervisors shall also be punished accordingly based on the circumstances. To prevent violations, employees in operations, procurement, finished product warehouses, construction supervision, and budgeting roles shall be rotated periodically and they shall abide by principles for preventing conflicts of interests. We shall also formulate anti-corruption education materials to educate all employees in hopes that all employees can abide by ethical principles in both work and life and fulfill the corporate culture of "diligence". No cases of material corruption had occurred from 2017 to 2020.

Ethical Code of Conduct

Nanya referenced the Code of Conduct of the Responsible Business Alliance and established the Labor Ethical Management Policy and Business and Ethical Code of Conduct as the basis for compliance by all employees (including managerial officers), employees of subsidiaries, customers, and suppliers in the business operations. The "Labor Ethical Management Policy" and "Business and Ethical Code of Conduct" have been published on the internal and external websites and made available to all employees and external personnel at all times. To strengthen employees' integrity and ethical awareness, we required all the staff and the staff of subsidiaries to sign the code of conduct. The signing coverage rate was 100%. The Company continued to organize the "RBA Labor and Ethical Code of Conduct Course" and "Business and Ethical Code of Conduct Course" for all employees (including the staff of subsidiaries) in 2020. The training coverage rate was 100%. The "RBA Labor and Ethical Code of Conduct Course" is an online course for all employees and the completion rate was 100%. The Company provides the virtual "RBA Labor and Ethical Code of Conduct Course" for all new recruits.

Employees may not provide (or accept) bribes or participate in insider trading or other actions that violate moral standards and damage the Company's reputation. In the event of a material or corruption violation (e.g., employees abuse their powers and accept bribery), they shall be immediately terminated once such violations are verified. Where such violations damage the interest of the Company or lead to severe violations, the Company shall pursue their legal liabilities.



To continue to optimize the workplace environment, Nanya implements related training by setting labor moral goals each year. We organized five courses including "Labor and Ethical Code of Conduct Course", "Anti-corruption Course", "Business and Ethical Code of Conduct Course", "Senior Executive Ethical Corporate Management Course", and "Occupational Hazards and Preventive Training" based on the management objectives of "zero corruption", "zero sexual harassment", and "zero illegal infringement in the workplace". The training completion rate was 100% for all courses.

Ethical corporate management and labor ethical education results

	2018	2019	2020	2021 Goals
"RBA Labor and Ethical Code of Conduct Course" completion rate	100%	100%	100%	**100%**
"Business and Ethical Code of Conduct Course" completion rate	100%	100%	100%	**100%**
"Anti-corruption Course" completion rate	100%	100%	100%	**100%**
"Senior Executive Ethical Corporate Management Course" completion rate	-	100%	100%	**100%**
"Occupational Hazards and Preventive Training" completion rate	-	100%	100%	**100%**

Note1:A total of 3,439 individuals completed the "RBA Labor and Ethical Code of Conduct Course" in 2020. (organized in October 2020).

Note2:A total of 3,428 individuals (excluding senior executives) completed the "Business and Ethical Code of Conduct Course" in 2020. (organized in October 2020)

Note3:A total of 3,371 individuals completed the "Anti-corruption Course" in 2020. (organized in July 2020)

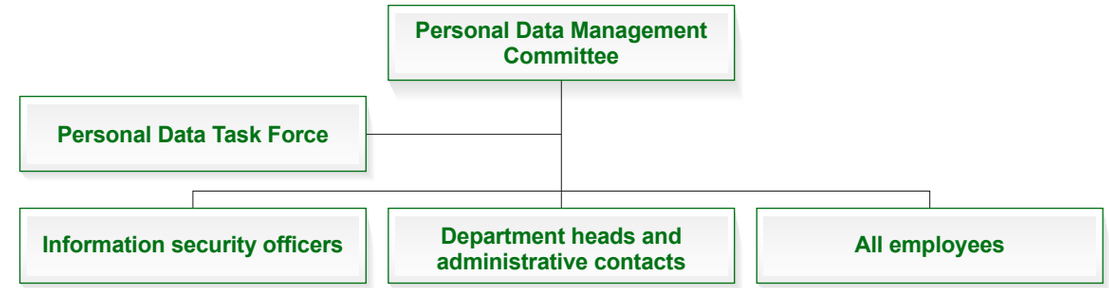
Note4:The "Senior Executive Ethical Corporate Management Course" was incorporated into the "Business and Ethical Code of Conduct Course" and a total of 11 individuals completed the training in 2020.

Note5:The "Occupational Hazards and Preventive Training" course includes both physical and digital courses. In 2020, a total of five physical courses were held, and the attendees consisted of department heads and project supervisors (227 individuals received training) and the digital courses were provided to all employees (3,440 individuals received training).

Personal Data Protection Act

The Company has established the Personal Data Management Procedures to ensure that our employees, suppliers, clients or outsiders may abide by the personal information protection regulation. The procedures specify the organization and duties for personal data protection, and provide regulations on the collection/processing/use of personal data as well as information on how data subjects shall exercise their rights and how their data is processed. To implement personal data processing risk management, the Company annually conducts personal data inventory and assessment, and we perform improvement measures based on risk levels. We set controlled access for personal information of employees or customers and apply strict restrictions on the use of such information. No high-risk items were found in 2020.

Structure of the Personal Data Management Committee



Duties of the Personal Data Management Committee



The European Union's General Data Protection Regulation (GDPR) entered into force in May 2018. As the Company has established a subsidiary company in the European Union, the legislation provides a certain level of regulations on measures for managing the personal information of European customers, clients, and suppliers.Nanya has adopted response measures based on the requirements in the GDPR and implemented related systems in subsidiaries to increase employees' awareness for personal information protection and reduce the risks of violations.

We organized personal data protection courses for personal data officers and personal data custodians in departments in 2020. A total of 31 individuals completed the training, and the training result was positive. The Company annually conducts internal audits of personal data to ensure the implementation degree of personal data management. Nanya announced its Privacy and Cookies Policy on the official website. Within the authorized scope of certain purposes, we use safe and reasonable methods to collect, process, or utilize personal data, We will not utilize this data for secondary purposes other than our collection purposes. Moreover, we ensure that clients may exercise their rights stipulated in the Personal Data Protection Act. As the Company's personal information protection has been rigorously and effectively executed, there were no violations in 2020.

Number of violations of personal data regulations and fines

	2018	2019	2020
Number of complaints about personal data	0	0	0
Number of violations of personal data regulations	0	0	0
Fine	0	0	0

Internal Control

Internal Control System

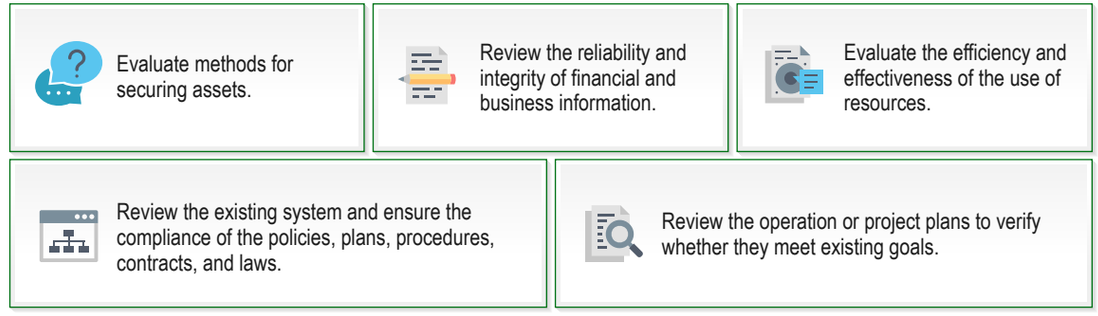
Nanya established an effective internal control system based on the Company and its subsidiaries' overall operation activities and its industry in accordance with the "Regulations Governing Establishment of Internal Control Systems by Public Companies". The Company conducts reviews at any time to respond to changes in the Company's internal and external environment as well as to ensure that the system design and implementation remain effective.

The implementation of the internal control system is a continuous operation. We continue to inspect various business and management operations and detect deviations from company policies, operating procedures, existing goals, or standards. We use a feedback system to respond to the appropriate management level and take necessary corrective actions for the issues to ensure the Company's operations are implemented in accordance with the original plans. We use the internal control system to complete audits and prevent abuse in operations.

Internal Audit

Nanya established Corp. Audit under the Board of Directors and appoints three dedicated auditors who participate in related auditing courses organized by professional training institutions each year to improve their professional skills. We also use the professional and independent internal audit operations framework to implement internal control in all levels of the Company.

Scope of Internal Audit



In addition to the audit report on the status of correction of defects and irregularities of internal control systems, the internal auditors shall follow up and provide reminders to ensure that relevant units take appropriate improvement measures in a timely manner. They shall submit the measures to the Independent Directors for review before the end of the following month after the completion of the audit report. Internal audit is not merely the responsibility of the independent audit department. The Company's units must complete independent business inspections within the specified cycles for specific audit items. Independent audit units shall review the results of the self-inspections and implement review inspections regularly or from time to time to ensure the execution of the internal control systems of each unit.

Internal audit items

	2017	2018	2019	2020
Number of audit items	42	44	45	45
Number of anomalies discovered	9	7	4	3[note1]
Anomaly improvement rate	100%	100%	100%	100%

Note1:The three anomalies included 1 for R&D, 1 for engineering, and 1 for finance. Improvements were completed for all three anomalies.

Grievance and Complaint Channels

Nanya has established the Regulations for Employee Protection and Complaints and Whistleblower Regulations to provide employees with channels for reporting any unlawful or unethical conduct. When employees discover a breach of laws or inappropriate conduct that affects the interests of individuals or the Company or other related material issues or where an individual attempts to gain unlawful interest by abusing the power of their office, they may file reports at any time for responsible dedicated units to take charge of processing. In addition, we also established a report hotline (02-29061001) on the Company's official website and a dedicated email (audit@ntc.com.tw) to provide complaint channels for stakeholders for infringements of their rights. We also assign dedicated personnel to take charge of processing the complaints. To protect the whistleblower, personnel responsible for processing cases shall conduct investigations based on the confidentiality principles and they shall be prohibited from disclosing cases to unrelated personnel. When investigating related individuals, the processing personnel shall only discuss parts that are relevant to the individuals to protect the identity of the whistleblower.

Grievance and complaint methods

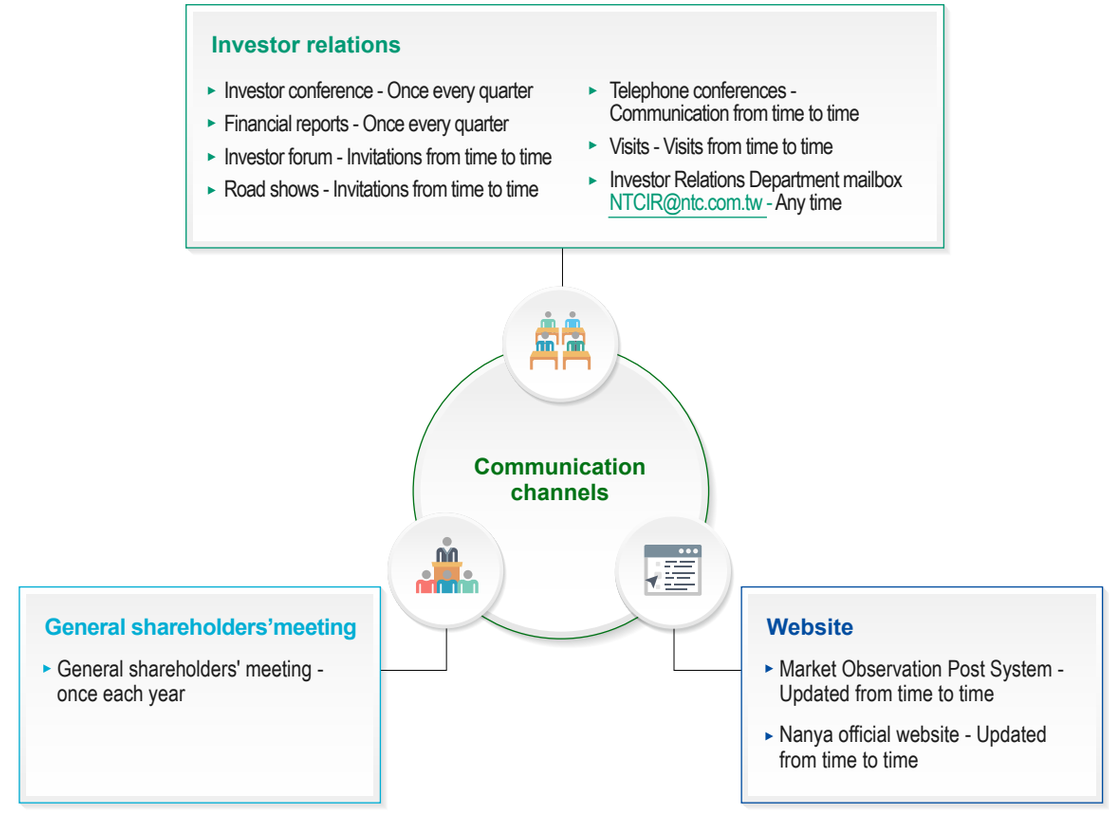
	2017	2018	2019	2020
File written complaints (including anonymous reports)	4	1	0	**2**
Employee grievance report table	0	2	2	**1**
Complaint hotlines and mailboxes	0	1	0	**0**
Total	4	4	2	**3**
Total confirmed cases after investigation	1	1	1	**0**
Category of confirmed cases				
Corruption and bribery	0	0	0	**0**
Discrimination	0	0	0	**0**
Humane treatment	1	1	1	**0**
Confidentiality of information	0	0	0	**0**
Conflicts of interest / Money-laundering / insider trading / dealing	0	0	0	**0**
Environment, health and safety	0	0	0	**0**
Processing and case closed	1	1	1	**3**
Case closure rate	100%	100%	100%	**100%**

Case description:Two written complaints, including one for information privacy and the other for private affairs
1.In regard to the information privacy complaint, no sufficient facts or proofs were found as supporting evidence after investigation, so the complaint was not a confirmed case. Therefore, we promoted related systems and regulations to the persons involved.
2.Regarding the private affairs complaint, the persons involved dealt with it at their discretion.

One employee grievance case resulted from department management issues. The case was not confirmed after investigation. However, considering department's atmosphere and employees' morale, we adjusted the shift of persons involved.

Information Disclosure

Nanya uses diverse, updated, and transparent channels to disclose related information to external stakeholders comprehensively. Nanya participated in 19 external investor conferences in 2020 and we also uploaded financial data and various information and video files to the company website and Market Observation Post System in accordance with requirements of the competent authority to provide investors with updated, correct, and transparent operation conditions and financial statistics.



4 Innovative technology

P51. R&D and Innovation
P55. Customer Service

The Best Partner for Our Customers

"Innovation" is one of the driving forces for Nanya's growth and competitiveness and one of our four core values. We shall strengthen product research, development, and manufacturing to satisfy customers' diverse demands and become the best memory partner for the smart generation.

8.4%

R&D expenses accounted for 8.4% of revenue and R&D personnel accounted for 26.0% of employees. These demonstrate Nanya's focus on technological development.

93.7 points

The customer satisfaction score was 93.7 points, reaching the target of 90 points set for the year

207 cases

Rewards for improvement proposals reached 207 cases, showing that employees adapted well to the culture of work improvement.



Strategies and Performance

2021 Goals	2020 Goals	2020 Performance
R&D and Innovation	Design new next-generation products, Develop 10nm process technologies, Entered the high-density server module market, Smart factory	
Complete the verification of 10nm DRAM technology for product shipment	Established 10nm DRAM technology	Completed the establishment of 10nm DRAM technology with quality standards conforming to product testing criteria
Train and equip a total of 400 engineering personnel with AI theories and practical technological capabilities	Establish high-performance production lines with AI-assistance and reach a project completion rate of 70%	Trained and equipped a total of 300 engineering personnel with AI theories and practical technological capabilities; completed 50 items for intelligent system development at the same time, reaching a project completion rate of 70%
Complete 70 items for intelligent system development	Completed product designs of 1A DDR4, LPDDR4, and DDR5	▸Completed the product design of 1A-nm LPDDR4, and carried on the trial production ▸The product design of 1A-nm DDR4 was estimated to be completed in Q1 2021. ▸The product design of 1A-nm DDR5 was estimated to be completed in Q2 2021.
Customer Service	Design and testing: Use global engineering support services to resolve issues with customer design and testing. Production and sales: Implement rigorous control of quality and improve delivery efficiency. After-sales services: Use the customer complaint management system to quickly resolve customers' issues	
Customer satisfaction score: Over 90 points	90 points	**93.7** points
Customer participation in platform parameters measurement services: 930 cases	920 cases	**955** cases
Joint product verification services for customers: 24 cases	24 cases	**27** cases
Customer technical exchange and courses: 80 sessions	80 sessions	**91** sessions

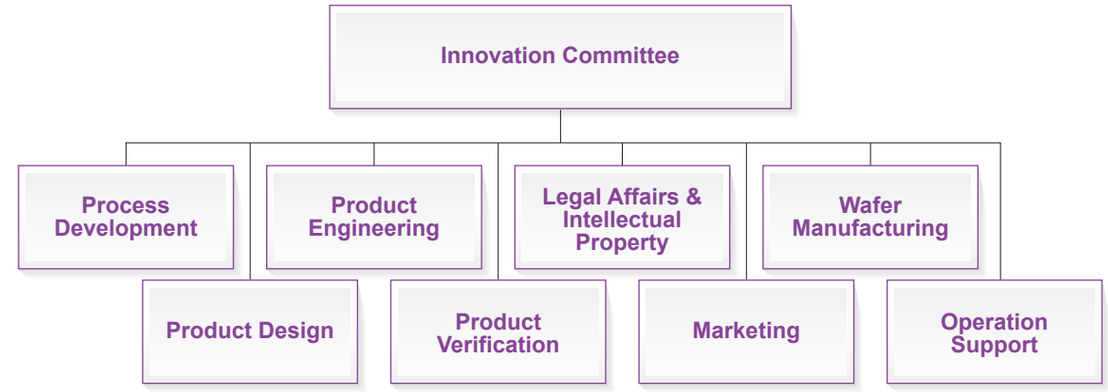
Exceeded Achieved Partially achieved

R&D AND INNOVATION

Smart products have been completely improving the quality of life for human beings and helping energy conservation and carbon reduction. Therefore, every year, Nanya invests large amounts of resources in technological development of new types of DRAM products, next generation processes, and advanced 3D stacked packaging. The developments provide customers with value-added services, and reinforces protection for intellectual property and trade secrets, accelerating the move towards product diversification and smart factories. Moreover, we have set a vision for innovative development to introduce the second generation 10nm DRAM process into mass production in 2025, develop the third generation 10nm DRAM process and the next-generation DDR5 and LPDDR5 products, and manufacture 16Gb high density products at large scale so as to enter fast-growing markets (artificial intelligence (AI), data centers, automotive and the Internet of Things), and set up high-efficient production lines with an AI-aided system.

Innovation Committee

In order to implement innovation management, create a culture of innovation, and enhance the company's innovative energy and value, Nanya especially set up the Innovation Committee, a cross-departmental unit, formed by the senior management and chaired by Executive Vice President (EVP). The Innovation Committee is positioned to coordinate and plan the overall innovation strategy, setting short, medium and long-term goals. The committee holds regular meetings to review the progress of various major projects. In 2020, we successfully completed the establishment of 10nm technology with quality standards conforming to product testing criteria, we also completed the product design of the first generation 10nm DRAM at the same time. On the aspect of AI, we cultivated and equipped a total of 300 technical specialists with theories and practical experiences, and developed 50 items for intelligent system.



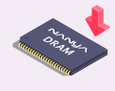
Investment in Innovative R&D

	2017	2018	2019	2020
Operating revenue (A) (NT$100 million)	549	847	517	610
Budget for innovative R&D (B) (NT$100 million)	36.7	48.9	49.3	51.4
Percentage of revenue for allocated to innovative R&D (B/A)	6.7%	5.7%	9.5%	8.4%
Total number of employees (C)	2,984	3,219	3,307	3,542
Total number of innovative R&D personnel (D)	430	501	639	922
Percentage of innovative R&D personnel among all employees (D/C)	14.4%	15.5%	19.3%	26.0%
Output of Innovative R&D				
Number of patents awarded	471	502	459	438

R&D of Low Energy Consumption Products

It is at the stage of new product development that the company starts considering the impacts on environment incurred by product life cycles, actively researching and developing new-generation low energy DRAM products so as to reduce energy consumption of end electronic products and lower greenhouse gas emissions. If different applications of electronic products were used as the basis to measure the energy consumption of our low power DRAM products sold in 2020, we saved approximately 658.48 million kWh on electricity consumption per year, and reduced CO_2 emissions of 335,164 tons annually, making concrete contributions to our expansion of business operations and our efforts to maintain a green earth.

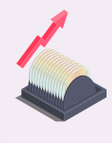
R&D Policy for Low Energy Consumption Products



Nanya continues to develop advanced manufacturing processes, so the energy consumption of new generation products developed with new processes is reduced by 15% compared with the previous generation.



Nanya cooperates with major chip customers, adopting the method of multi chip package (MCP) to reduce back-end assembly and testing as well as energy consumption.



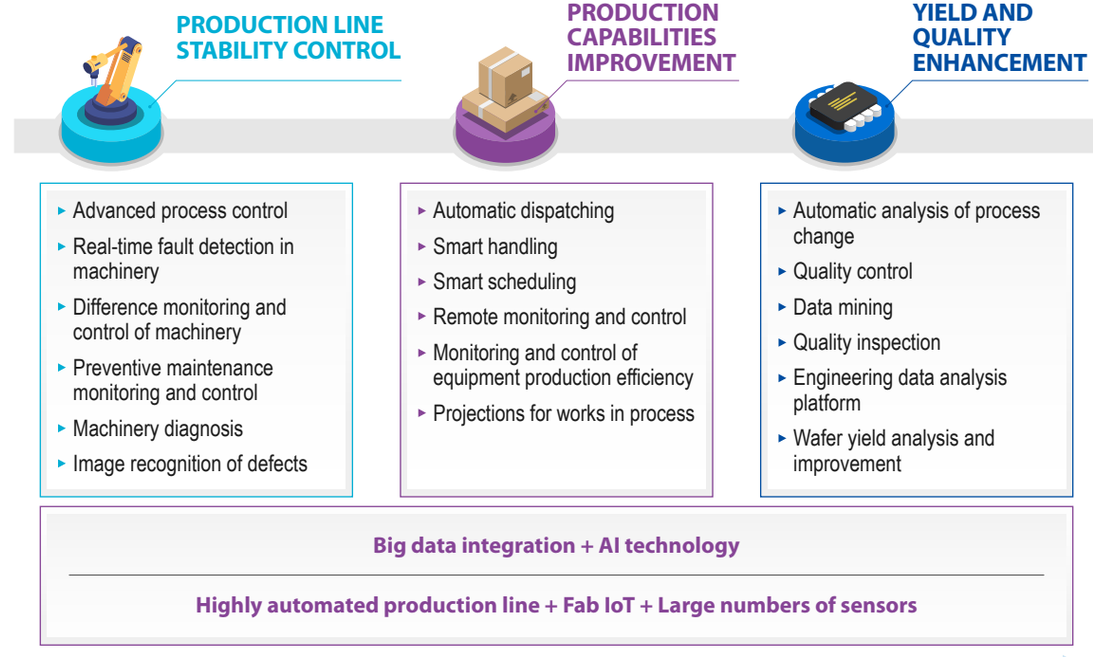
Nanya strengthens the development of low energy consumption product lines and enlarges product portfolios in order to satisfy the need of various mobile devices and electronic products.

Nanya Smart Factory

Nanya's 12-inch wafer fabrication plant has all the necessary infrastructure that a smart factory requires, including highly automated production lines, Fab IoT, large numbers of sensors, big data integration, and AI technology. Currently, the company has developed a number of innovative production line applications, including the machinery diagnosis, advanced process control, optimization of production schedules, projections of work in process, smart handling, wafer probe testing, defect image recognition, and pattern recognition of wafer yield. These applications can effectively enhance the entire operational efficiency of production lines. Because of these developments, three important aspects of production, i.e., yield, quality, and output, are benefited.

With increased difficulties in new-generation advanced processes, higher process precision is required. Moreover, diverse product portfolios have increased the complexity of line control. Nanya has actively implemented AI technologies to drive progress, hoping that each part of operations can be more efficient; engineering teams can be more insightful; and plants operations can generate more value. With the gradual implementation of AI technology in various major operational settings in the plants, high-performance production lines with AI-assistance are going to be established, so the overall efficiency and capacity of processes will be enhanced.

Nanya smart factory - infrastructure and three major applications



Status and Strategy of Intellectual Property

Nanya has created many patents through the cooperation with world-class entities, technology transfer, and joint execution of R&D plans, and has acquired these patents. As of 2020, Nanya has obtained as many as over 4,000 patents, which is hugely beneficial to R&D and production. Meanwhile, in relation to the protection of our trade secrets and trademarks, we have also established a complete protection system. In regard to continuous profitability and risk prevention, we have established complete operating mechanisms in order to protect proprietary R&D results and consolidate our competitive advantages. Moreover, we can flexibly use intellectual property to effectively resist excessive patent litigation.

Critical legal cases related to intellectual property involving Nanya were as follows:

In October, 2016, Lone Star Silicon Innovations accused Nanya and its subsidiaries (collectively "Nanya") in the U.S. District Court of East Texas for patent infringement. The case was transferred to the U.S. District Court of Northern District of California in July, 2017 and the Court adjudicated the dismissal of the case in January 2018. The Plaintiff is appealing against the dismissal to Federal Court and State Court, and Nanya has engaged counsels to properly handle it to ensure Nanya's rights.

The U.S.-based Monterey Research LLC. accused Nanya and subsidiaries Nanya Technology USA and Nanya Technology Delaware in the U.S. District Court for the District of Delaware for patent infringement in November 2019. We have engaged counsels to properly handle the case to protect our rights and interests.

Intellectual Property Management
https://www.nanya.com/en/IR/111/Intellectual%20Property%20Management

Nanya intellectual property strategy



Make full use of intellectual property to create a favorable environment for the Company and the industry.



Create the most favorable R&D and production environment with intellectual property, and then use the results of excellent production and R&D to recreate intellectual property rights that are practical and good.



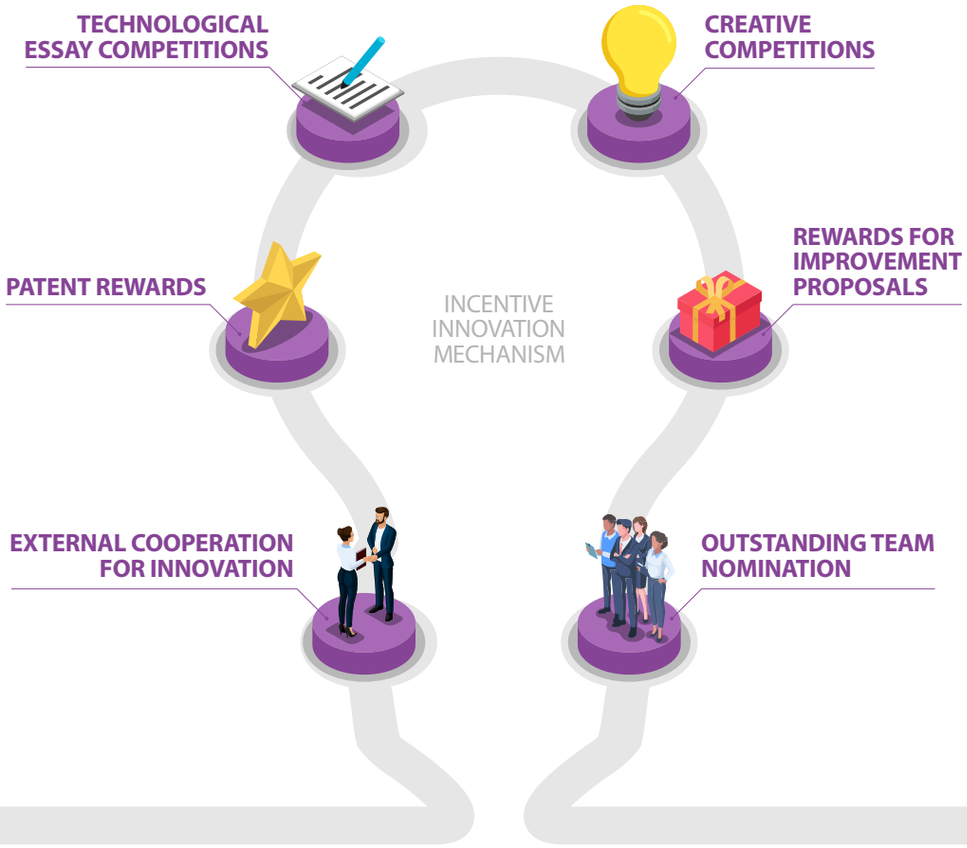
Manage intellectual property with a suitable system, and protect trade secrets with a rigorous network for information security.

In addition, in the face of increasingly intense business competition and challenges of globalization, the protection of trade secrets has become an increasingly important subject for an enterprise to maintain its core competitiveness. Trade secrets include technology, methods, processes, recipes, programs, and design or other information that can be used in production, sales or operation, complying with the requirements for secrecy, economic value, and confidentiality measures that have been taken. In recent years, Nanya has actively implemented advanced process technology, new product development, and innovative sales models. In order to ensure the Company's long-term competitive advantages, we implemented the ISO 27001 Information Security Management system in 2019 and continuously obtained external verification in 2020 so as to minimize the risk of leaks.

2017	2018	2019	**2020**
Number of trade secrets			
4,172	5,056	3,989	4,031

Incentives for Innovation

"Innovation" is one of the driving forces behind the company's technological growth and competitiveness enhancement and one of our core values. To encourage employees to propose innovative ideas, the Company holds annual innovation competitions, offers patent rewards and rewards for improvement proposals, and organizes essay competitions and the best team competitions. We recognize and reward innovative ideas proposed by each employee, hoping that all employees will internalize the spirit of innovation. Results of activities held in recent years were shown in the table below.



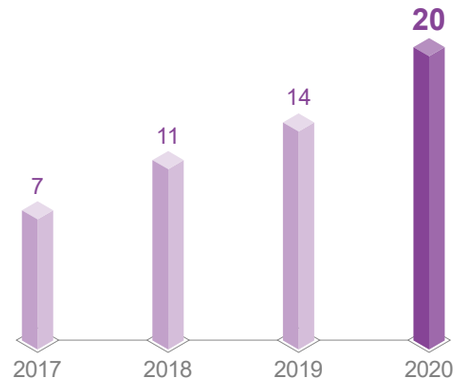
Results of innovative activities

	2017	2018	2019	2020
Patent rewards - Number of patents granted	471	502	459	**438**
Rewards for improvement proposals - Number of proposals	47	51	225	**207**
Rewards for improvement proposals - Actual annual benefit (NT$)	158,563,200	311,059,200	368,721,600	**1,583,318,400**
Technological essay competitions - Number of entries	46	58	65	**79**
Best team competitions - Number of entries	7	15	15	**17**

In addition, we have attached great importance to technological R&D. We incorporate external innovation into our R&D in open and innovative ways, so the Company can maintain sustainable development. We have worked on the design and basic research of next generation memory with professors from National Taiwan University, National Central University, and Chang Gung University, and the Electronic and Optoelectronic System Research Laboratories under the Industrial Technology Research Institute. We have also partnered with manufacturers of masks and machinery in joint development of next generation DRAM process and materials. Through customized Wafer Level Packaging and multiple application products developed rapidly with downstream system developers, Nanya has launched new open innovation programs every year in the past four years in order to conform with the Company's short, medium, and long-term R&D plans.

Open innovation program

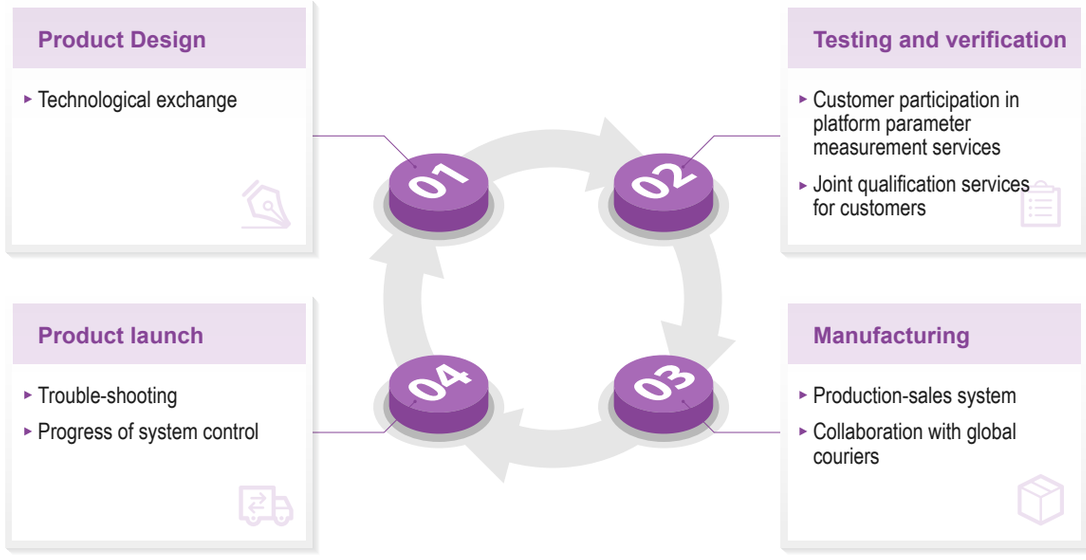
Unit : Number of cases



CUSTOMER SERVICE

Nanya is committed to providing the best customer service and is convinced that quality and timely customer service is crucial to the maintenance of customer relationships. Good customer relationships will help us build customer loyalty, and consolidate the good and trusted partnerships with customers. Our vision is to become the best memory partner in the smart era as well as a service-oriented enterprise. Through close cooperation with MCU makers and customers, we will strengthen product R&D and manufacturing in order to satisfy diverse requirements, provide customers with comprehensive products and system solutions, and offer better and more trustworthy service.

Customer Service Process



Product Design and Testing Verification Stage

In order to improve the efficiency and frequency of customer service and effectively build close relationships with customers, the Field Application Engineering Division provides technical supports to customers in Taiwan, China, Southeast Asia, Europe, the United States, Japan and South Korea, organizing irregular technology exchange events to meet the technical needs of customers. In 2020, the Division held a total of 91 events, providing technical supports and assisting customers' engineering personnel to solve problems in design and testing.

In addition, through the highly efficient, intensive, and high-quality customer platform parameter measurement service, of which 955 cases were completed in 2020, Nanya assisted customers in understanding the characteristics of their product platforms so that the new product development progress and verification cycles of customers were significantly accelerated, reducing investment risks and helping final products to be launched in a timely manner in the demand market. Nanya also provides joint qualification services for customers to assist them in development and verification at the initial stage of products. Therefore, compatibility issues may be detected early, and improved before mass production. A total of 27 cases were completed under the joint verification services in 2020.

Production and Sales Stage

Nanya has been certified for ISO 9001: 2015 and IATF 16949: 2016 quality system. The Quality Assurance Division monitors and controls product quality as well as implements improvements in order to make sure that all production processes are fully optimized. Moreover, the Division includes each stage of the production process into a well maintained and tightly controlled system, manufacturing the products that meet the customers' requirements. The sales staff continuously communicates with the customer and sends the weekly projections of the customer's future demand forecast back to the Company. The Company's production and sales system converts the information into a production plan after the head office aggregates the needs of global business feedback and the plan is adjusted according to the weekly feedback from sales staff so as to meet customer needs.

After-sales Service Stage

Nanya is committed to enhancing product quality and rapidly responding to customers' quality issues to meet their expectations. In order to accelerate the efficiency of problem analysis, the Nanya's service team will fully understand the problems reported by customers first, update analysis progress to customers based on analysis plans, and send customers the corrective measures and handling methods once analysis is completed. Through the cooperation among the divisions of Field Application Engineering, Quality Assurance, Product Engineering, and Manufacturing Process along with the process management conducted with a customer complaint handling system, over the years, the company has been able to reply to over 90% of customers' complaints within target deadlines.

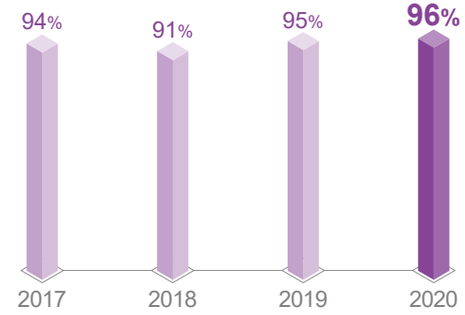
Customer complaint handling process



Achieving rate of customer complaint cases

In 2020, Nanya completed 96% of customer complaint cases within target deadlines. The Company will continue to maintain frequent communication with customers and understand how customers use our products and failure conditions in the shortest time possible to accelerate problem analysis and solve problems.

Achieving rate of customer complaint cases



Customer Privacy Protection

Customers are extremely important partners for the company. Therefore, we are obligated to rigorously safeguard their privacy and confidential information as if it is our own. To ensure confidential information is well protected, Nanya has formulated the Confidential Information Management Procedure. Regarding the documents provided by customers, after internal filing procedure and the confidentiality classification, these documents are archived in the document control center. In the future, if employees require access to these documents, they have to go through the document application procedure. Based on the level of document confidentiality and the purpose of use, corresponding supervisors give their approval and then the document control center will authorize the access and distribute the documents to the applicants. In 2020, no case involving violation of customer privacy occurred. If a customer suspects or discovers evidence indicating an information leak, a complaint can be lodged through the NTC Complaint Mailbox and Complaint Hotline.

Customer Satisfaction

Nanya strive for continuous improvement, working in a practical way, with a spirit based on exceeding our customers' requirements in quality, delivery and service. In relation to customer satisfaction, Nanya employs an impartial third-party consultancy company to conduct satisfaction survey for direct and end-customers through the internet or interviews, that Nanya can understand customers' needs from a fair and objective perspective. The content of the survey includes the dimensions of "Product", "Delivery", "Quality", "Technical service", "Communication", "Commercial" and "Comparison with competitors". With regard low performance items, relevant departments are responsible to review and proposed corrective action. In addition, the results of customer satisfaction survey are submitted and reported at the top management meeting, while the sales personnel are going to reply customers with improvement results or continuous improvement plan, and continue to improve customer satisfaction. In order to improve customer satisfaction, Nanya has established a review platform to give priority to handle and improve customers' requirements.

In addition to the customer satisfaction survey, customers regularly conducts business and technical review meetings with Nanya 's service team, Nanya is able to keep close relationships with customers and provide better service. We will commit ourselves to strengthening the collaborative cooperation among internal relevant divisions in response to urgent or sudden demands from customers. Moreover, we will continuously strive to improve product quality and the timeliness and efficiency of communication on quality issues with customers while keeping smooth communication with customers, making every effort to satisfy customers' requirements.

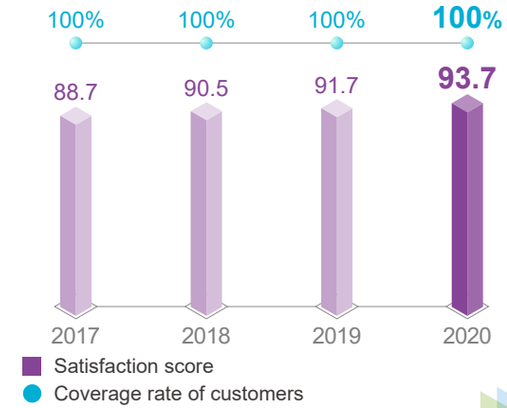
Customer Satisfaction Survey Procedure



The average overall satisfaction score of 2020 was 93.7 points, reaching the target of 90 points. In the last three years, our customer satisfaction has gradually increased and the target score for 2021 is 90 points and above. The target setting of the customer satisfaction survey is to consider the fluctuation of the industrial characteristics and the annual regular review of the performance and benchmarking, and set a reasonable target, submitted to the president for approval by the quality assurance division.

In regard to the Nanya's scores and the results of comparison with competitors, customers highly recognize the Nanya's performance on delivery, technical service and communication, Mainly Nanya assists the client in accelerating the verification of new products and technical exchanges during the product design, testing and verification phase. In addition, there is still room for improvement in the performance of product technology capabilities and quality. Based on the supply and demand of the market and product application, we will strengthen customer communication and improvement with positive attitude, insisting on product quality control and improvement according to customers' feedback. Thus, in 2020, there were no product recalls.

Results of Customer Satisfaction Survey



5 Responsible Procurement

P59. Sustainable Supply Chain Management
P65. Conflict Minerals Management

A Promoter of Shared Value

Suppliers have always been Nanya's most important business partners. We aim to enhance cooperation to create greater value and share the value and benefits of cooperation and create a sustainable future.

1st

Held Nanya Sustainable Supply Chain Seminar for the first time in 2020, and invited 20 key suppliers to discuss topics on energy conservation and carbon reduction

24.6 million kWh

Electricity saved through cooperating with suppliers on energy-saving projects was estimated to exceed 24.6 million kWh.

100%

Nanya requires 100% of key suppliers to complete the self-assessment to control sustainability risks in the supply chain.



Strategy and Performance

2021 Goals	2020 Goals	2020 Performance
Sustainable Supply Chain Management	Management of conflict minerals: No conflict minerals have been used in any of Nanya's products Supply chain risk management: Implement regular "quality, delivery, service, cost, technology, and sustainable management" evaluations for suppliers	
Use of non-conflict minerals: 100%	100%	**100%**
Key suppliers' completion of the self-evaluation questionnaire: 100%	100%	**100%**
Completion rate of deficiency improvements by suppliers with high sustainability risk in audits 100%	100%	**100%**
100% of suppliers signing Supplier Code of Conduct	100%	**100%**

Exceeded Achieved Partially achieved

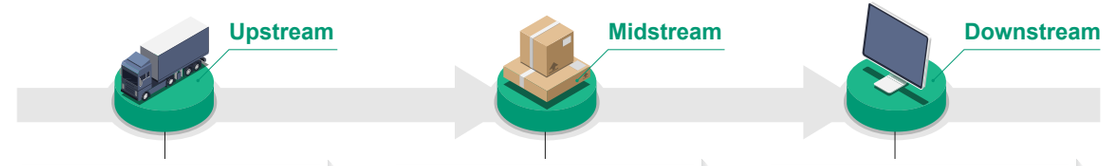
SUSTAINABLE SUPPLY CHAIN MANAGEMENT

Nanya Industrial Chain

The IC industry (including DRAM) is categorized into upstream IC design, mask making/wafer materials, midstream IC production, and downstream IC packaging and testing. Nanya is committed to the research and development, design, production, and sales of IC products and we are primarily responsible for upstream IC design and midstream IC production in the industrial supply chain.

To improve the efficiency of customer service and effectively build closer relationships with customers in the upstream product design and testing and verification stages, the head office provides customers' technical solutions in various regions, including Taiwan, mainland China, Southeast Asia, Europe, America, Japan, and South Korea. In response to customer's requests, we irregularly exchange technologies with customers, provide technical support, and assist in solving the problems faced by the customer's engineering staff in design and testing.

The Company continuously communicates with customers in the midstream production and sales stages and report weekly to the head office on the feedback of customers' future demand forecasts. The head office aggregates the demand forecasts around the globe and converts them into production plans, which are adjusting weekly to meet customers' needs and maximize the benefits. In the meantime, we cooperate with downstream contractors to form a complete industrial value chain.



IC design
- Intellectual property

- IC design

Wafer Manufacturing
- Equipment supplier
- Chemicals
- Wafer materials
- Mask production

- IC manufacturing

Packaging and Testing
- Lead frame
- Substrate
- IC packaging and testing equipment

- IC packaging
- IC Testing

Supply Chain Overview

Nanya's major suppliers include "suppliers" and "contractors". Major supplies are divided into two main categories, production materials and non-production materials. Production material suppliers are the Company's major suppliers and the number of them totaled 304 in 2020. Among the 304 major suppliers, 82 are regarded as key suppliers[Note1]. Not only do we continue to promote the concept of sustainable operations, but we also work with suppliers jointly on constructing a resilient and sustainable supply chain to implement corporate sustainability.

Number of suppliers and ratio of procurement amount

	2017	2018	2019	2020
Number of major suppliers (Tier 1)	350	270	330	304
Number of key suppliers	89	80	82	82
Proportion of key suppliers (%)	25%	30%	25%	27%
Proportion of procurement from key suppliers (%)	79%	77%	68%	68%

Regions where key suppliers

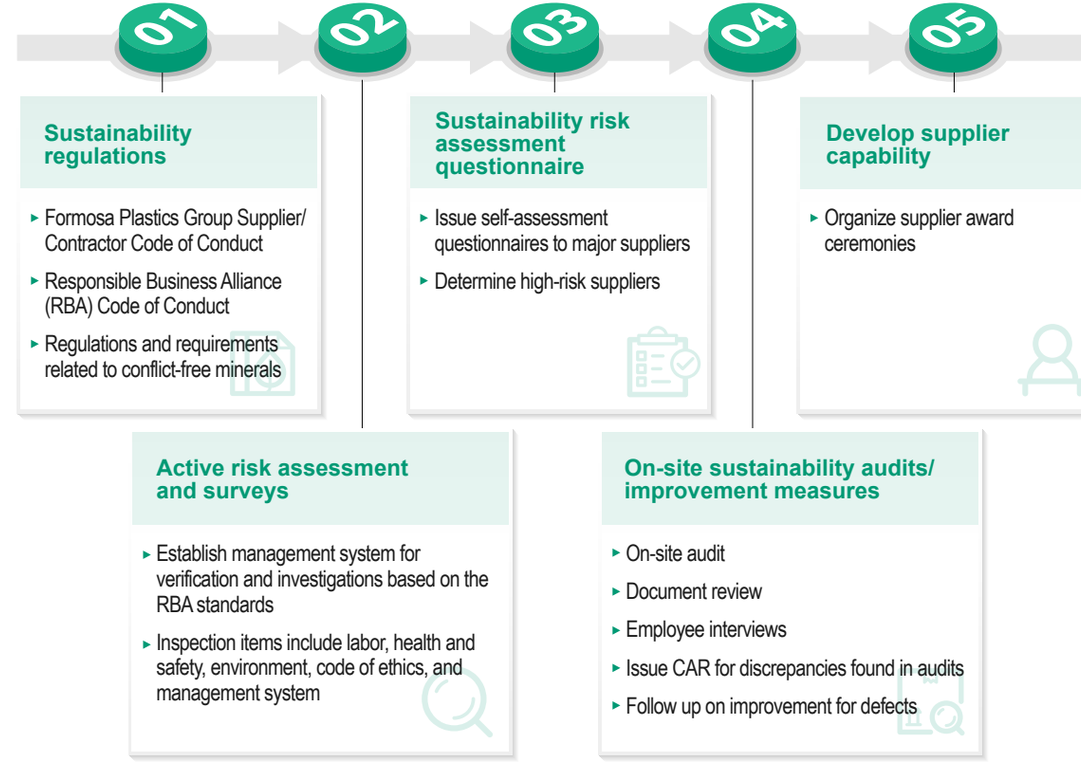
Region	Number of Key suppliers
Asia	219
Americas	58
Europe	27
Total	304

Note1:Please refer to the appendix for the list of key suppliers in 2020

Sustainable Supply Chain Management Framework

Nanya established a supply chain management framework. We use sustainability regulations, sustainability risk surveys, on-site sustainability audits/improvement measures, and supplier capability development to manage and control supply chain risks and strengthen suppliers' sustainability performance. We hope to drive suppliers to grow with us and exert more shared value and influence through a series of sustainability management processes.

In addition to continuous requirements on the aspects of quality, delivery, and service, Nanya also established related risk management mechanisms. When external factors (such as: natural disasters, diseases, changes in global major events) result in the risk of running out of materials, Nanya immediately initiates emergency response. Related departments, including materials, quality assurance, and engineering, jointly and swiftly formulate response plans, and review aspects of checking on material inventory, asking backup suppliers for materials, increasing stock levels of materials, and reviewing material consumption in process to monitor the risk.



Sign the Letter of Compliance with Corporate Social Responsibility Requirements for Suppliers and Subcontractors of Formosa Plastics Group

For our suppliers to understand and implement corporate sustainability step by step, we formulated the Letter of Compliance with Corporate Social Responsibility Requirements for Suppliers and Subcontractors of Formosa Plastics Group (Letter of Compliance), and provided suppliers with comprehensive training and education. The training coverage rate was 100%. The Letter of Compliance includes the Supplier Code of Conduct stipulated by Formosa Plastics Group, the RBA Code of Conduct, and regulations and requirements related to conflict-free minerals. Suppliers have to undertake to abide by the corporate social responsibility regulations in the Letter of Compliance before signing contracts with the Company.

Major suppliers[Note1]	2017	2018	2019	2020	2021 Goals
Number of major suppliers	350	270	330	**304**	
Number of suppliers signing the Letter of Compliance	211	219	330	**304**	
Percentage of supplier signatures (%)	60.29%	81.11%	100%	**100%**	**100%**
New suppliers					
Number of new suppliers	76	18	87	**28**	
Number of suppliers signing the Letter of Compliance	18	18	87	**28**	
Percentage of supplier signatures (%)	23.68%	100%	100%	**100%**	**100%**
Key suppliers					
Number of key suppliers	89	80	82	**82**	
Number of suppliers signing the Letter of Compliance	72	63	82	**82**	
Percentage of supplier signatures (%)	80.89%	78.75%	100%	**100%**	**100%**
Existing suppliers					
Number of existing suppliers	274	252	243	**276**	
Number of suppliers signing the Letter of Compliance	192	202	243	**276**	
Percentage of suppliers signing the Letter of Compliance	70%	80%	100%	**100%**	**100%**

Note1: Major suppliers included new suppliers and key suppliers.

Supplier Sustainability Assessment

In terms of supplier selection, when suppliers that directly produce materials are introduced into Nanya's supply chain, they have to receive rigorous evaluations and reviews in addition to related third-party verification of ISO 9001 and ISO 14001. We use digital supplier assessment and management system to conduct reviews on six major indicators, including "quality, delivery, services, costs, technology, and sustainable operations". The score for sustainable management indicators accounts for 10% to ensure compliance with the Company's requirements for a sustainable supply chain.

Supplier sustainability assessment indicators[Note2]



Note2: The top five important indicators for supplier assessment are “quality, delivery, services, technology, and sustainable operations”

Note3: Sustainable operations

1.Green environment evaluation items include the ISO 14001 certification, energy and resource conservation, reduction in greenhouse gas emissions, and waste recycling rate.

2.Corporate social responsibility evaluation items include compliance with local labor laws and regulations.

Sustainability Risk Surveys and Assessment

To ensure the supply chain's implementation of sustainability, Nanya distributes Technology Corporation Supply Chain Code of Conduct Questionnaire to major suppliers each year. All major suppliers have to conduct self-assessment, fill in the questionnaire, and hand it back. Suppliers are required to reply the implementation status of various sustainability issues on the questionnaire and provide certification documents issued by related management systems. The results of the suppliers' self-assessment questionnaires shall be adopted as the basis of sustainability risk management and as reference for Nanya's assistance to achieve supply chain sustainability. The content of questionnaire mainly focuses on potential impacts that suppliers might make on the three aspects of economic, social, and environmental. For example, Potential impacts on the social aspect include labor practices/human rights standards/business ethics/health and safety; Potential impacts on the environmental aspect include environmental management/greenhouse gas. We analyze the results of the suppliers' self-assessment questionnaires, screen 5% of high-risk suppliers for onsite audits, and provide assistance for improvements.

In 2020, all major suppliers (including key suppliers) completed sustainability risk assessment. (The Company distributed the self-assessment questionnaires to 304 major suppliers and all of them handed the questionnaires back.) After analysis of the questionnaires, a total of 16 high-risk major suppliers were identified in 2020. High risks on three aspects were as follows. In regard with high-risk suppliers, we had performed document review and onsite audits.

Economic aspect	Companies fail to establish conflict-free minerals policies.
Social aspect	Companies do not set bans on forced labor and abide by regulations on work hours and wages. They are punished for violating labor or ethical regulations, failing to establish whistle-blowing systems and identity protection. They do not set bans on discrimination, provide the right to form associations freely, and formulate procedures for covering suppliers under the ethical elements of BRA Code of Conduct.
Environmental aspect	Companies fail to formulate identification procedures for environmental protection laws and regulations, obtain permits to discharge pollutants related to their operational activities, and establish procedures for identifying impacts/risks caused by climate change.

Supplier sustainability risk assessment

Major suppliers[Note1]	2017	2018	2019	2020	2021 Goals
Number of suppliers surveyed	350	270	330	304	
Response rate	63%	100%	100%	100%	100%
Number of high-risk suppliers	5	14	17	16	
Percentage of high-risk suppliers (%)	1%	5%	5%	5%	
Key suppliers					
Number of suppliers surveyed	89	80	82	82	
Response rate	64%	100%	100%	100%	100%
Number of high-risk suppliers	4	1	5	5	
Percentage of high-risk suppliers (%)	5%	1%	6%	5%	
Tier 2 key suppliers					
Number of suppliers monitored	43	32	40	80	90
Response rate	100%	100%	100%	100%	100%
Number of high-risk suppliers	1	3	2	4	
Percentage of high-risk suppliers (%)	2%	10%	5%	5%	

Note 1: Major suppliers included key suppliers.

Supplier Sustainability Audit

In addition to screening high-risk suppliers for audits based on the results of self-assessed Nanya Supply Chain Code of Conduct Questionnaire each year, to strengthen sustainability risk management of supply chains, conducting onsite audits for key suppliers at least once every three years is phased in. In 2020, we periodically audited 26 key suppliers (including high-risk suppliers). We made a plan to have 100% of key suppliers receive audits on sustainability risk by third-party institutions entrusted by Nanya starting in 2021, estimating that 30 key suppliers (including high-risk suppliers) would complete the audits in 2021. Thus, we are able to ensure the supply chain's implementation of sustainability.

The audit coverage rate of high-risk suppliers was 100% in 2020. We audited 20 high-risk suppliers (including 16 high-risk major suppliers and 4 high-risk second-tier key suppliers) on their sustainability performance. The audit results showed that high-risk suppliers had 64 non-compliance items, but high-risk second-tier suppliers had zero. In regard to non-compliance items, the Company issued Corrective Action Request (CAR) for follow-up and improvement.

Sustainability audit table of high-risk suppliers

	2017	2018	2019	2020
Numbers of audited suppliers	9	28	19	20
Average audit score	89	90	82	81
Number of non-compliance audit items	20	39	112	64

Category and number of violations

	2017	2018	2019	2020
Labor ethics	▸ 1 instance of forced labor ▸ 4 penalty records ▸ 4 items involving work hours and wages ▸ 3 item involving training and education ▸ 1 item involving personal information protection ▸ 2 items involving discrimination ▸ 1 item involving the management system	▸ 1 instance of forced labor ▸ 2 penalty records ▸ 7 items involving work hours and wages ▸ 1 item involving training and education ▸ 3 items involving discrimination ▸ 3 items involving child labor/youth labor ▸ 2 items involving information security ▸ 1 item involving female night shift ▸ 1 violation of labor regulations	▸ 22 items involving human rights or employment discrimination ▸ 4 items involving not having work rules formulated or approved ▸ 14 items involving work hours and wages ▸ 3 items involving grievance mechanisms ▸ 3 items involving reward and punishment procedures ▸ 8 item involving training, education, and communication ▸ A total of 54 items	▸ 5 items involving not having work rules formulated or approved ▸ violated 13 items involving human rights or employment discrimination ▸ violated 7 items involving work hours and wages ▸ violated 6 items involving grievance mechanisms ▸ violated 2 items involving information security ▸ violated 3 items involving reward and punishment procedures ▸ A total of 36 items
EHS	▸ 2 violations of environmental safety regulations ▸ 2 irregularities in operation control	▸ 4 items involving fire safety ▸ 8 items involving labor safety operation control ▸ 6 items involving environmental information updates on public websites	▸ 9 violations of environmental safety regulations ▸ 39 defects in labor safety operation ▸ 4 defects in environmental protection operation ▸ 6 defects in fire safety operation ▸ A total of 58 items	▸ 2 violations of environmental safety regulations ▸ 8 defects in labor safety operation control ▸ 6 defects in health operation control ▸ 11 defects in fire safety operation ▸ 1 defect in environmental protection operation control ▸ A total of 28 items
Improvement Rate	100%	100%	100%	100%

Achieved number of audited suppliers goal (16 suppliers). The number of audited suppliers goal in 2021 is 20 suppliers.

Supplier Capability Development

Nanya has established the Material Review Board (MRB), and uses systematic procedures, including supplier evaluations, audits, assistance and improvement for discrepancies found in audits, performance evaluation, and award ceremonies for outstanding suppliers to implement sustainability requirements in daily management of the supply chain on the basis of cooperation and mutual aid The evaluation items include supply chain performance, quality system, customer satisfaction, timely delivery, and environmental safety.

Supplier Seminar

In order to respond to trends in corporate sustainability, enhance sustainability awareness in the supply chain, and expand influence to the entire product value chain, we held the Nanya Sustainable Supply Chain Seminar for the first time in December 2020, inviting Tsai-Chi Kuo, Secretary-general of the Taiwan Academy of Corporate Sustainability (TACS) and 20 key suppliers to jointly participate in corporate sustainability, and focus on energy management as well as topics on energy conservation and carbon reduction.

As carbon emissions of Nanya's products mainly come from electricity and energy consumption, the first Nanya supplier seminar started from the perspective of energy management. TACS Secretary-general Tsai-Chi Kuo was invited to introduce the trends in supply chain management. Based on life cycles, Kuo expounded on how enterprises and supply chains could collaborate to implement sustainable development. Moreover, Nanya and two suppliers, Air Liquide Far Eastern Ltd. and Formosa Sumco Technology Corporation, shared their experience, so suppliers at the seminar could learn from each other and come up with methods for energy conservation and carbon reduction. Therefore, the suppliers were able to feedback on carbon footprint reduction of Nanya's products, leading the growth of the supply chain to create sustainable value.



Supplier Seminar
https://www.nanya.com/en/IR/16/Press%20Release?IRId=630

Supplier Annual Evaluation

Nanya uses the annual assessment to convene seminars and discuss requirements regarding production with suppliers. We also educate suppliers about related sustainability topics on an ad hoc basis. In addition, we organize award ceremonies for outstanding suppliers based on the results of the annual assessment. During the ceremonies, senior executives directly communicate to suppliers regarding goals and requirements of the supply chain for quality, technology, delivery, services, costs, and sustainable operations. We compared suppliers of raw materials, components, and equipment in 2020 and presented awards to 8 outstanding suppliers.



2020 Supplier Award Ceremony

Participation in Suppliers Activities

In 2020, Nanya participated in the beach cleanup activity held by our supplier Air Liquide Far Eastern Ltd. so as to work hand in hand at implementing corporate social responsibility and making contributions to environmental protection.



Sustainable Supply Chain Development Strategies and Projects

Sustainable Supply Chain Development Strategies

Nanya firmly believes that the sustainable growth of supply chains has certain impacts on corporate sustainable development. Therefore, we are committed to developing sustainable supply chains. We actively invest in related resources and cooperate with suppliers to drive sustainable supply chains and achieve shared value.

Nanya's commitment



No conflict minerals have been used in any of our products and we have conducted procurement based on the green product regulations.



We adhere to the principle of fair trade and conform with related laws and regulations to protect human rights, pay attention to labor's physical and mental health and safety, protect environment, and fulfill corporate social responsibility.



In adherence with the principle of integrity, we are dedicated to implementing corporate social responsibility in our purchasing activities so as to pursue sustainable operations.

Sustainable Supply Chain Development Projects

Human rights risks of contractors' migrant workers

Suppliers' stable and good supply capabilities come from stable production manpower and friendly working environments. Migrant workers are indispensable sources of labor for a majority of factories. However, most of migrant workers are brought to Taiwan through manpower agencies, which is prone to high risks of human rights management. Therefore, we have promoted the human rights protection for migrant workers to be the main theme of our sustainability project in the supply chain. We started to assess human rights risks of contractors' migrant workers in 2019. The assessment was based on the provisions of Freely Chosen Employment in the RBA Code of Conduct, including, voluntary work and redundancy, zero fees for workers and not holding their identity cards and personal certificates under any circumstances, and no unreasonable restrictions on workers' freedom of movement and their primary movement areas. We continued to promote the project of human rights protection for migrant workers in 2020. Key suppliers with transaction amount accounting for the top 20% and with migrant workers' employment had to be assessed, and a total of two suppliers met the criteria. The Company assisted the two suppliers in implementing the project of human rights for migrant workers, and the suppliers had to propose improvement plans. Currently, implemented items included: Zero payment (including commissions, fees of accommodation, transportation, documentation, and health checkups), installing lockable safe boxes for storage of important documents and possessions, direct payments of wages to employees' bank accounts, free access to working and living space, holding religious and cultural activities, and preventive measures against infectious diseases. In 2020, the repayment totaled NT$4,103,000, benefiting 59 migrant workers.

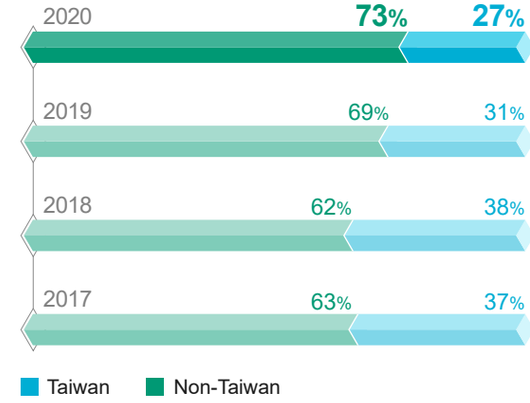
Asking suppliers to implement energy-saving activities

Climate change is a critical topic facing the entire world in this century. The Company has actively promoted energy management programs for years. During the sustained promoting process, we have considered sharing our experience of energy management improvements with suppliers with relevant equipment, so the suppliers may implement effective energy-saving programs to lower their energy consumption. In regard to the selection of suppliers, we focused on 14 suppliers with more energy consumption and relevant equipment, such as packaging and test outsourcing factories, material and mask suppliers, and promoted seven energy management programs with high power consumption and of obvious benefit to power conservation, including implementing smart energy conservation into chilled systems, saving energy on the side of refrigerants in ice water machines, and replacing impellers of CDA compressors. After the cooperation in 2020, we had received response from 12 suppliers, and would continue to start 26 energy-saving activities in 2021. The electricity saved was projected to exceed 24.6 million kWh, reducing 12,569 ton CO_2e emissions.

Local Procurement

Nanya prioritizes local procurement to facilitate stable development and cooperation with suppliers, provide faster service time, shorten delivery time, reduce unnecessary costs, and reduce the impact on the environment. However, as semiconductor equipment and technologies mostly involve foreign production or international collaboration, most of the materials used in the semiconductor industry are still produced in foreign countries. This has led to larger foreign procurement compared to domestic procurement. Nanyashall continue to cooperate with local suppliers to expand procurement and employment opportunities in Taiwan and create greater value in partnerships with suppliers.

Percentage of local materials procurement amount in 2017-2020



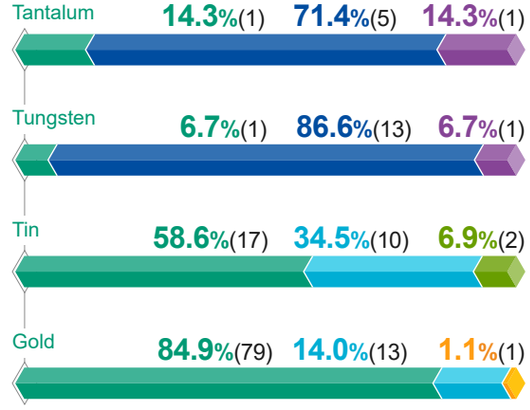
CONFLICT MINERALS MANAGEMENT

Nanya is committed to the management of conflict-free minerals and responsible sourcing strategies to meet the expectations of current and future markets, laws and regulations. To meet the requirements of conflict-free metals, shoulder the responsibility of the Responsible Business Alliance (RBA) and meet the objectives of the Responsible Minerals Assurance Process (RMAP). The 6 suppliers and 13 raw material suppliers that supply Nanya have completed the conflict metal supply chain survey, and have confirmed that the 39 metal material suppliers in the supply chain are 100% compliant with the requirements of conflict-free metals, which for environmental and industrial supply chains are make a substantial contribution.

Suppliers of raw materials that use or contain 3TG must comply with the Company's policies and use the Conflict Minerals Reporting Template (CMRT) as a survey tool to provide 3TG survey results. To ensure that the supply chain does not is not involved financial aid of illegal warlords or armed groups thats endanger basic human rights, In addition to wafers and IC packages, Nanya's production line has increased mass production of DIMM modules, the supply chain returns the number of 3TG smelters, the number of smelters increased by nearly 5 times from 37 smelters to 181 smelters.

Conflict-Free Minerals Policy
https://www.nanya.com/Files/1068

Distribution of new added smelters in 2020



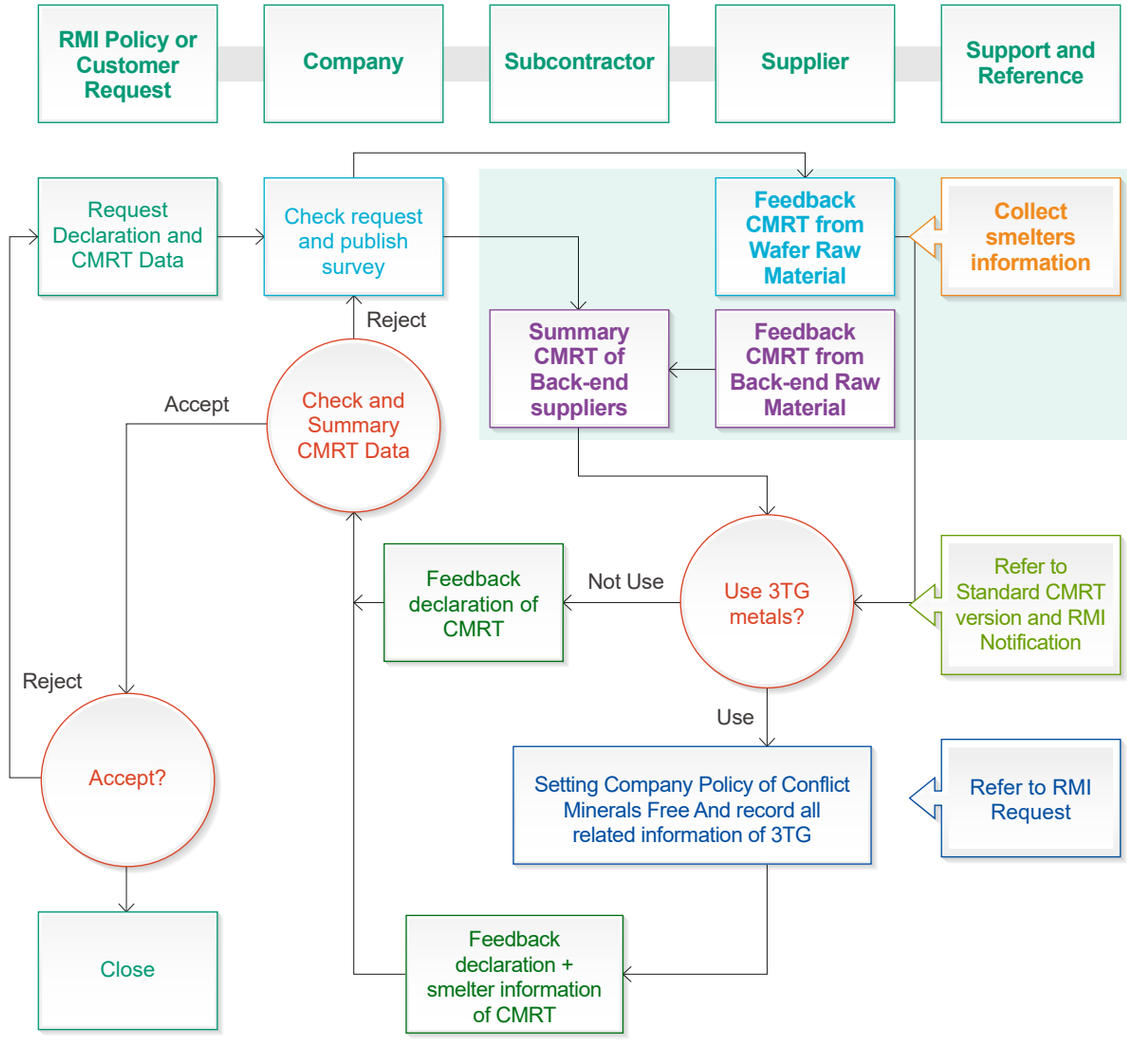
The metal minerals currently used in our products that gold, tantalum, tin, and tungsten are collectively referred to as 3TG. Approximately 5% of the smelters replied that the source of the 3TG might come from the Democratic Republic of the Congo (DRC) or neighboring countries, also have some from recycled or scrapped metals. The smelters have confirmed that the source of the minerals conformed to the Responsible Minerals Assurance Process (RMAP) policy, and has been approved as a legal smelter.

In addition to the 3TG, cobalt mines and cobalt metals have been included by the RMI in the survey indicators of supply chain in recent years. From 2018 Nanya has collected information on smelters from raw material manufacturer. and it is currently known to use about 4 smelters located in Finland. Norway, China and Japan.

The 3TG metal applications currently used in our company are as follows:

Gold	Tantalum	Tin	Tungsten	Cobalt
Applicable Product RDL, IC, DIMM	Applicable Product wafer, DIMM	Applicable Product IC, DIMM	Applicable Product wafer, DIMM	Applicable Product wafer, DIMM
Application Category Gold-plated layer, Gold wire	Application Category Wafer Target Material, Alloy material of passive components	Application Category Solder paste, Solder ball, Tin wire	Application Category Wafer Target material, Alloy material of passive components	Application Category Wafer Target material, Alloy material of passive components

Procedures for the Management of Conflict Minerals



Investigation Preparation

Nanya's supply chain has a multi-level supply chain relations with the raw mines. Therefore, before conducting the investigation, we first check the supply chain raw materials, define the applicable classification of 3TG in our company's products, and screen out the suppliers who need to conduct conflict mineral investigations and implement a series of top-down investigations on the suppliers. Use and compare the standard survey tools defined by the Responsible Minerals Initiative (RMI) to get the latest lists.

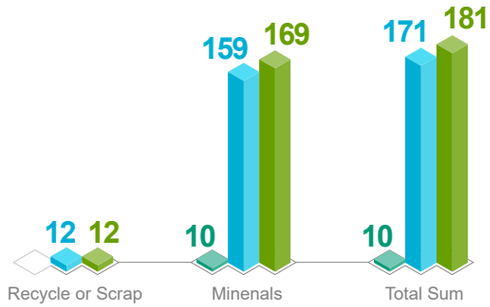
Due Diligence



Corresponding Product Categories for 3TG Minerals and Investigation Data

Nanya is a memory supplier, based on the due diligence of the supply chain and compared with the list of qualified smelters of the Responsible Minerals Initiative (RMI), A total of 58 suppliers responded to the source of 3TG metals, and 181 smelters were identified in the supply chain survey. At present, these 181 smelters are all approved by the Responsible Minerals Initiative (RMI), and 100% comply with the conflict-free metal policy.

3TG Metal Procurement Sourcing



- From DRC or neighboring countries
- Not from DRC or neighboring countries
- 3TG smelter complies with the conflict-free metal policy

Nanya will continue to follow up on the Responsible Minerals Assurance Process (RMAP) policy to take due diligence and reduce supply chain risks.

Responsible Minerals Assurance Process Policy

Continue to cooperate with suppliers / contractors and implement supply chain investigations to ensure the accuracy of the information.

Consolidate forces in the supply chain and request 3TG smelters to pass the verification procedures in the Responsible Minerals Assurance Process (RMAP) to verify the source of the minerals.

Audit suppliers to evaluate the supply chain's policy and practice of the execution of conflict minerals.

Future outlook

We have only one earth. With the progress of modernization and the rapid development of technologies, various natural resources are gradually depleted. Moreover, due to geographical factors, natural resources are managed and controlled by few countries or governments. During the mining process of natural resources, tremendous energy consumption, water resource pollution, land loss, and even illicit incidents, such as infringements of human rights, may occur. During a nearly ten-year period from 2009 to date, in response to requirements from clients and various social aspects, Nanya has participated in investigations of rare-earth materials, metalloids, and volatile organic compounds (VOCs), and actively introduced backup suppliers into our qualified supply chain. Moreover, we have ensured that all suppliers in the supply chain are very cooperative in replying to our requests as well as gradually conforming to regulations so as to meet clients' expectations and create a sustainable enterprise.

6 Green Manufacturing

P70. Climate Change Management and Strategy
P74. Eco-Friendly Products
P80. Greenhouse Gas Management
P.82 Energy Management
P84. Water Management
P85. Waste and Recycling
P89. Environmental Expenses and Benefits

A Practitioner of Green Technology

With the green concept that we have only one earth, Nanya insists on leaving the best environment to every future generation. We actively manage all impacts on the environment incurred during operational processes. On the aspects of energy, resources, emissions, and waste, we adopt higher standards than regulations to avoid or reduce risks of the impacts, setting goals to review execution results of sustainability performance in order to fulfill our responsibilities for cleaner production and safeguard the natural environment. As climate change has become one of the most significant global risks, we implemented risk identification, assessment and management in accordance with the framework of the Task Force on Climate-related Financial Disclosures (TCFD) Recommendations to enhance our operational resilience under the risk of climate change.

45.6%

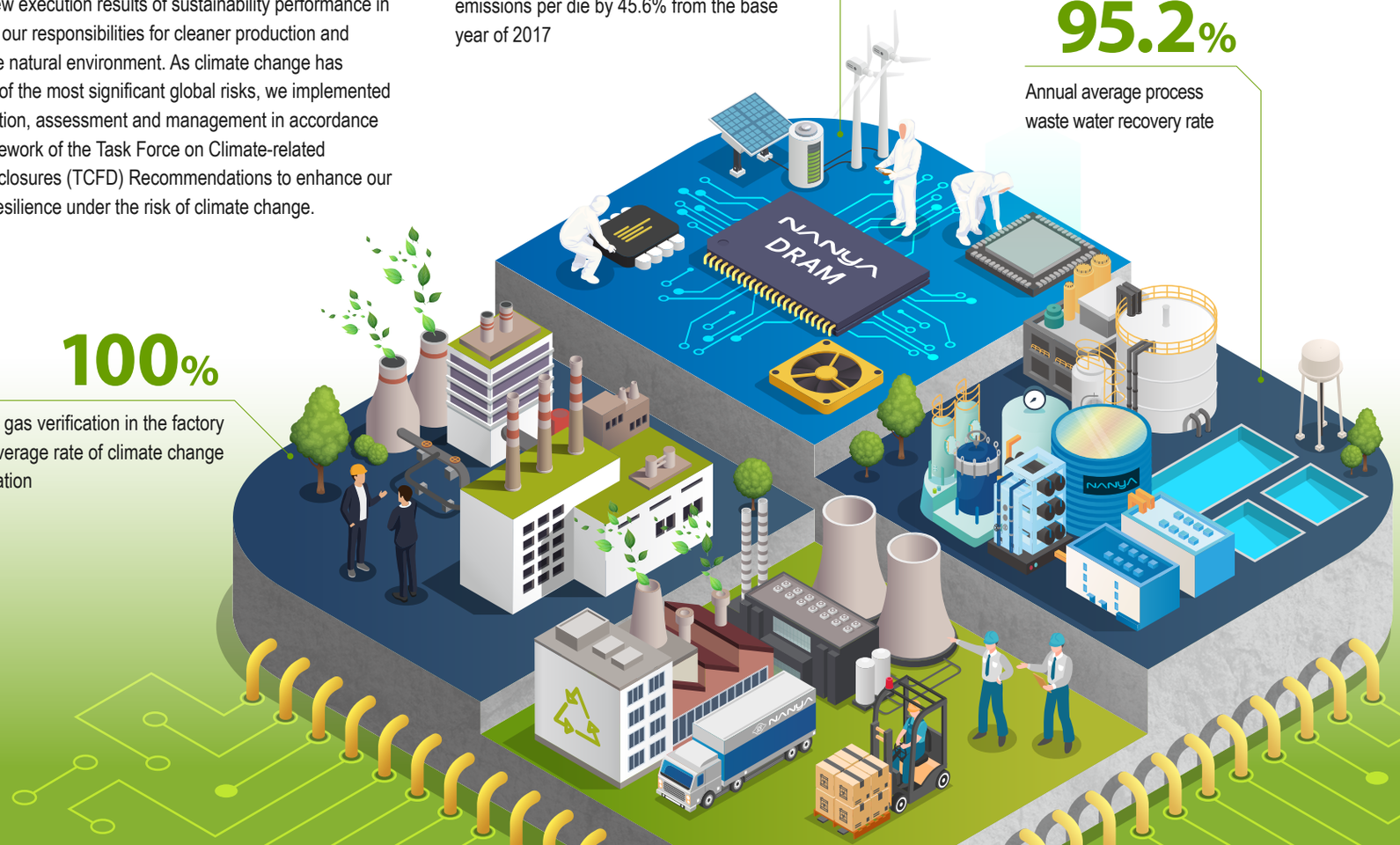
Reduce volatile organic compounds (VOCs) emissions per die by 45.6% from the base year of 2017

95.2%

Annual average process waste water recovery rate

100%

Greenhouse gas verification in the factory area and coverage rate of climate change risk identification



Strategy and Performance

Eco-friendly products

Technology improvements: Research and develop advanced and highly efficient products to assist consumers in lowering energy consumption and reducing carbon emissions during the usage of products

Consider product life cycle: Improve the environmental friendliness of products on the environment

Hazardous substance management: Continue to promote replacement plans for hazardous substances in the production process

2021 Goals	2020 Goals	2020 Performance
Ratio of 20nm and other advanced processes account for 84% and above	Ratio of 20nm and other advanced processes accounted for 70% and above	**83.6%**
Complete product life cycle inventory on 100 percent of products	Completed life cycle inventory on 100 percent of products	**100%**
100 percent of products conform to hazardous substance free regulations and customers' specifications	100 percent of products met hazardous substance free standards	**100%**
100 percent of materials contain zero perfluorooctanoic acid (PFOA) or related substances	100 percent of materials contained zero perfluorooctanoic acid (PFOA) or related substances	**100%**

Greenhouse Gas Management

Energy conservation and carbon emissions reduction: Set short, medium, and long-term goals and actively implement related management measures.

Low-carbon manufacturing: Commit to improvement in production technologies and reduce greenhouse gas emissions in the production process.

2021 Goals	2020 Goals	2020 Performance
Reduce greenhouse gas emissions per die by 25% from 2017	Reduced greenhouse gas emissions per die by 15% from 2017	Reduced by **31%**
Reduction rate of perfluorocarbons (PFCs) emissions during processes reaches 90%	Reduction rate of perfluorocarbons (PFCs) emissions during processes reaches 90%	Reduction rate reached **90%**
Reduce perfluorocarbons emissions per die by 25% from 2015	Reduced perfluorocarbons emissions per die by 20% from 2015	Reduced by **25.3%**

Energy Management

Implementation of energy conservation measures: Implement ISO 50001 Energy Management System for systematic management and improve the efficiency of energy usage.

Innovative applications: Use external exchanges or training to obtain the latest energy conservation technology or energy-saving methodology.

2021 Goals	2020 Goals	2020 Performance
Cumulative energy saved with energy conservation measures from 2017 to 2021 reaches 58,300 MWh ($2.1x10^8$ MJ) and above.	Cumulative energy saved with new energy conservation measures from 2017 to 2020 totaled 50,000 MWh ($1.8x10^8$ MJ).	Cumulative energy saved from 2017 to 2020 totaled 51,265 MWh ($1.85x10^8$ MJ).
Annual renewable energy use reaches 1,260 MWh ($4.54x10^6$ MJ)	Annual renewable energy use reached 1,200 MWh ($4.32x10^6$ MJ)	Actual use was 362 MWh ($1.3x10^6$ MJ) (owing to limited supply in market in 2020)

Water Management

Response to risks: Establish backup water sources and water storage tanks and use emergency response organization between company plants to coordinate water usage.

Wastewater recycling and reuse: Establish wastewater collection processing and adopt different multiple recovery and reuse to improve the water recovery rate.

Water usage reduction: Conserve water through daily management.

2021 Goals	2020 Goals	2020 Performance
Annual average process wastewater recovery rate: More than 95%	Annual average process wastewater recovery rate: 97%	Annual average process wastewater recovery rate: 95.2% (Improvement in effluents projects led to decrease in the amount of waste water recycling.)
Other losses in production caused by restricted water supply: 0 wafer (slice)	Other losses in production caused by restricted water supply: 0 wafer (slice)	Other losses in production caused by restricted water supply: 0 wafer (slice)

Waste and Recycling

Circular economy: Increase waste recycling and reuse rate to use resources effectively.

Source reduction: Continue to promote waste reduction and increase waste recycling rate.

2021 Goals	2020 Goals	2020 Performance
0 cases in violation of environmental laws and regulations	0 cases in violation of environmental laws and regulations	**0** cases
Rate of auditing and coaching waste disposal contractors on-site > 80%	Rate of auditing and coaching waste disposal contractors on-site > 60%	**90.32%**
Reduce VOC emissions per die by 40% from the base year of 2017	Reduced VOC emissions per die by 15% from the base year of 2017	Reduced by **45.6%**

Exceeded | Achieved | Partially achieved

CLIMATE CHANGE MANAGEMENT AND STRATEGY

Climate change caused by human beings has led to global warming. Therefore, Nanya may frequently encounter physical disasters, including extreme rainfall, high and low temperatures, flooding, and droughts. Meanwhile, we may be faced with changing risks such as stricter regulatory requirements, market pressure, bottlenecks in low-carbon technology, or reputation. Faced with climate risks, we have to plan and design all new plants based on green-building principles to strengthen the climate resilience of the plants, use the exhaust gases from perfluorocarbons (PFCs) process machinery, and install high-temperature waste gas treatment equipment which achieves at least 90% removal efficiency rate to reduce Greenhouse emission(GHG) emissions. Moreover, we have to conduct extreme climate scenario analyses of locations where our manufacturing sites stand, and take necessary action. The action includes installing Dynamic Uninterruptible Power Supply (DUPS) systems to avoid risks of disruptions to wafer manufacturing caused by power blackout due to blizzards, and building detention basins to mitigate the impact of torrential downpours.

Nanya proactively responded to the trend of international carbon management. In 2018, Nanya implemented the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) formulated by the international Financial Stability Board (FSB), and publicly sign support for TCFD in 2021. Nanya developed strategies and actions in response to climate change on aspects of governance, strategy, risk management, and metrics and targets in hopes of reducing the impact of climate risks.

Governance

Management Strategies and Actions

- The Corporate Sustainability Committee supervised by the board of directors is the main competent authority, and is chaired by the President.
- Establish the Energy Conservation Committee, and convene quarterly meetings of the Corporate Sustainability Committee

2020 Operation Status

- The Corporate Sustainability Committee convened quarterly, discussing corporate sustainability topics such as corporate governance, society, environmental protection, and energy conservation. Responses to climate change was also one of the discussion topics. The discussion topics were listed as resolutions or action items that required follow-ups and improvements. For example, gradually purchasing renewable energy in response to requirements of energy regulations and customers was a resolution.
- Energy conservation management programs were developed quarterly, and operation status of each program was reviewed. A total of 25 energy conservation programs were completed, and an estimate of 24,117 MWh was saved annually.

Strategy

Management Strategies and Actions

- Based on the TCFD framework, short, medium, and long-term climate-related risks and opportunities are periodically identified, and so are impacts of climate-related risks and opportunities on organizational operation, strategy, and financial plans.
- The resilience of organizational strategy is considered under different climate scenarios.

2020 Operation Status

- In accordance with the TCFD methods, short, medium, and long-term climate-related risks and opportunities were discussed and identified cross-departmentally. A total of 15 risks and 3 major opportunities were identified.
- We used the 2℃ global warming scenario of the UN Intergovernmental Panel on Climate Change (IPCC) to analyze climate risks during operational processes, and developed relevant mitigation measures that complied with the Adaptation Policy Framework for Climate Change. In addition, we formulated renewable energy purchasing strategies and goals for a five-year period to move towards the science-based targets (SBT) reduction goal.



Metrics and Targets

Management Strategies and Actions

- GHG management and goals of resource recycling and reuse are stipulated.
- Energy conservation programs based on the ISO 50001 are promoted.
- The scopes 1/2/3 of GHG inventory and verification are conducted annually to confirm sources of GHG for key project management.
- Product environmental footprint inventory is conducted on 100 percent of our products, and GHG reductions of the entire supply chain are promoted.
- We aim to participate in the international Carbon Disclosure Project (CDP), disclosing information on carbon emissions and communicating with stakeholders.

2020 Operation Status

- In 2020, we set a goal to reduce GHG emissions per unit of production by 15% from 2017, and the goal was achieved.
- A total of 25 energy conservation programs were completed, and an estimate of 24,117 MWh was saved annually.
- The inventory and verification of GHG emissions for 2019 were completed; the inventory and verification of GHG emissions for 2020 would be completed in May 2021.
- Product environmental footprint inventory was conducted on 100 percent of our products, and 7 internal energy conservation programs were promoted to relevant suppliers, who planned to take action to implement energy conservation measures in 2021.
- We received the ratings of A- in the CDP in 2018 and 2019, and acquired excellent result by receiving the rating of A List leadership level in 2020.

Risk Management

Management Strategies and Actions

- Impact levels and occurrence probability are used to assess the significance of related risks and opportunities brought by the climate change, and relevant response measures are set.
- Climate risk identification and assessment results are incorporated into the Enterprise Risk Management (ERM), and are periodically verified by senior management.

2020 Operation Status

- A total of 4 material risks and 3 major opportunities were identified. For example, the unit price of electricity might increase by 30% in 2025 so energy management programs were promoted.
- Four material risks were identified, including an increase in the unit price of electricity in 2025, replacement of current products with low-carbon emissions products, and the formulation and implementation of carbon pricing. Three financial impacts were estimated and reported to senior management for review in the annual meeting of the Finance Risk Management Committee.

Identification of Climate Change Risks and Opportunities

When conducting risk assessment of all our issues, we completely abide by the enterprise risk management standards. Based on the risk assessment standards, severity levels are linked with levels of financial impact. Financial impact is classified into 5 levels. When the financial impact amount of an issue exceeds NT$300 million, the issue is listed as a company-level risk or opportunity (with substantive financial impact). In response to such an issue, the Environmental Sustainability Working Group under the President's Office has to provide management measures for the highest management to make decisions before the President reports to the board of directors at a proper time. The Environmental Health and Safety (EHS) Department is responsible for the assessment of environmental and climate-related risks. Therefore, the division quarterly conducts risk/opportunity identification of direct and indirect issues caused by climate change, assesses material risk/opportunity items, and develops proper countermeasures.

Background data collection

- Background data is collected from news media outlets, online sources, or incidents in other countries or companies.
- The TCFD recommendations are adopted so when developing risk scenarios, we consider transition risks, including policy and legal, market, technology, and reputation, and chronic and acute physical risks.

Risk probability analysis

- Related business risks and threats are analyzed. Items analyzed are potential risks that might occur, links impacted in value chain (including direct operation, supply chain or customer), time when risks occur (current: 0-1 year, short-term 1-3 years, medium term 3-10 years, and long-term 10-30 years), and risk probability (almost certain, probable, likely, unlikely, and almost improbable).

Confirmation of control mechanisms and setting of regulatory indicators

- Verify existing management and control mechanisms
- Set feasible control indicators

Risk assessment

- Risk indicators based on the severity of consequences and probability are evaluated.
- Determine whether to implement improvement measures based on the ratings of the risk indicators or whether to maintain existing opportunities
- The ratings of the risk indicators are red, yellow, blue, and green. Red means improvement measures have to be implemented immediately (the risk indicators are 15 or higher); yellow means improvement measures may be implemented depending on situation; blue means the risks are acceptable; and green means no actions are required.

Analysis of financial impacts

- The most critical and important operation functions in the Company are analyzed. The functions are descriptions of potential financial impacts, amounts of financial impacts, levels of financial impacts (the classification of financial impacts is as follows: the 5th level/more than NT$300 million, the 4th level/NT$100-300 million, the 3rd level/NT$10-100 million, the 2nd level/less than NT$10 million, and the 1st level/no impact). The 5th level (>NT$300 million) is defined to have substantive financial impact.
- Analyze the impact of incidents on corporate functions
- Analyze the maximum permissible interruption time for failed functions or losses

Phase 1 evaluation

The evaluation is annually conducted by the EHS Department, and the materiality of an opportunity is decided based on levels of benefits and possibility of opportunities. If an opportunity is defined as material, the division shall proceed the next phase evaluation with related departments.

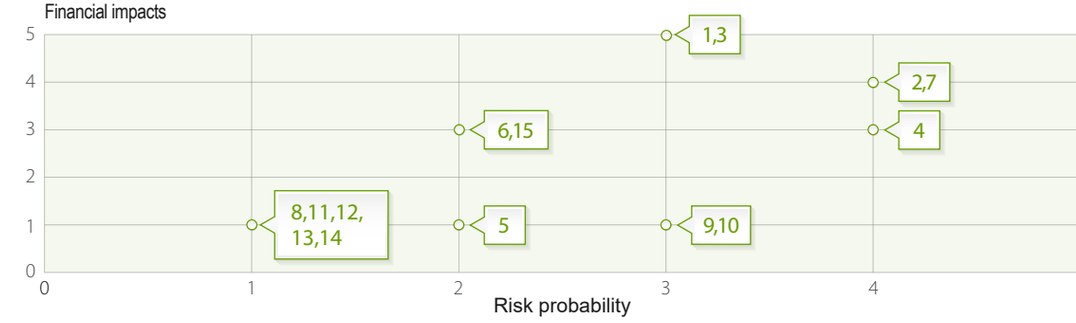
Phase 2 evaluation

The evaluation is conducted by the EHS Department and the Engineering Works Department, including strategy for opportunity realization, and cost of opportunity realization.

Phase 3 evaluation

A material opportunity is approved by supervisors at all management levels based on the amount of cost of opportunity realization. If a material opportunity is regarded as an expansion proposal that requires capital expenditures, it shall be reported in the form of an investment plan for management.

Risk probability of climate change issues vs. Financial impacts



Material risk issues

1. Clients' strong demand for low-carbon products
2. Enactment of caps on greenhouse gas emissions
3. Increase in the unit price of electricity in 2025
7. Unstable power supply caused by climate change

Opportunity-related issues

1. Promotion of the ISO 50001 Energy Management solutions
2. Engagement with suppliers on energy conservation and carbon emissions reduction
3. Development and expansion of low-carbon products and services

Other risk issues

4. Passage of the Renewable Energy Act
5. Unable to respond to clients' demand for the use of green energy
6. Decrease in order quantities placed by clients due to our poor performance of the CDP carbon management
8. Climate abnormality-droughts
9. Climate abnormality-torrential downpours or typhoons
10. Climate abnormality-lightning accidents
11. Frequency of occurrence and intensity of extreme weather incidents
12. Increase in cost of raw materials owing to climate abnormality
13. Rise in sea levels
14. Rise in average temperatures
15. Industry stigmatization

Scenario Analysis

Physical Scenarios

All production lines within the geographical boundaries of our company's geographical locations, Linkou District in New Taipei City, Taiwan, are used for scenario analysis. In accordance with the Representative Concentration Pathways (RCP), 4 pathways (RCP2.6, RCP4.5, RCP6.0, and RCP8.5) were simulated to analyze the scenarios that the factory area might be faced with during periods of 2021-2040 and 2041-2060. Since the simulation periods are concordant with the target year 2050 set by the Paris Agreement, we used the Taiwan Climate Change Projection and Information Platform (TCCIP), a national open platform, to simulate on-line the most severe situations that temperature and rainfall might change under the RCP's 4 scenarios. Under the scenario of RCP8.5 in the period of 2041-2060, the temperature would rise a maximum of 2.74℃, and the rainfall would increase by a maximum of 54.1%; under the scenario of RCP4.5, the rainfall would decrease by a maximum of 42.1%. The aforementioned scenarios were included in the risk assessment of climate change.

The scenario of RCP8.5 would have the most sever impact on us. Since the temperature would rise 2.74℃, our power consumption of air conditioning equipment would increase by 8%, resulting in an increase of NT$30 million annually in energy expenses. Due to the scenario, we re-evaluated the use of air conditioning, aiming to reduce the Scope 2 emissions and lower the expenses of power consumption. Through the evaluation mechanisms of the ISO 50001 Energy Management, we identified that air conditioning systems accounted for a major portion of our energy use. Therefore, we cooperated with an external technology company in 2019 to develop a proposal to use chilled-water systems controlled by AI to optimize the operation of air conditioning systems. The optimization of each component in chilled-water systems due to AI smart control created benefits of energy conservation. The annual power saving could reach 1,830 MWh, reducing NT$5.4 million in energy costs.

Transition Scenarios

Nanya used Taiwan's Nationally Determined Contributions (NDCs), in response to the Paris Agreement, for scenario analysis to project impacts on power cost in the future. The medium-term target in Taiwan's NDCs indicates that in 2030, Taiwan will reduce GHG emissions by 20% from 2005. Based on the past meteorological data collected and the GHG emissions data registered by industries and the public sector, the government used the Business As Usual (BAU) to simulate scenarios to the end of 2030, and found that the total GHG emissions would increase to 428 million metric tons. However, the target amount of GHG emissions in the NDC is 215 million metric tons in 2030. Moreover, according to the national energy policy, nuclear power will not be in use for power supply in 2030. Taiwan Power Company (TPC) has not yet made public its projections of electricity prices in 2030 or other related plans so we projected electricity prices by ourselves based on the unit prices of electricity from various energy and the amount of electricity sales. The percentage of renewable energy in Taiwan would increase from 4.9% in 2018 to 40% in 2030, which is planned by the national energy policy. As the cost of renewable energy in Taiwan is higher, TPC might raise the unit price of electricity from NT$2.60/kWh in 2018 to NT$3.88/kWh. The cost of purchased electricity would rise by 50%.

In regard to the projected increase in purchased electricity, based on the purchased amount of 713 million kWh in 2020, we projected that the energy costs in 2030 might increase NT$913 million, accounting for 1.5% of revenues. As there may be major changes to Taiwan's Electricity Act, and many uncertain factors attaches to the national energy policy so we assessed the probability of occurrence of the risk less than 50%. Owing to the scenario analysis result, we considered reducing the percentage of purchased electricity, raising targets of energy conservation, and whether it would be possible to install self-use renewable energy power generation equipment. Meanwhile, we implemented the ISO 50001 Energy Management programs. Currently, we have changed voluntary reduction goals to be in line with those of the NDC, which is reducing GHG emissions by 10% from 2018 in 2030 is our goal. We also set schedules and made plans for purchasing renewable energy certificates.

Financial Impact Analysis of Climate Change Risks and Finance

In regard to verified risks and opportunities, countermeasures against risks include: Setting standards for implementation, putting them in business plans or annual KPI of departments, empowering internal competent departments to implement prevention and improvement measures, and using Action Item Review (AI Review) for follow-ups and management.

Engagement with suppliers on energy conservation and carbon emissions reduction

Potential Financial Impacts

- Enhance the value of product greening
- Stimulate consumers' purchasing willingness to increase consumption
- Improve consumers' awareness of products and purchasing willingness to increase consumption

2020 Countermeasures

- We shared our energy conservation experiences and technologies of recent years with suppliers whose factories consumed large amount of power. We received positive responses, and many supplier energy conservation projects would be launched in 2021.

Promotion of the ISO 50001 Energy Management solutions

Potential Financial Impacts

- Save electricity expenses

2020 Countermeasures

- **A total of 25 energy conservation programs were completed, saving 24,117 MWh/year**

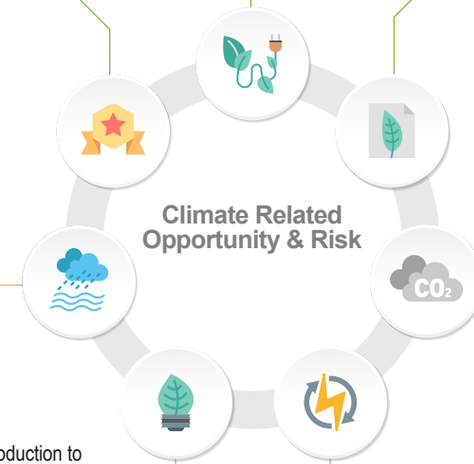
Development and expansion of low-carbon products and services

Potential Financial Impacts

- Enhance product competitiveness and satisfy the need of markets
- Increase revenue

2020 Countermeasures

- Invested in resources of R&D and production, and developed or expanded the percentage of low power consumption products



Unstable power and water supply caused by climate change

Potential Financial Impacts

- mpacts on production and increase in operating costs

2020 Countermeasures

- **Enhanced process water recovery rate to 95.2%**
- Continued to purchase Dynamic Uninterruptible Power Supply (DUPS) equipment based on the need of production to lower the risk of power blackout or sudden drops in voltage of key machinery

Enactment of restrictions on GHG emissions

Potential Financial Impacts

- Increase in operating costs, and limiting expansion of production capacity

2020 Countermeasures

- Reduction rate of PFCs emissions during processes reached a minimum of 90%
- A total of 25 energy management programs were promoted and completed, reducing GHG emissions of 12,775 ton CO_2e.
- Purchased 362,000 kWh of Taiwan Renewable Energy Certificates (T-REC)

Clients' strong demand for low-carbon products

Potential Financial Impacts

- Low-carbon technology fails to meet consumers' requirements, leading to decrease in both order quantities and revenue

2020 Countermeasures

- Adjusted the percentages of manufactured products, and the percentage of low-carbon products manufactured was higher than 2019

Increase in the unit price of electricity by 30% in 2025

Potential Financial Impacts

- Increase in the cost of purchased electricity by 30%, leading to rise in manufacturing cost

2020 Countermeasures

- **A total of 25 energy conservation programs were promoted and completed, saving24,117 MWh/year**

Opportunity Risk

ECO-FRIENDLY PRODUCTS

Assimilate Product Life Cycle Thinking (LCT)

Nanya and clients both aim to protect a green planet. We implemented the Life Cycle Thinking (LCT) and the Design for Environment. For a long time, we have made an effort to research and develop advanced and highly efficient eco-friendly products. We not only have helped clients develop products with low energy consumption design, but also have engaged in hazardous management and conflict minerals management through our influence on supply chains. In order to continue improving the environmental friendliness level of products, we have formulated environmental health and safety performance indicators, promoting various waste reduction and resource reuse, GHG reduction and other projects. In coordination with the Green Product Promotion Committee (GPPC) on green product management, right from the start of product development, we consider seven aspects of environmental impacts, including procurement, manufacturing, transportation, product use, disposal, and recycling in order to identify improvement opportunities to increase environmental benefits.

Nanya Green Design Matrix

	Procurement	Manufacturing	Transportation	Product use	Disposal and recycling
Energy efficiency	●	●	●	●	
Greenhouse gases	●	●	●	●	
Material reduction	●	●	●		
Conflict minerals	●				
Hazardous substances	●	●			●
Waste reduction		●			●
Water resources reduction		●			

Environmental external benefits

When new products are developing, impacts on environment of complete life cycles are considered. To electronic products, the energy consumption in use is one of the most significant indicators in environmental impacts. Nanya actively researches and develops low energy consumption products, and assist clients lower demand for energy during their usage of electronic products so that GHG emissions can be reduced.

Over 658.47 million kWh of Electricity Saved

- Product
  low power DRAM and 20nm consumer DRAM
- Scope
  total sales volume of 2020
- Calculation
  Based on the quantity of products sold in one year, and compared the energy consumption of the aforementioned DRAM products with that of the previous generation
- Benefits
  electricity conservation and carbon reduction; electricity saved equivalent to the annual electricity consumption of 168,322 households[Note1]; and reduced GHG emissions by 335,164 ton-CO_2e, equivalent to 861 times carbon absorption of Daan Forest Park for one year.[Note2]

Note 1: Based on TPC's news release on 2020/6/1: An estimate of 326 kWh per month consumed by a household in 2019.
Note 2: Based on the Bureau of Energy: Using CO_2 absorption of Daan Forest Park at 389 tons per year for calculation.

Life Cycle Assessment (LCA)

In response to the EU's new wave of requirements for environmental issues, we used the Simapro, a life cycle assessment tool, to conduct life cycle assessment on 100 percent of our products, calculated environmental footprints of products, and identified directions for future improvements. In the meantime, the company would use the product environmental data and coefficients accumulated through analysis processes to build a decision support system for green product development. The company gave multiple considerations on the requirements, and conducted quantitative life cycle assessment on products in each life cycle stage. Pursuant to the contents of quantifying and communicating requirements and guidelines for the Product Environmental Footprint of the life impact assessment under the ISO 14040s series, the company participated in product environmental footprint declarations, and referred to the regulations of ISO 14064-1 GHG Inventory and ISO/TS 14067 Carbon Footprint International Standard to execute the declarations. The analyzed products were various dynamic memories (DRAM) we manufactured last year, and boundaries of the life cycle system included raw materials manufacturing, transportation, wafer manufacturing, packet packaging, module packaging, product use, and recycling/disuse. Because the company's main production was memory wafer manufacturing, other system boundaries were outsourced. Therefore, the main system boundary was wafer manufacturing. Among 14 items of environmental footprint sources, GHG emissions of three main resources listed in the results of the 2019 product life cycle assessment were reduced.

Three main hotspots of greenhouse effect listed in the results of the 2019 product LCA results

Electricity use

Percentage of product carbon footprint **83.62%**

Improvement plan

- Promote the ISO 50001 Energy Management solutions
- Implement the plan on purchasing renewable energy

2020 Operation result

- Completed 25 energy conservation programs, saved 24,117 MWh/year, and lowered 12,775 ton/year CO_2 emissions
- Purchased 362 kWh of Taiwan Renewable Energy Certificates (T-REC)

Directions of improvements

- Continue to promote energy management solutions
- Continue to implement the plan on purchasing renewable energy

12-inch production wafers

Percentage of product carbon footprint **3.98%**

Improvement plan

- Key suppliers have promoted energy management programs at factories.

2020 Operation result

- Completed 15 energy conservation programs, saved 1,757 MWh/year, and lowered 2,780 ton/year CO_2 emissions

Directions of improvements

- Save electricity in wafer manufacturing processes
- Conserve energy in public equipment.(installation of highly efficient energy-saving equipment)

Calcium chloride used in waste water treatment

Percentage of product carbon footprint **1.26%**

Improvement plan

- Lower the usage amount of calcium chloride

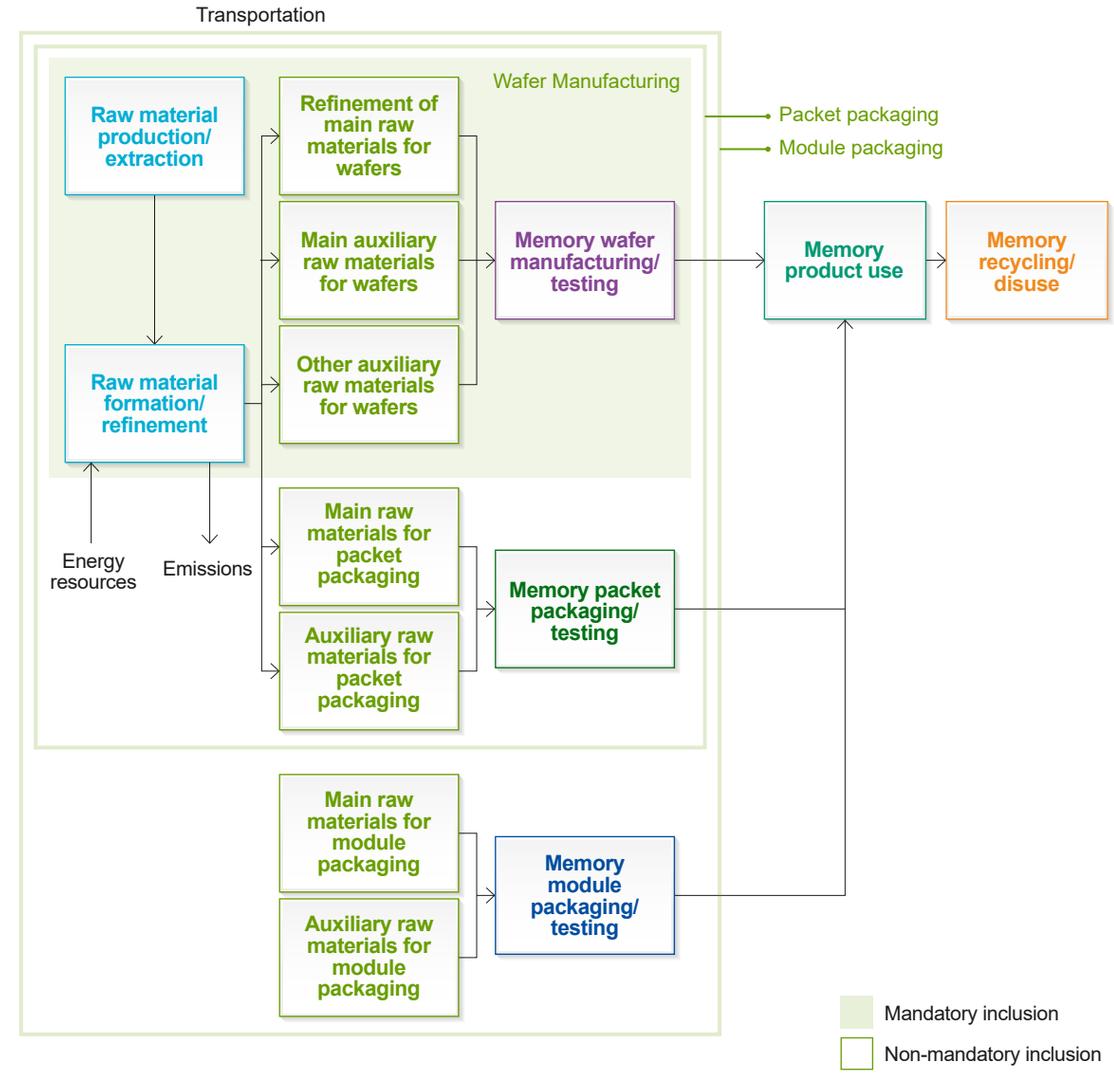
2020 Operation result

- We installed a resin tower regeneration acid waste water collecting system. The system started operating in December 2019. The total amount of calcium chloride used in waste water treatment reduced by 20.3% from 2019. The percentage of greenhouse effect is 1.26% of in 2019, which is lower than 1.92% in 2018.

Directions of improvements

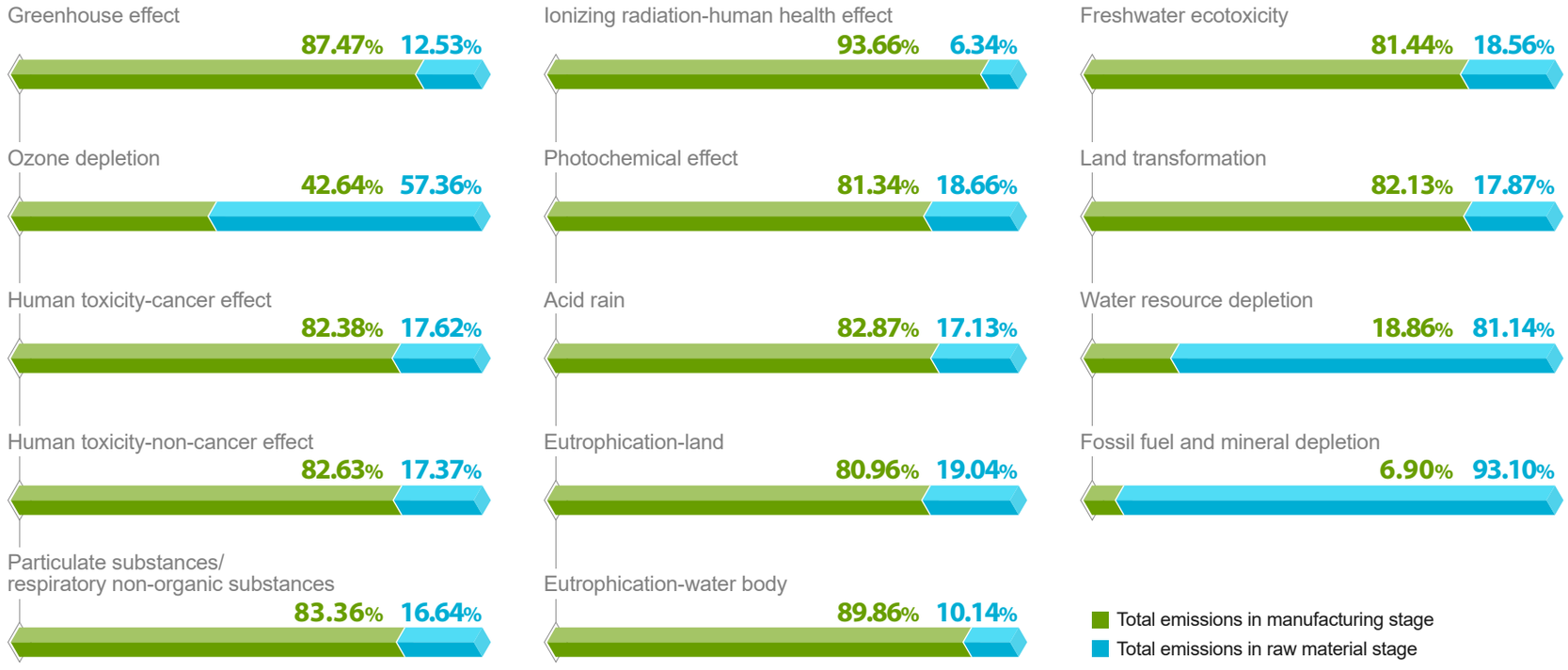
- Through annual assessments on product environmental impacts to understand the percentage pf environmental impact after the decrease in the usage amount of calcium chloride.

Environmental footprint system boundaries of key products



Energy-saving Product Design

Ratio chart of product's 14 items of environmental footprints in stages of raw materials and manufacturing process

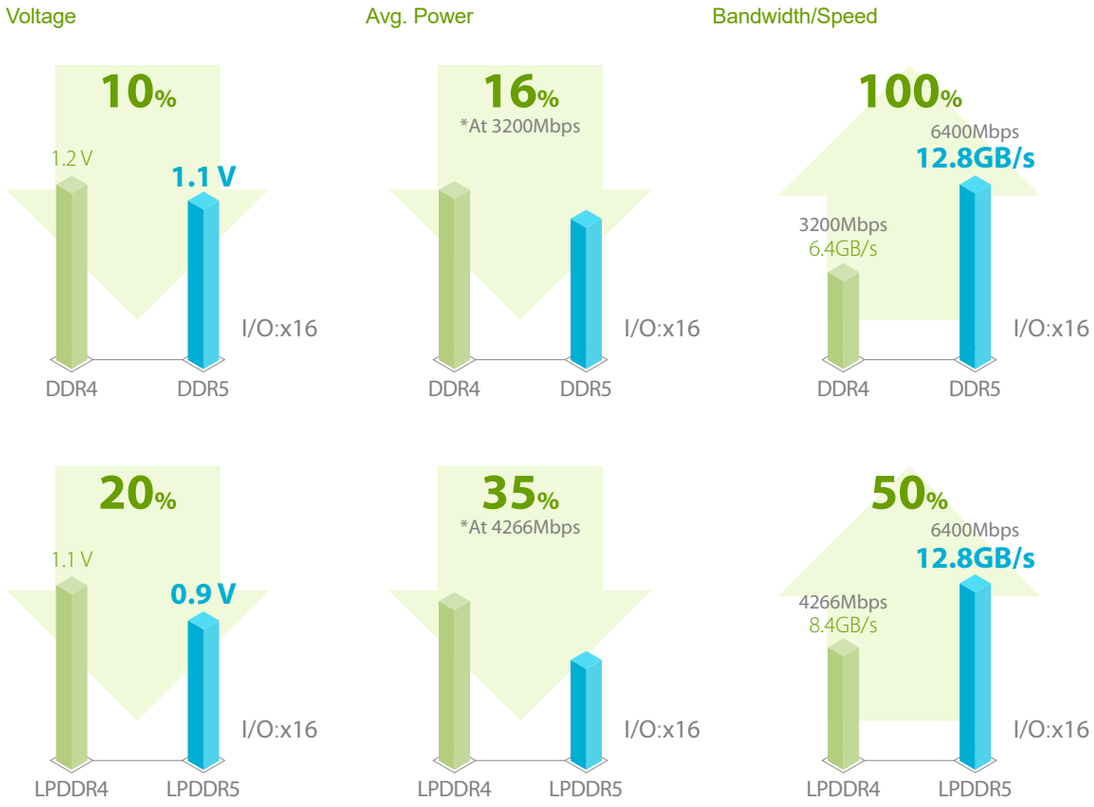


Product life cycle inventory for 2020 was completed. We used staple product SA30 memory to show the ratio of 14 items of environmental footprints in stages of raw materials and manufacturing process. Manufacturing process at factories accounted for about 87.5% of greenhouse effect, and procurement of raw materials accounted for around 12.5% of greenhouse effect.

Nanya has been dedicated to the research, development, manufacturing, and sales of DRAM (Dynamic Random Access Memory), becoming the fourth largest DRAM company worldwide. Moving towards the smart era, DRAM is a key component to be used in the applications of smart city, smart home, smart office, unmanned vehicles, internet of things (IoT), cloud, artificial intelligence (AI). With continuous promotion of independently developing process technology, Nanya started researching and developing new generation process technology of 1A-nm and 1B-nm in 2017, and planned to develop products with high integration, faster speed, and lower energy consumption, such as DDR4/DDR5. Different from the past methods of cooperating with other DRAM companies on technology development or technology licensing, Nanya itself independently developed the process technology of 1A-nm and 1B-nm. The 1A-nm technology is expected to complete technology and product verification in the third quarter of 2021. Once the verification is successful, the technology will be the first 10-nm DDR5 DRAM technology developed by Taiwan, proving that Taiwan's capability to develop DRAM technology is in line with global competitors. Meanwhile, we have constantly expanded our existing product lines into diverse applications, providing clients with whole product solutions to become the become the best memory partner in the smart era.

Driven by the demand for 5G communications, cloud, AI, and smartphone memory upgrade, DDR5 and LPDDR5 (low power double data rate memory) became the main supply of new generation memory. Compared with current mainstream memory, new generation memory possesses faster transmission efficiency while saving energy due to lower operating voltages. When comparing DDR4 with DDR5, average power consumption of DDR5 is reduced by around 16%. However, the bandwidth is increased by two times, leading to higher data transmission rates.

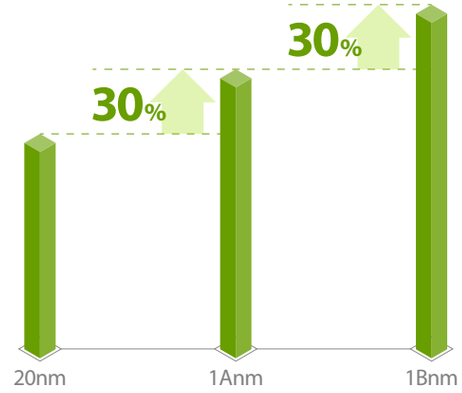
DDR5&LPDDR5 provided specifications that save more electricity with high bandwidth/high speed



Nanya has been dedicated to developing advanced processes. We have been independently developing 1A process technology since 2017. The trial run was carried out in 2020. The 1A process technology will substantially shrink chip sizes, increasing production capacity of single wafer by 30%. Therefore, under the situation of same production capacity, factories can achieve the goals of energy conservation and carbon reduction.

Nanya RAM Technology Strategy

To enable 30% productivity gain per technology node



Hazardous Substance Free Products

In 2005, Nanya established the Green Product Promotion Committee (GPPC) to promote hazardous substance free (HSF) management. During the product manufacturing process, we continued to prevent pollution, save energy, reduce wastes, and avoid hazardous substances. Through concatenating suppliers of raw materials, process materials, rear-section packaging outsourcing and packaging materials, Nanya built an effective green product supply chain with upstream and downstream suppliers in the supply chain so as to conform to the laws and regulations of current global environmental protection trend. Through the GPPC, we referred to laws and regulations of the EU and countries in other regions and the hazardous substance management specifications of major international customers to stipulate the General Rules of Environmental Management Substances for Components and Materials, continuing to effectively control and manage the sources of raw materials and related materials in order to achieve standards of green products and mitigate impacts on natural environment during manufacturing process of products. Under the instruction of the General Rules of Environmental Management Substances for Components and Materials, all of our products needed to conform to international regulations, such as RoHS, REACH, Packaging Instructions, and WEEE, as well as clients' requirements. Moreover, we do not use chemicals concerned by the IEC 62474 so products non-compliant with the IEC 62474 Material Declaration account for 0% of revenue. In addition, through the establishment of HSF management system of materials, we ensured that the wafers produced, rear-end IC packaging, and DIMM module products would conform to the international regulations and related specifications of clients towards HSF management.

Established HSF management system

2009 → 2010 → 2011 → 2017 → 2019 → 2020

Conformed to RoHS1.0

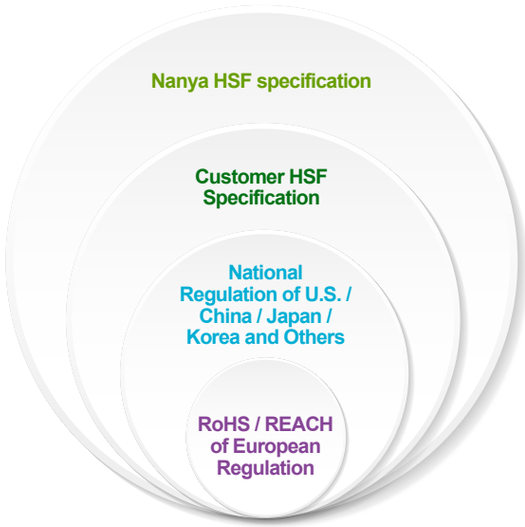
- Comply with Halogen-Free requirement
- Prohibited PFOS entirely in process substances
- Restricted use of the substances in the Annex XVII to REACH
- Restricted RoHS 6 substances
  - Prohibited azo compounds / asbestos / radioactive substances / ozone depleting substances
  - Controlled phosphorus/arsenic
- Restricted use of REACH substances of very high concern (SVHC)
  - 2008.10, V1
  - 2009.09, V2
  - 2010.03, V3
  - 2010.12, V4

Conformed to RoHS2.0

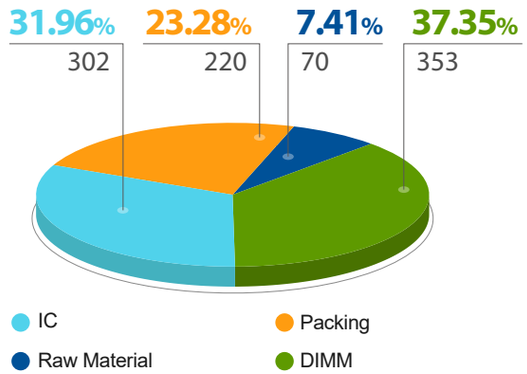
- Restricted RoHS 6 substances
- Managed 4 specific phthalates (BBP,DBP,DEHP,DIBP)
- Process substances-prohibited slurry containing PFOA in 2017
- Restricted use of REACH substances of very high concern (SVHC)
  - 2011.06, V5
  - 2011.12, V6
  - 2012.06, V7
  - 2012.12, V8
  - 2013.06, V9
  - 2013.12, V10
  - 2014.06, V11
  - 2014.07, V12
  - 2015.03, V13
  - 2015.12, V14
  - 2016.06, V15
  - 2017.01, V16
  - 2017.07, V17

Conformed to RoHS3.0

- Restricted RoHS 6 substances
- Restricted 4 specific phthalates (BBP,DBP,DEHP,DIBP)
- Process substances-switched to use PFOA-free photoresist in 2018
- Process substances-all photoresist delivered to factories in 2020 was PFOA-free
- Restricted use of REACH substances of very high concern (SVHC)
  - 2018.01, V18
  - 2018.07, V19
  - 2019.01, V20
  - 2019.07, V21
  - 2020.01, V22
  - 2020.06, V23

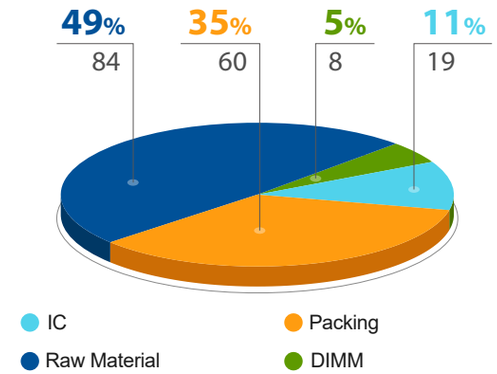


Y2020 TEST REPORTS



RoHS report items of 6 contractors and 49 raw material suppliers were reviewed while 945 RoHS reports were reviewed. The completion rate was: 100%.

Y2020 HS SURVEYS

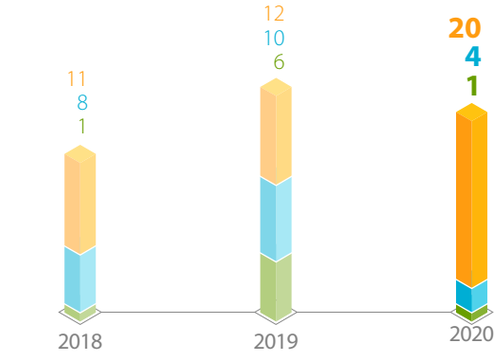


Two versions of REACH SVHC item survey (REACH SVHC V.22&V.23) were completed while 149 hazardous substances survey reports were reviewed. The completion rate was: 100%. Two versions of HS survey (HS Survey V35&V37) required by clients were completed while 22 hazardous substances survey reports were reviewed. The completion rate was 100%. Survey reports totaled 171.

Raw Materials Usage Reduction

In addition to recycling raw materials for reuse, the company reviewed the rationality and appropriateness of raw material use as well. Moreover, through streamlining the manufacturing process, the company could reduce the use of raw materials. The responsible organization of the company set implementation goals for raw material reductions every year, and periodically reviewed the performance of reductions in the entire company's raw materials. Accumulative 25 entries in improvement proposals regarding the consumption of raw materials were completed in 2020, including formula development of new processes, extensions to use cycle, and reductions of process consumption. Among the improvement proposals of 2020, the DFS (Dry-Free Suck back) function in the photolithography area adjusted the cleaning formula for photoresist nozzles so a traditional one-hour cleaning cycle gradually extended to 24 hours. Therefore, 100 liters of photoresist were saved each month (reduced by 1.5%) while 4,700 liters of cleaning solvents were saved (reduced by 3.7%), making the improvement proposal the one with the maximum benefits for raw materials usage reduction.

Improved performance of raw material consumption



Use and output of raw materials

Input			
Production raw materials	Consumption	Renewable	Non-renewable
Raw wafers (thousand slices-12-inch)	831		Y
Process chemicals (metric ton)	53,593		Y
Process gases (million m^3)	6,260		Y
Electricity (million kWh)	713		Y
Clean water (1,000 m^3)	3,341	Y	
Packaging materials for wafers (metric ton)	118	27%	73%



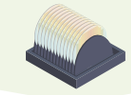
Nanya FAB

Output	
Product	Output volume
Raw wafers (thousand slices-12-inch)	826
Waste gases	Drainage
GHG (Metric ton-CO_2e)	469,744
Volatile organic compounds (metric ton)	15.85
Sulfide (metric ton)	1.92
Nitrogen oxides (metric ton)	10.05
Wastewater	Drainage
Volume of wastewater (1,000 m^3)	2,705
Waste	Output
General industrial wastes (metric ton)	6,090
Hazardous industrial wastes (metric ton)	17,323

Ratio of using recycled materials as production materials



During the production process, dummy wafers were required to monitor process conditions, and used dummy wafers were reused through re-fabrication. Each dummy wafer was expected to be reused for around 8-11 times (differences exist owing to various processes). Therefore, the cost of purchasing brand-new dummy wafers was saved while plenty of waste output was reduced.



Since 2017, we have used suppliers' supplementing yields as major indicators for the allocation percentage of orders of the next year. In addition to considering suppliers' quotations, wafers of high supplementing yields may enhance the quantities of supplementing wafers, and may further improve the percentage of wafer start capacity using reclaim wafer.



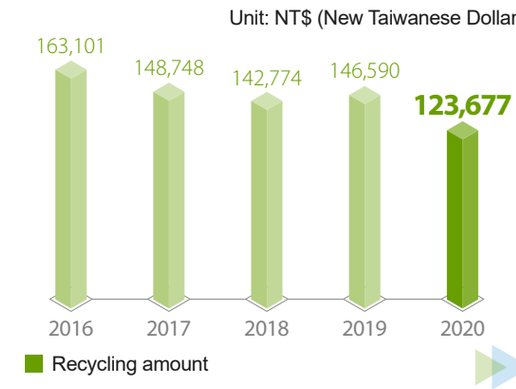
We periodically reviewed defective items with suppliers, and asked suppliers improve their process conditions and modify specifications. In 2020, suppliers adjusted process methods so the discard condition that etching numbers of wafers were incorrectly read after step rings were polished was improved.Therefore, the average value of supplementing yields was increased from 80% to 85%.. Due to stable supplementing yields, the reused rate was increased from 72% in 2017 to 78% in 2020.

Product testing and reclamation of delivery packaging materials

Packaging materials for product shipments to outsourced testing facilities or packaging facilities, such as cartons, outer cartons, cushioning materials, and wafer cassettes, were all reclaimed as many as possible to be reused within the company. Moreover, wafer cassettes used by raw material for wafer were also recycled and reused in product shipments, and the reuse rate of these cassettes were nearly 100%. The aforementioned practices reduced the consumption of product packaging materials and waste output to minimum levels. This approach could reduce the consumption of approximate 26,000 pieces of brand-new 12-inch wafer cassettes every year, equivalent to reducing the consumption of 118 tons of plastics.

Reduction in product packaging materials

In response to the action of recycling and reductions, the company's own warehouses of finished products started with recyclable packaging materials. Reusable packaging materials used in supplementing finished products were recycled to be used in product exchanges for customer complaints, product storage, and commissioned work to reduce the times of application and purchase, further achieving the action of recycling for reuse and reductions of packaging materials. In addition, the cost of packaging materials used could be reduced. Although the saved amount was small, it made a difference to overall environmental maintenance and resource recycling.



GREENHOUSE GAS MANAGEMENT

Greenhouse Gas Inventory and Reduction

The main sources of GHG emissions from semiconductor fabrication plants are electricity and perfluorocarbons (PFCs). Among them, electricity is essential for operation and production, enabling all machinery and equipment at plants to normally operate. PFCs are perfluorocarbons and other compounds of the same kind used in production process, categorized into the GHG with high global warming potential.

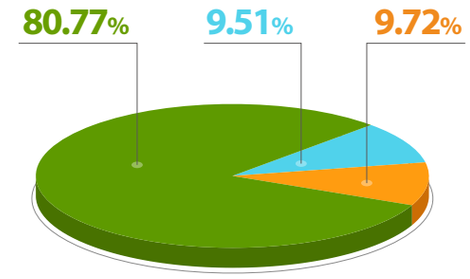
▸ Greenhouse Gas Inventory

We refer to the ISO 14064-1, four regulations formulated by the Environmental Protection Administration under Taiwan's Executive Yuan, i.e., the GHG Reduction and Management Act, the Regulations Governing GHG Emissions Inventory and Registration, the GHG Verification Guidelines, and the GHG Registration Guidelines, and the requirements of the WBCSD/WRI GHG Protocol, using the method of 100% operational control to set organizational boundaries.

To improve the integrity of GHG inventory in our value chain, we added the verification of scope 3 emissions in 2018. The inventory scopes of Nanya were all operating locations in Taiwan. The main sources of GHG emissions were purchased electricity and steam (accounting for about 80.7%) and perfluorocarbons (PFCs) used in processes (accounting for about 9.5%). GHG emissions in 2020 totaled 469,744 metric tons CO_2e. Our scope 1 emissions totaled 90,327 metric tons CO_2e, and we did not have any carbon dioxide emissions from biomass fuel. Our scope 2 emissions totaled 379,417 metric tons CO_2e.

GHG emission factors were based on the GHG emission factory management table declared on the national registration platform of Taiwan's Environmental Protection Administration, the IPCC 2006, emission factors released by Taiwan's Bureau of Energy, Ministry of Economic Affairs, and emission factors made public by the company-owned steam plant of Nan Ya Plastics Corporation's utility plant. GWP values were referred to the IPCC Fourth Assessment Report. Compared with the base year of 2017, the GHG emissions in 2020 increased by approximately 24.8%, and the number of chips produced increased by approximately 19.7%. In terms of emissions per unit wafer, the emission intensity in 2020 was 0.78 kg-CO_2e/product wafer area cm^2, which was higher than that in 2019. However, if viewing from the emission intensity of per unit chip output, the total GHG emissions/total chips in 2020 decreased by 31% than that in the base year of 2017.

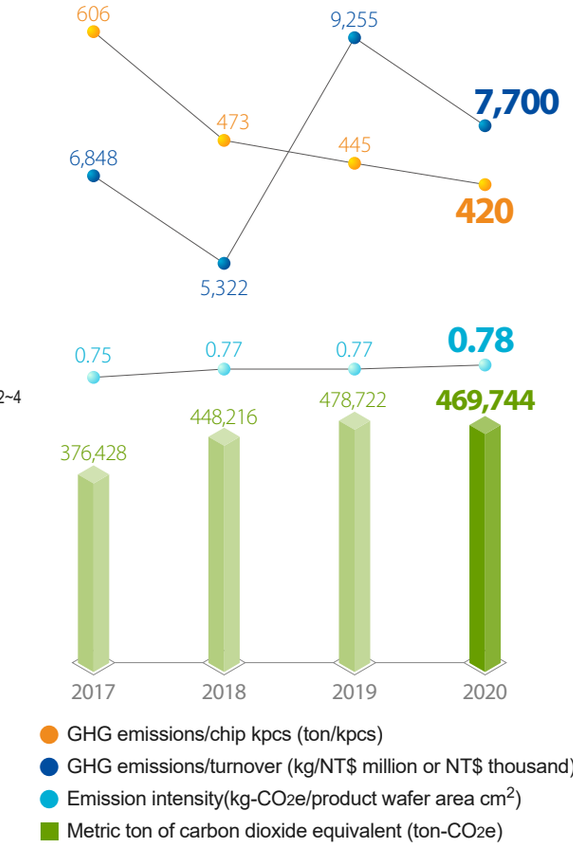
2020 Greenhouse Gas Emissions



2017 to 2020 Scope 1 and Scope 2 emissions[Note2~4]

2017	2018	2019	2020
Scope 1 (Metric ton of carbon dioxide equivalent, ton-CO_2e)			
61,287	78,312	88,701	90,327
Scope 2 (Metric ton of carbon dioxide equivalent, ton-CO_2e)			
315,141	369,904	390,021	379,417
Gross emissions (Metric ton of carbon dioxide equivalent, ton-CO_2e)			
376,428	448,216	478,722	469,744

GHG emissions



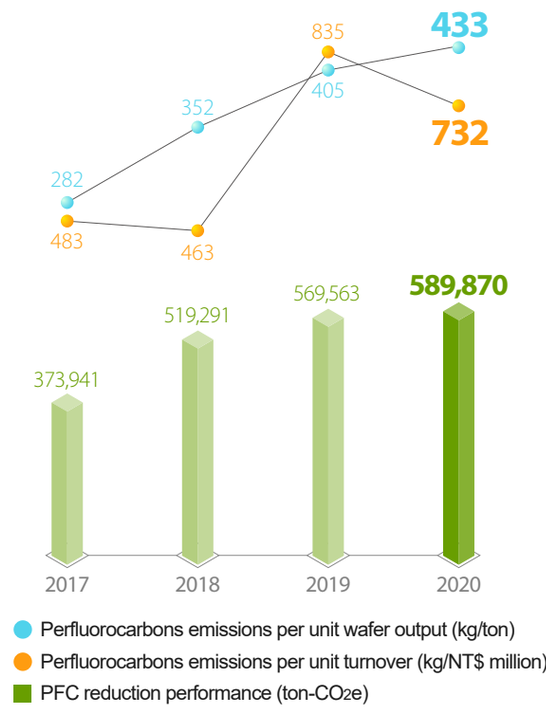
Note 1: Emission intensity: the amount of GHG emitted from per unit wafer area output.
Note 2: PFCs emissions totaled 9 types of process gases, including carbon tetrafluoride (CF_4), perfluoropropane (C_3F_8), hexafluorobutadiene (C_4F_6), tetrafluorocyclobutane (C_4F_8), trifluoromethane (CHF_3), difluoromethane (CH_2F_2), monofluoromethane (CH_3F), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).
Note 3: Other direct emissions included CO_2, CH_4, N_2O of process gas, HFCs, and SF_6 of non-process gas, such as fire extinguishing equipment, high-voltage power panels, refrigerators, and freezers.
Note 4: Indirect energy emissions included the use of electricity and steam.

Greenhouse Gas Reduction

We have actively promoted voluntary reductions and participated in the annual voluntary reduction promotion plan of industrial GHG implemented by the Industrial Development Bureau under the Ministry of Economic Affairs. As PFCs have the properties of high global warming potential, we have gradually implemented GHG reduction plans since 2006. When planning to build fabrication plants, we have purchased Local Scrubber with high reduction rate. Currently, the PFC Local Scrubber used in the thin film and etching processes is Burn Type, destroying PFCs through the high temperature generated by combustion. In order to reduce the emissions of PFCs into the air, we formulated the acceptance criteria of PFC reduction rate processed by Local Scrubber. The gas treatment efficiency of CF_4 should reach above 90%, and the reduction rate of processing C_3F_8, C_4F_6, C_4F_8, CHF_3, CH_2F_2, and SF_6 should reach more than 95% while the reduction rate of NF_3 should be over 99%. After the installation of Local Scrubber is completed, the FTIRwill be used to detect the reduction rates of various PFC gases to meet the reduction trend in the future.

Through purchasing Local Scrubber with high PFC reduction rate when planning to build fabrication plants, and promoting programs on reducing the use of PFC in process, we aimed to reach a reduction rate of at least 90%. From 2017 to 2020, the reduction rates of PFC gases used in process all reached a minimum of 93%, reducing a total of 2,052,666 ton-CO_2e GHG emissions in these four years, equivalent to 5,251 times carbon absorption of Daan Forest Park for one year.

PFC reduction performance



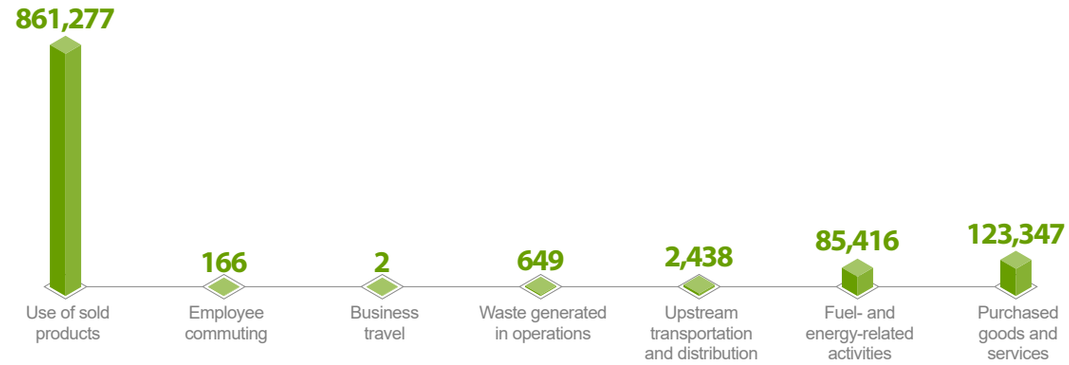
Carbon Disclosure Project

Upholding the principle of transparent disclosure, we have participated in the evaluation of the Carbon Disclosure Project (CDP), a non-profit organization, since 2009, disclosing related information regarding GHG emissions and reductions every year. We received the ratings of leadership level (A-) in the Climate Project in 2018 and 2019, and acquired the rating of A-List leadership level (A) in 2020. In addition to the CDP and public disclosure of related information regarding carbon emissions in this report, Nanya also actively discloses its GHG emissions and reductions in the GHG report system of the Responsible Business Alliance (RBA), or provides related information with regard to carbon emissions so as to help clients form bases for calculating footprints of their products.

Scope 3 Emissions

To improve the integrity of GHG inventory in our value chain, we have conducted scope 3 inventory in accordance with the GHG Protocol since 2017, and have passed external verification of the ISO 14064-1 standards. Among the 15 items of scope 3 GHG emissions, a total of 7 items passed verification. The highest GHG emissions came from the use of sold products, followed by the purchased goods and services in the upstream. The fuel-and energy-related activities not included in scope 1 or scope 2 stood at the third place.

2020 Scope 3 Greenhouse Gas Emissions (tCO2e)



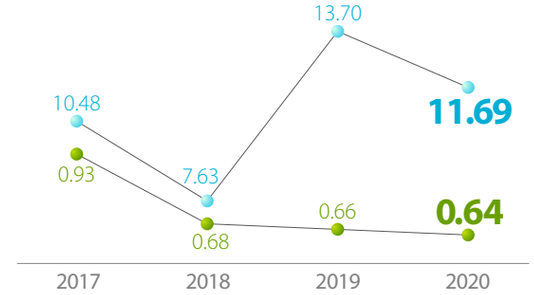
Note 1: Global Warming Potential (GWP) is the warming intensity of the gases relative to carbon dioxide (set the CO_2's GWP = 1); The high global warming potential referred in this article are the gases with a GWP value higher than 675. (Based on the GWP values of the IPCC Fourth Assessment Report (FAR))
Note 2: Local Scrubber: local exhaust processor.
Note 3: FTIR: Fourier-Transform Infrared Spectrometer

ENERGY MANAGEMENT

Service life and environmental impacts of fossil energy have been the most important issues so efficient management is urgent. Purchased electricity and natural gas are main energy sources that Nanya uses. Externally, other indirect energy consumption that generates GHG emissions includes raw materials transportation, production of raw materials suppliers, waste transportation/disposal, employee travel, and employee commuting. In order to mitigate the environmental impacts of greenhouse effect, when building fabrication plants, energy conservation is the base for the plans, such as adopting a dual-temperature chilled water system and waste heat recovery and utilization in freezers. Over the past years, we have constantly implemented various energy-saving technologies, using diverse thinking methods, such as automating equipment control, improving equipment efficiency, reclaiming energy for reuse, and improving production management, to reduce energy consumption. Meanwhile, we prioritize energy conservation equipment during the design of equipment installation and procurement. Moreover, the company promotes energy management programs in offices and public areas to reinforce the concepts of our employees in energy conservation. The company also continues to reduce the consumption of raw materials and increases the recycling amount of waste to mitigate the global impacts of GHG.

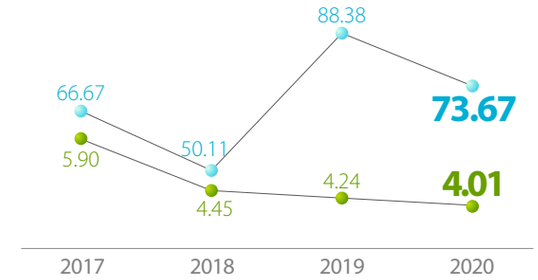
Energy sources that Nanya mainly consumes are purchased electricity, natural gas, and a small amount of diesel. The company does not use internal energy. The electricity consumption in 2020 totaled 712,924 MWh (2.567x109 MJ), and among the consumption, 362 MWh (1.3x106 MJ) came from purchased renewable energy. The natural gas consumption totaled 4,494,478 m^3 (46,743 MWh, 1.683x108 MJ), converted to megawatt hour (MWh) as the calculation base. Purchased electricity (non-renewable energy) in total accounted for 93.8% of the company's whole energy consumption, followed by purchased natural gas, accounting for 6.15%, and purchased renewable energy (electricity), accounting for 0.05%. As the consumption of diesel accounted for less than 0.05%, it was not listed in the statistical analysis of each figure. The increase of production capacity drove the rise in energy consumption. Compared with 2019, the production capacity of Nanya in 2020 increased by 3.95%, and the total electricity consumption in 2020 increased 4,032 MWh (1.45x107 MJ) or increased by 0.57%, equivalent to an increase of 2,052 metric tons of CO_2e emissions. Compared with 2019, total natural gas consumed in 2020 reduced 77,175 m^3 (2.89x106 MJ) or reduced by 1.69%, equivalent to a decrease of 145 metric tons of CO_2e emissions. Energy consumption costs in 2020 totaled NT$1,653,020 thousand, an increase of NT$3,850 thousand or 0.23% compared with 2019. Energy consumption (electricity + natural gas) of 2020 totaled 759,667 MWh (2.735x109 MJ), and energy consumption per unit production capacity was 0.679 MWh/k-pcs (2.44 x103 MJ/k-pcs), reducing 0.023 MWh/k-pcs (82.8 MJ/k-pcs), or a decrease of 3.39% compared with 2019. Compared with 2019, the production capacity of 2020 increased by 3.95%, and turnover increased by 17.94%. Energy consumption per unit turnover in 2020 was 12.452 MWh/k-pcs (4.482 x104 MJ/k-pcs), reducing 2.171 MWh/NT$ million (7.816 x103 MJ/NT$ million), or a decrease of 14.85% compared with 2019. Energy cost per unit production capacity decreased NT$0.05 thousand/k-pcs, or reduced by 3.6% compared with 2019. The energy cost per unit turnover in 2020 decreased NT$4.79 thousand/NT$ million, or reduced by 15% compared with 2019.

Run chart of 2017-2020 electricity consumption



- Electricity consumption per unit turnover (MWh/NT$ million)
- Electricity consumption per unit production capacity (MWh/k-pcs)

Run chart of 2017-2020 natural gas consumption



- Natural gas consumption per unit turnover (m^3/NT$ million)
- Natural gas consumption per unit production capacity (m^3/k-pcs)

Electricity consumption from 2017 to 2020

2017	2018	2019	2020
Electricity consumption (MWh)			
575,893	645,387	708,892	712,924
Electricity consumption (MJ)			
$2.073x10^9$	$2.323x10^9$	$2.552x10^9$	$2.567x10^9$

2017 to 2020 natural gas consumed

2017	2018	2019	2020
Natural gas consumption (m^3)			
3,662,649	4,245,273	4,571,653	4,494,478
Natural gas consumption (MWh)			
38,092	44,151	47,545	46,743
Natural gas consumption (MJ)			
$1.371x10^8$	$1.589x10^8$	$1.712x10^8$	$1.683x10^8$

Note 1: The calculation of production capacity was the output of Good Electronic Chip (GEC), and the output of various products was converted into around 4Gb product particle numbers, using per thousand pieces (k-pcs) as the calculation unit.

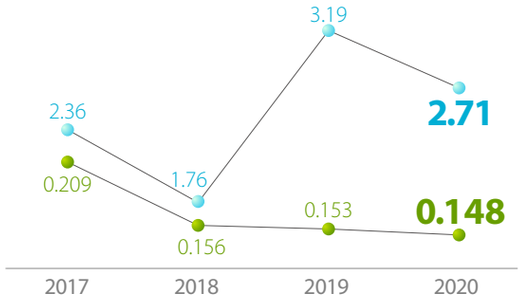
Note 2: Calculation: 1 cubit meter of natural gas = 10.4 kWh of electricity (Based on the Energy Product Unit Heating Value Table updated in 2020 by the Bureau of Energy for unit conversion, 1 kWh of electricity = 860 kcal; one cubit meter of natural gas = 9,000 kcal)

Note 3: Calculation: 1 kWh of electricity = 3.6 MJ

Diesel consumption from 2017 to 2020

2017	2018	2019	2020
Diesel consumption (iter)			
70,000	14,400	20,000	17,720
Diesel consumption (megajoules)			
2.462×10^6	5.064×10^5	7.034×10^5	6.232×10^5

Run chart of 2017-2020 energy costs



- Energy costs per unit turnover (10k NT$/NT$ million)
- Energy costs per unit production capacity (10k NT$/k-pcs)

Energy costs from 2017 to 2020

2017	2018	2019	2020
Energy costs (10k NT$)			
129,510	149,110	164,917	165,302

The company implemented ISO 50001 Energy Management system and completed the verification in 2018, hoping to constantly improve energy use and management. Pursuant to standard-setting, supervision, measurement, documentation, and improvement of energy intensity, the company promoted the best practical methods of energy management and strengthen favorable management behaviors. In 2020, a total of 29 energy management programs were completed, and in which 25 energy-saving programs create a total energy-saving benefits of 24,117 MWh/year (8.68×10^7 MJ/year), including saving the consumption of electricity and natural gas. We have planned 31 new energy management programs for 2021, and the estimate energy-saving benefits may reach 8,677 MWh/year (3.12×10^7 MJ/year). These programs are all for electricity conservation. We have constantly paid attention to issues on energy conservation and carbon emissions reduction as well as made an effort to implement related measures. At the High-Tech Energy Conservation and Carbon Reduction Forum held by the Taiwan Semiconductor Industry Association (TSIA) in 2019, we joined in the declaration of voluntary energy conservation and carbon reduction. We also received the Excellence Award in the Smart Energy Savings Competition of New Taipei City in 2019. At the 2020 Taiwan Corporate Sustainability Awards, we received the Climate Leadership Award for our energy conservation and carbon reduction project. We started building an energy management system platform in 2019 for smart energy-saving management.

A real-time monitoring platform has been built in the energy management system with a tree structure for hierarchical management so statistical analysis can be conducted in individual system and equipment. The company invested NT$21.8 million in the platform, which was completed at the end of 2019. The platform has been beneficial to energy consumption management and improvement of various organizations and machine groups. In regard to renewable energy use, Nanya has planned to use renewable energy starting in 2020, and gradually increased the amount of renewable energy. We planned to consume a minimum of 1,260 MWh (4.54×10^6 MJ) of renewable energy in 2021 and increase to a minimum of 22,000 MWh (7.92×10^7 MJ) for the whole year of 2025.

Note3~4



Note 1: Diesel is used for the backup power system (DUPS and emergency generator operation). It uses energy in an abnormal state, and its consumption accounts for very low energy consumption of the company. It accounts for less than 0.05% of energy consumption from 2017 to 2020, so it is not listed in the statistical analysis of each graph.

Note 2: Based on the Energy Product Unit Heating Value Table updated in 2019 by the Bureau of Energy to calculate the heating value of diesel, 1 liter of diesel = 8,400 kcal;1 kcal = 4,186.8 MJ.

Note 3: The electricity CO_2e emission was based on the electricity carbon emission factor = 0.509 kgCO_2e/kWh, published in2019 by the Bureau of Energy, Ministry of Economic Affairs.

Note 4: The natural gas CO_2e emission was based on the GHG Emission Factor Management Table Version 6.0.4 announced by the Environmental Protection Administration.

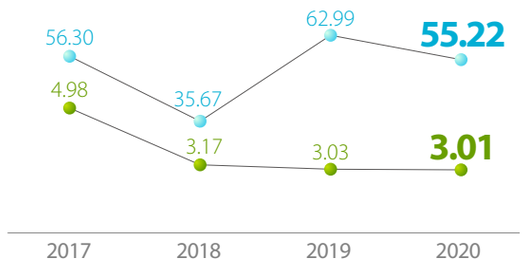
WATER MANAGEMENT

Water Resource Use and Recycling

Our main water source comes from the Shihmen Reservoir, and is channeled and processed through the Taoyuan Canal before being supplied as production water. The gravity flow is used to independently channel water without affecting the ecology of water resources and any other purposes of usage. In addition, rainwater harvesting can supply production water and tap water for household use. In 2020, the water consumption was 3,368,954 tons, of which channeled through the Taoyuan Canal was 3,321,583 tons, accounting for 98.6% of the total water consumption. The total amount of rainwater harvesting was 19,413 tons, accounting for 0.6% of the total water consumption. The amount of tap water consumption was 27,958 tons, accounting for 0.8% of the total water consumption. As the production capacity in 2020 increased by 3.95% compared with 2019, annual water consumption increased 110,568 tons or by 3.39%. Annual water consumption intensity per unit production capacity reduced 0.02 tons/k-pcs or by 0.5%. Water consumption intensity per unit turnover decreased 7.8 tons/NT$ million or by 12.3%. Annual consumption of ultra-pure water increased 44,014 tons or by 1.31%. Annual water consumption per unit production capacity reduced 0.08 tons/k-pcs or by 2.5%. Water consumption intensity per unit turnover decreased 9.19 tons/NT$ million or by 14.1%.

Nanya's Water Management Video
https://youtu.be/99DJfjGer-0

Run chart of 2017-2020 water consumption

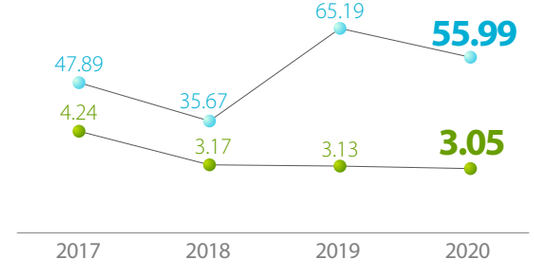


- Water consumption per unit turnover (ton/NT$ million)
- Water consumption per unit production capacity (ton/k-pcs)

Water consumption from 2017 to 2020

2017	2018	2019	2020
Water consumption (ton)			
3,092,814	3,022,362	3,258,386	3,368,954

Run chart of 2017-2020 ultra-pure water consumption



- Ultra-pure water consumption per unit turnover (ton/NT$ million)
- Ultra-pure water consumption per unit production capacity (ton/k-pcs)

Ultra-pure water consumption from 2017 to 2020

2017	2018	2019	2020
Ultra-pure water consumption (ton)			
2,630,671	3,022,306	3,371,876	3,415,890

Currently, Nanya has only one production plant located in New Taipei City, Taiwan. Taiwan's rainfall is unevenly distributed between regions and seasons, which often results in regional and seasonal droughts. Nanya has used the WRI Aqueduct, tools for simulating water resource scenarios, to analyze the geographical location of the plant, finding that the water source area where the plant is located is at risk of short-term water shortages rather than at high risk of long-term water shortages. To reduce the risk of short-term water shortages inherent in the geographical location, we have continuously promoted water-saving measures, and committed ourselves to water recycling to strengthen our adaptability. The amount of water needed by production is huge so water shortage will cause production interruptions, affecting the output and delivery. To mitigate immediate impacts caused by short-term water shortages, a cistern with a capacity of 43,000 tons and two detention basins each with a capacity of 4,060 tons have been built in the plant to effectively harvest rainwater during the rainy season. Moreover, Nanya and the adjacent factories of the Formosa Plastics Group have cooperated to set up an emergency response organization for water shortages. When water shortages occur, the members of the emergency response organization can urgently deploy water resources to support each other. Therefore, no production losses have occurred owing to water shortages.

In addition to the design of water-saving processes, the Nanya's water management chiefly emphasizes water reduction and recycling.

Currently, the main directions promoted are as follows:

- Implement water-saving results through work guidelines.
- Promote water conservation through daily management practices.
- Reach the reduction effects through methods of conservation such as reduction and recycling.
- Build waste water classification treatment and adopt multiple recycling to maximize the use of water resources.

Currently, we have set up acid-alkaline waste water, hydrofluoric waste water, and organic waste water recovery systems. Along with various promotions of water saving measures, the recovery rate in 2020 reached 95.2% (the recovery rate of process water was calculated with the formula approved by the environmental quality supervision and management committee of the Nanlin Technology Park, which met the committed value of environmental impact assessment that the recovery rate of process water was 81.1%). In 2020, the water consumption from the waste water recovery systems, process recovery systems, and rainfall harvesting methods totaled 3,272,200 tons, accounting for 97.1% of the company's water consumption. In the future, to coordinate with the expansion plan of plant area, an estimate of NT$430 million has been invested in building new hydrofluoric waste water COD and total nitrogen treatment systems, which not only will solve the problem of excessively high hydrofluoric waste water COD and total nitrogen, but also recover the hydrofluoric waste water at the same time. It is estimated that additional 1,000 tons hydrofluoric waste water will be recovered daily. The systems are expected to be completed in 2022.

Note 1: The calculation of production capacity was the output of Good Electronic Chip (GEC), and the output of various products was converted into around 4Gb product particle numbers, using per thousand pieces (k-pcs) as the calculation unit.

WASTE AND RECYCLING

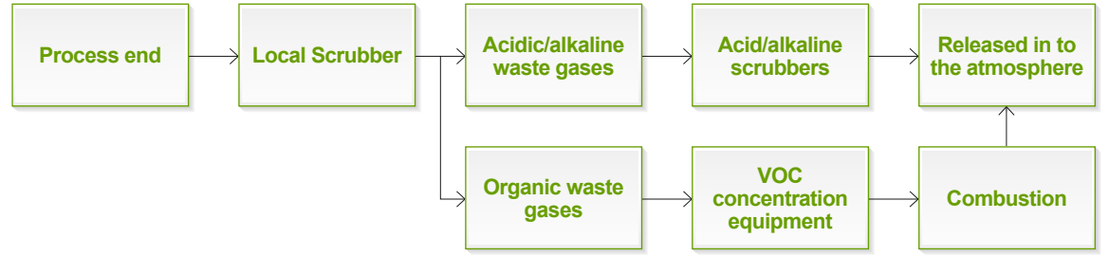
Based on the environmental protection and commitments of environmental impact assessment, the company regularly monitors environmental impact factors, such as air quality, noise and vibration, the quality of surface water and groundwater, traffic flow, and the ecosystem within the scope of development to truly appreciate its impacts on the environment. There has been no violation of environmental regulations since 2014. In addition, Nanya has checked with the competent authorities that Nanya's developing areas are not at an environmentally sensitive location or a location with specific purposes. In the Environment, Safety and Hygiene Policy, Nanya has made every effort to promote various measures to reduce waste and recycle resources to comply with relevant requirements of regulations as well as to respond to the commitments to environmental protection-related requirements signed by the company. Moreover, Nanya annually evaluates waste that can be reduced and recycled, and the types and amount of recovered waste water, drafts annual plans and goals, and includes the plans into the annual budget and work plan.

Air Pollution Control

Since the plant was set up, we have put great emphasis on pollution control. With the planning of the environmental management programs, we effectively reduce the consumption of raw materials and lower the concentration of waste gas emissions. We use air pollution prevention equipment in compliance with the regulations, including Local Scrubber, acid/alkaline scrubbers, VOC zeolite rotor concentrators, and post-combustion devices. Detections over the years show that the company has met (exceeded) the pollutant emission standards stipulated in the government's environmental regulations. To continue to maintain the best performance of treatment equipment, every equipment is maintained and inspected periodically. The operators receive complete training and education are to maintain the system in good operation and ensure that the waste gases emitted do not endanger the environment.

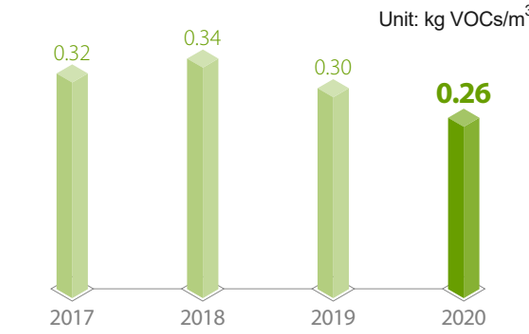
The main air pollutants of Nanya are categorized into acidic, alkaline and organic waste gases. The waste gases are imported into appropriate treatment processes and equipment based on their properties. From the production line, the waste gases are imported into the local waste gas treatment system to have specific substances removed. Acidic or alkaline waste gases are then treated by the acid/alkaline scrubbers. After the treatment, the waste gases are neutralized and can be released into the atmosphere. Organic waste gas is absorbed and concentrated by the zeolite rotor, and then imported into the post-combustion equipment to be directly broken down. The combustion efficiency rate reaches 99%, which substantially exceeds statutory standards. Moreover, the reduction rate of overall volatile organic gas emissions is kept above 90%, meeting the statutory requirements. Figure 1 shows the process. Organic air pollutant emissions per unit product (emission intensity) in 2020 was 0.26 kg VOCs/m^2.

Flowchart of waste gas treatment



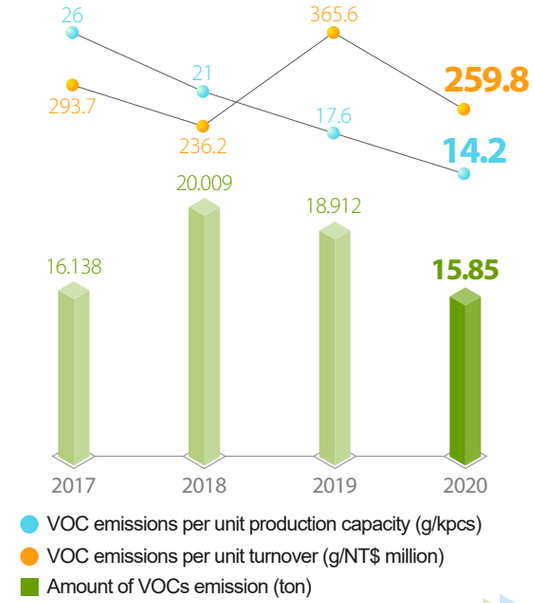
Note 1: VOC stands for volatile organic compounds; local scrubber stands for local waste gas treatment equipment.

VOCs Emission Intensity



VOC emission intensity from 2017 to 2020 (KG VOCs/m2 = VOC emissions (kilogram)/wafer area (square meter))

Run chart of 2017-2020 VOC emissions



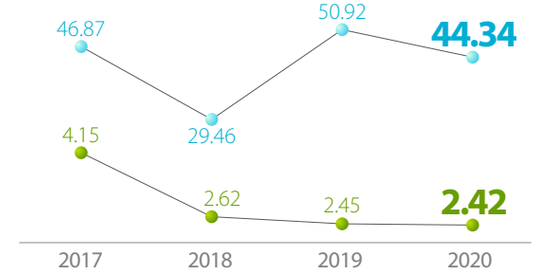
Wastewater

All wastewater generated by Nanya is collected according to property classification and channeled into proper wastewater equipment for treatment. To ensure that the quality of discharged wastewater is in line with regulations, we and the Environmental Protection Department have monitored the quality of effluents via synchronous connections. In addition, off-line sampling, analysis, and detection are outsourced every quarter to improve the wastewater quality management and control. When the quality of wastewater meets discharge standards, one hundred percent of our treated effluents are all discharged into the Dake River via terrestrial surface. As the effluents meet the quality standards of Category E water bodies, which may be used for irrigation water, Class 2 industrial water, and environmental conservation, and the Dake River later converges into the Tamsui River that empties into the ocean. To avoid environmental pollution and ecological impacts owing to abnormal quality of wastewater, we have spared no effort to prevent and control water pollution, gradually upgrading and investing in wastewater treatment facilities. The in-plant wastewater treatment is carried out in over 20 different pipelines. The wastewater is mainly classified into organic wastewater, general acidic and alkaline wastewater, hydrofluoric wastewater, and high-concentration liquid waste that is outsourced for treatment. In relation to wastewater treatment, wastewater is classified and treated according to different properties. Other than following statutory standards, we also reuse recyclable wastewater that is treated by the recovery system to reduce the discharge amount of wastewater. The plant area is reconstructed on the open space of existing plant so no massive excavation of the peripheral vegetation of the designated land has been made. Wastewater is properly treated before being discharged into the Dake River. Discharged water bodies and relevant habitat are not designated as national or international conservation areas. Investigation shows that the wastewater discharging areas do not involve in affecting the habitat of protected animals or destroying the habitat.

Wastewater discharging volume of 2020 totaled 2,705,126 tons, increasing 71,425 tons or by 2.71% compared with 2019. The annual wastewater discharging intensity per unit production capacity decreased 0.03 ton/k-pcs or by 1.22%; the annual wastewater discharging intensity per unit turnover decreased 6.6 tons/NT$ million or by 13%. In coordination with the expansion of FAB-3A-N in 2016, additional wastewater systems and recycling systems were installed. These systems were classified into the following types: acidic and alkaline, organic, and hydrofluoric acid (HF) wastewater systems. The original acidic and alkaline wastewater system was equipped with a reclamation system.

In 2017, a reclamation system with reverse osmosis (RO) was added, which could increase 288 tons of reclaimed water per day. With the expansion of the new plant, the installation of additional organic wastewater reclamation system was completed in 2017, which could increase 1,500 tons of reclaimed water per day. In 2018, the installation of hydrofluoric wastewater reclamation system was completed, which could increase 500 tons of reclaimed hydrofluoric wastewater. Because of the increase in the reclamation volume of wastewater, the annual average process water recovery rate reached 95.2% in 2020. To coordinate with the expansion of new factory, we have invested NT$430 million in building new hydrofluoric wastewater COD and total nitrogen treatment systems. This not only will solve the problem of excessively high hydrofluoric wastewater COD and total nitrogen, but also will recover hydrofluoric wastewater at the same time. It is estimated that additional 1,000 tons of hydrofluoric wastewater will be recovered per day. The systems are expected to be completed in 2022. In response to the decrease in sludge treatment plants and the ever stricter acceptable criteria, starting in 2017, additional isopropanol-concentration system had been built to reduce the load of wastewater COD. Moreover, additional organic sludge dewatering equipment had been installed. From the completion of the system and the equipment to 2018, the water content rate of sludge had decreased from 84% to less than 60%; from 2019 until the present, the water content rate of treated organic sludge have been keeping below 60%.

Run chart of 2017-2020 wastewater discharge volume

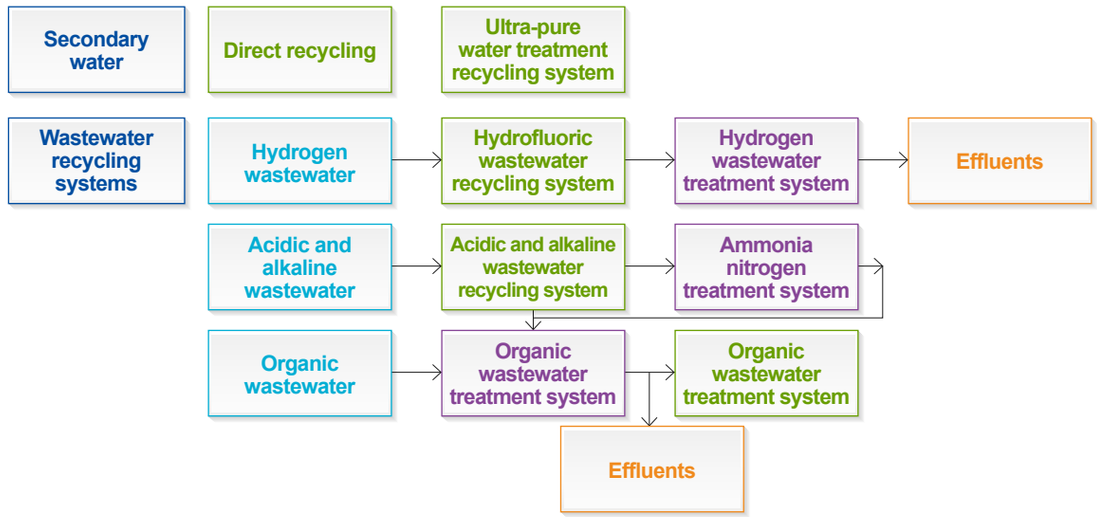


Wastewater discharge volume from 2017 to 2020

2017	2018	2019	2020
Wastewater discharge volume (ton)			
2,574,479	2,495,900	2,633,701	2,705,126

Note: The calculation of production capacity was the output of Good Electronic Chip (GEC), and the output of various products was converted into around 4Gb product particle numbers, using per thousand pieces (k-pcs) as the calculation unit.

Nanya process wastewater recycling



Testing results of discharged wastewater quality in 2020

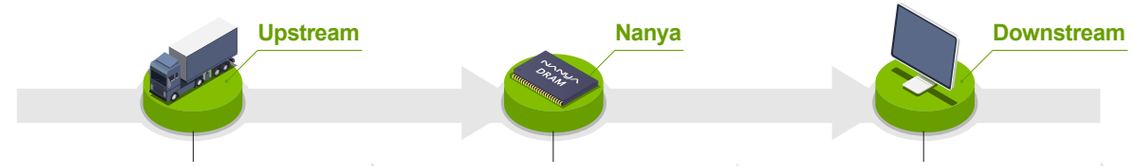
3A plant	Unit	Statutory standards	Testing results Minimum	Mean	Maximum	Compliant or non-compliant with standards
pH	-	6-9	7.1	7.5	7.8	●
Chemical oxygen demand (COD)	mg/L	<100	15.2	49.6	90.7	●
Suspended solids (SS)	mg/L	<30	1.5	4.6	7.2	●
Fluoride ion	mg/L	<15	7.4	9.4	12.2	●
Ammonia nitrogen	mg/L	<30	10.6	14.0	20.8	●

● Compliant ○ Not- compliant

Waste Management

The general industrial wastes and the hazardous industrial wastes of the Nanya are all managed by the Output Department in terms of storage, clearance, detections, and reduction promotions. In addition, the company periodically audits waste contractors to see whether the contractors follow the regulations of waste disposal to handle the waste clearance, in order to confirm the legality of the contractors, ensure that all wastes are well-processed or recycled, and prevent impacts on the environment again. Nanya had not shipped any hazardous wastes to other countries from 2014 to 2020. Output of all hazardous industrial wastes in 2020 was outsourced to certified domestic waste disposal contractors, and reuse was the end purpose in treating 97.48% of the output.

Assessment results of waste impact



Upstream

Impact sources

- Used large numbers of 53-gallon drums of chemicals
- Used large numbers of small gas cylinders, resulting in more residual gases

Mitigation measures

- Replaced 53-gallon drums with tank trucks to store and transport chemicals or recycled empty drums
- Replaced small gas cylinders with large Y-shaped cylinders to reduce residual gases and numbers of cylinders

Nanya

Impact sources

- Sources of raw materials and related materials contained hazardous substances.
- Used large numbers of acidic and alkaline chemicals
- Used large numbers of dummy wafers

Mitigation measures

- Through the establishment of Hazardous Substance Free (HSF) management system of materials, we ensured that the produced wafers, rear-end IC packaging, and DIMM module products would conform to the international regulations and related specifications of clients towards HSF management.
- Recycled wastes in the plant, for example, copper sulfate waste liquid was directly converted to copper cakes for recycling.
- Acidic wastes were outsourced for recycling, such as sulfuric acid and phosphoric acid.
- Dummy wafers were recycled for 8-11 times.

Downstream

Impact sources

- Products required many packaging materials.
- Products contained hazardous substances.

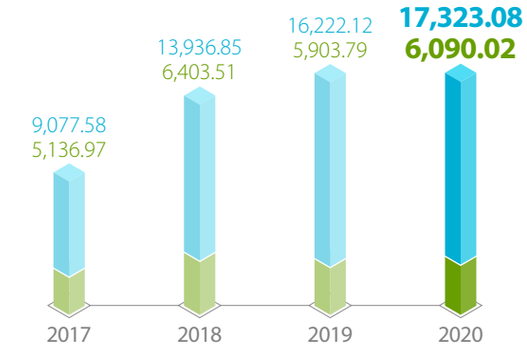
Mitigation measures

- Clients were encouraged to recycle packaging materials for Nanya to reuse.
- Waste electronic components had to conform to the EU's environmental protection directives, including WEEE, RoHS, and EuP.

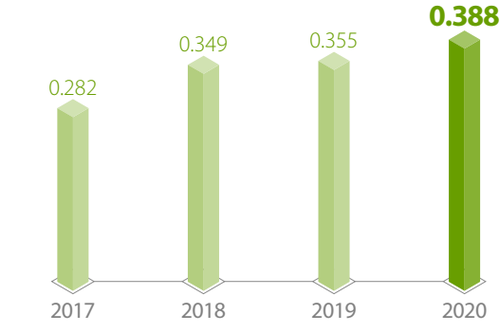
Resource recycling

Wastes of 2020 totaled about 23,413.1 tons, composed of 6,090.02 tons of general wastes (including 211.11 tons of announced recycling items) and 17,323.08 tons of hazardous industrial wastes. The waste output per unit product was around 0.388 tons/output wafer area (m2). Compared with 2019, total waste volume in 2020 increased by about 5.82%. The main reason was that new processes continued to improve production capacity in 2020, leading to increases in both waste volumes and waste output per unit product. Although new processes resulted in substantial increases in hazardous industrial wastes, more than 85% of our main output of hazardous industrial wastes was outsourced to waste treatment vendors who recycled the wastes as industrial materials. The company will continue to take measures to reduce wastes and increase recycling in order to reach the sustainable development goal of effective recycling of wastes.

Total volume of waste output



Waste output per unit product

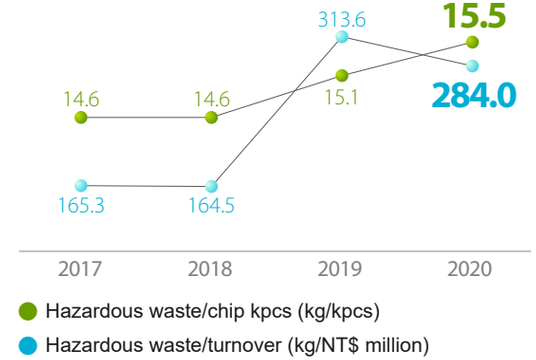


Waste output of Nanya in 2020

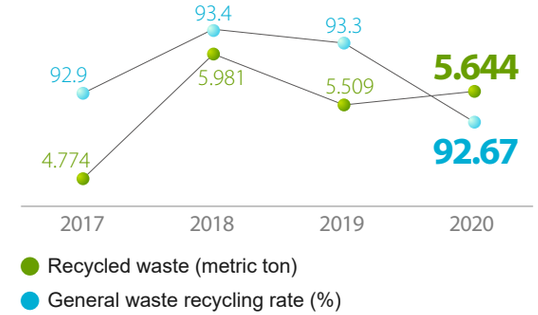
Unit：Ton

	Recycling	Incineration	Burial	Total
Hazardous	17,308.22	8.36	6.5	17,323.08
General (non-hazardous)	5,643.75	446.27	0	6,090.02
Total	22,951.97	454.63	6.5	23,413.1

Run chart of 2017-2020 hazardous waste output



Run chart of 2017-2020 General waste



ENVIRONMENTAL EXPENSES AND BENEFITS

Nanya introduced the environmental accounting system in 2008 and the environment benefit accounting system in 2009, which was officially implemented in 2010. The introduction of the environmental accounting system made it possible to access information on the environmental expenses, assess the benefits of the expenses, and provide the stakeholders with concrete and accurate environmental protection acts. Statistics are compiled for each category of environmental expenses according to the rules established by the Environmental Protection Administration, and are used for internal management, so that the public will understand the environmental protection efforts of enterprises. According to the consolidated statistics, the capital investments of 2020 was NT$154,289 thousand, and the operating expense was about NT$667,850 thousand, totaling NT$822,139 thousand. Total turnover of 2020 was NT$61.006 billion, and the environmental expenses accounted for 1.35% of the turnover.

Environmental expenses from 2017 to 2020

Unit: NT$ thousand

2017	2018	2019	2020
Capital investments			
861,328	475,265	350,447	154,289
Operating expenses			
512,505	644,055	675,846	667,850
Total			
1,373,833	1,119,320	1,026,293	822,139

Performance of promoting the ISO 14001 management solutions over the years

Unit: NT$ thousand

2017	2018	2019	2020
Energy (electricity) conservation program			
16,677	8,744	64,934	52,397*
Waste reduction program			
778	0	3,360	234
Program of reducing consumption of process raw materials			
14,960	12,179	5,221	6,865
Substantive benefits of industrial waste recycling			
778	11,502	10,386	9,564
Electricity fees saved owing to low power consumption and advanced processes			
305,111	736,071	697,553	888,574
Total benefits			
338,304	768,496	781,454	957,634
Records of violating environmental protection regulations			
0	0	0	0

* A total of 25 energy management programs were implemented in 2020.

Environmental expenses in 2020

Unit: NT$ thousand

	Descriptioniq	Operating expenses	Capital investments
Operating costs	Air pollution control costs: costs of air pollution, water pollution, and other types of pollution control	524,549	154,219
	Global environmental protection expenses: (1) Expenses for climate change prevention (2) Other expenses related to global environmental protection	25,932	
	Resource and energy reduction and recycle expenses: (1) Enhance the efficiency of resources utilization (2) Costs of waste reduction, recycling, and reprocessing (3) Energy conservation expenses	104,270	
Related costs from upstream and downstream of suppliers and customers	(1) Green procurement (2) Expenses incurred in providing products for the sake of environmental protection	116	
Management costs	(1) Costs of personnel environmental training and education (2) Expenses incurred in acquiring external verification (3) Expenses incurred in measuring environmental impacts (4) Other	11,794	70
R&D costs	Expenses incurred in researching and developing products because of environmental protection		
Social activity costs	Expenses incurred in improving the environment such as nature protection, afforestation, and landscaping the environment	285	
Environmental taxation and fees	(1) Expenses incurred by air pollution (2) Examination and certificate expenses for pollution prevention and control	904	
Subtotal		667,850	154,289
Total		822,139	

Benefits generated by auditing internal management systems in the last two years

ISO 14001

Y2019
- Number of defect: 9
- Type of defect: Mainly violated Clause 7.5.2 Creating and updating
- Case closing rate: 100%

Y2020
- Number of defect: 7
- Type of defect: Mainly violated Clause 7.5.2 Creating and updating and Clause 6.1.1 Actions to address risks and opportunities; improvements were all completed.
- Case closing rate: 100%

ISO 45001

Y2019
- Number of defect: 13
- Type of defect: A total of 7 defects in integrity of filling in hazard identification forms (Clause 6.1.2), accounting for the majority of the defects, followed by 3 defects in failing to send staff to participate in consultations of workers (Clause 5.4); improvements were all completed.
- Case closing rate: 100%

Y2020
- Number of defect: 15
- Type of defect: A total of 7 defects in failing to comply with criteria for operations and site management, and problems in appropriateness of automated checklist content (Clause 8.1.1), accounting for the majority of the defects, followed by 4 defects in management of equipment cabinets for emergency response (Clause 8.2); improvements were all completed.
- Case closing rate: 100%

7 Harmonious Workplace

P91. Employee Diversity
P95. Talent Retention and Employee Care
P104. Human Rights
P107. Talent Development
P116. Occupational Health and Safety

An Attractive Employer for Professional Talents

In order to create momentum for growth even amid continuous changes in the external environment, Nanya uses talent retention and cultivation to preserve competitive advantages. We also accept employee opinions to create a safe, human rights-based, and harmonious workplace and fulfill our business targets.

72.1%

Internal employee substitution rate for job openings 72.1%

100%

100% of contractors have passed the pre-entry safety training.

71%

The average level of approval indicated by employee survey responses reached 71%.



Strategy and Performance

2021 Goals	2020 Goals	2020 Performance
Talent Development	Improvement of professional skills: Establish yearly training development plans based on the Company's strategy; plan diversified learning courses and channels. Training of key talents: Strengthen the training of key talents and increase the proportion of key talents. Individual development: Establish independent learning and employee personal development mechanisms to increase the internal employee substitution rate for job openings.	
Annual planned course completion rate ≧ 100%	Annual planned course completion rate ≧ 100%	182.3%
Percentage of employees that are key talents ≧ 3%	Retention rate of key talent ≧ 90%	100%
Internal employee substitution rate for job openings ≧ 60%	Internal employee substitution rate for job openings ≧ 60%	72.1%
The Talent Development Award of TCSA Taiwan Corporate Sustainability Awards)	The Gold Medal Certification in TTQS Talent Quality-management System)	Gold Medal Certification Received
Talent Retention and Employee Care	Manpower stabilization: Implement talent retention plans to stabilize outstanding employees and increase the retention rate of key talents.	
Retention rate of key talent ≧ 98%	97% retention rate of outstanding employees	97.65%
Domestic voluntary separation rate ≤ 5%	Domestic voluntary separation rate ≤ 6%	4.57%
More Average approval rate of Employee Engagement Survey ratio ≧ 73%	72%	71%
Human Rights	Compliance with laws: Comply with international human rights standards and apply relevant policies and standards in practice. Protect equality: Build workplace equality by establishing risk management and precautionary measures as well as designing diversified communication and complaint channels.	
Workplace violence: 0 cases	Workplace violence: 0 cases	0
Employees' educational training on labor ethics completion rate: 100%	Employees' educational training on labor ethics completion rate: 100%	100%
Occupational Health and Safety	Early diagnosis and early improvement: Continuous PDCA improvements for the occupational health and safety system Safety culture: Build employees' safety awareness and establish a high-quality safety culture Cross-inspection: Cross-inspection by internal and external institutions to strengthen independent inspections	
Frequency of disabling injuries[Note1]<0.21	0.23	0.14
Severity of disabling injuries[Note2]<7.2	7.6	6
In-plant self-inspection rate[Note3]>93.5%	93%	98.7%

Exceeded Achieved Partially achieved

EMPLOYEE DIVERSITY

Employees are not only the most important capital to Nanya, but also the key to supporting sustainable operations and innovative R&D within the Company. We strive to create a humane and comfortable office environment where new employees are subjected to systematic training and have access to diverse learning resources to help them quickly accumulate professional knowledge and skills for the semiconductor industry, and receive reasonable compensations in return. The Company also has an Employee Welfare Committee that organizes exciting and interesting recreation activities on a yearly basis to maintain employees' work-life balance as well as physical and mental well-being, and create a sustainably healthy workplace.

We believe a competitive and stable workforce to be essential for improving the productivity and competitive advantage of the Company. We continue to design and provide an environment where talents may thrive. Through talent cultivation, we strive to become the best employer that looks after talents.

Stable workforce

Nanya has a very stable workforce structure. In 2020, the Company has a total of 3,542 permanent employees in Taiwan and in overseas subsidiaries (including 98 interns). There were 3,425 employees in Taiwan, accounting for 96.70% of all employees, and the 117 employees in overseas subsidiaries accounted for 3.30%. In addition, there were 41 non-permanent employees[Note 4]. Male employees totaled 2,569 whereas female employees totaled 973, representing a gender ratio of 2.64 (male):1 (female). The average age of the Company's employees is 36.9. The 30-50 age group was the most dominant of all, representing 64.97% of total employee size. 100% of permanent and non-permanent employees were hired directly by the Company. The Company hired no part-time staff in 2020 and 100% of its employees worked on a full-time basis.

Note 1: Disabling injuries frequency rate (FR) = (total employees with disabling injuries × 10^6)/total work hours
Note 2: Severity of disabling injuries (SR) = (total days lost to disabling injuries x 10^6)/total work hours
Note 3: Independent inspection rate: (Number of cases reported by departments/number of discrepancies reported by safety and health units) *100%
Note 4: Non-permanent employees include consultants, contract staff, and interns.

In 2020, Nanya had 23 female mid-level managers, which accounted for 12.78% of all mid-level managers; there were also 3 female senior-level managers, representing 5.45% of all senior-level managers; the Company currently has no female managers in executive-level management. Due to the special nature of the semiconductor industry and realities concerning talent supply, males still dominated the management roles. As for production line management roles such as team leader and shift leader, females accounted for as high as 93.75% and had significant influence on the productivity of Nanya. There were a total of 127 female managers in section chief-grade management in revenue-generating departments, which accounted for 33.87% of total managers.

Number and Percentage of Female Staff in the Last 4 Years[Note 1~3]

	2017		2018		2019		2020	
	Number of females	Percentage of females	Number of females	Percentage of females	Number of females	Percentage of females	Number of females	Percentage of females
Total employees	879	29.45%	925	28.74%	930	28.12%	973	27.47%
Management level (A+B+C+D)	111	36.63%	115	34.64%	114	35.63%	116	33.72%
Managing supervisor (A)	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Senior managers (B)	3	6.12%	3	5.66%	3	6.00%	3	5.45%
Mid-level managers (C)	21	14.09%	22	13.02%	23	14.20%	23	12.85%
Entry-level managers (D)	87	94.57%	90	93.75%	88	93.62%	90	93.75%
Head of revenue-generating department (management level)	106	41.41%	109	41.13%	122	35.16%	127	33.87%
Females working in STEM-related positions	315	13.97%	339	14.53%	360	14.84%	411	15.54%

Note 1: Managerial role refers to a position in the management level, including managing supervisors (Assistant Vice President and above), senior managers (plant manager and director), mid-level managers (department manager and section manager), and entry-level managers (team leader and shift leader).

Note 2: Revenue-generating department refers to any department other than planning, administration, operational support, quality assurance, legal affairs, and safety & health departments.

Note 3: STEM: Job positions related to science, technology, engineering, and mathematics.

The semiconductor industry is both capital and technology intensive. It not only involves multi-billion dollar plants and manufacturing equipment, but also requires a substantial number of outstanding engineering talents to join the production team of Nanya. As of Thursday, December 31, 2020, the Company had 3,542 permanent employees on its payroll, and 82.67% of whom were specialists.[Note 4] Overall, the Company has a competitive, healthy and growing talent base to support development of innovative production procedures, technologies and products. Most employees are in the 30-50 age group, while employees' education levels are concentrated in bachelor's and master's degrees.

Age of Permanent Employees

Taiwan	Under 30 years old	30-50	Over 50 years old
Female	152	760	40
As a percentage of total females in Taiwan operations	15.97%	79.83%	4.20%
Male	685	1629	159
As a percentage of total males in Taiwan operations	27.70%	65.87%	6.43%
Overseas subsidiaries			
Female	4	9	8
As a percentage of total females in Taiwan operations	19.05%	42.86%	38.10%
Male	21	40	35
As a percentage of total males in Taiwan operations	21.88%	41.67%	36.46%
Total			
Female	156	769	48
As a percentage of total females in Taiwan operations	16.03%	79.03%	4.93%
Male	706	1669	194
As a percentage of total males in Taiwan operations	27.48%	64.97%	7.55%

Note 4: "Specialist" refers to indirect labor.

Attracting top talents

The Company adopts recruitment policies that comply with labor regulations in Taiwan as well as its own ethical employment principles. The Company strives to provide equal employment opportunities and environment, and recruit talents solely based on individual professional capabilities and experience without discrimination whether in terms of age, ethnicity, gender, sexual preference, religion, political association, place of birth, marital status, appearance or disability. Employees' promotion, performance evaluation, training, reward and discipline after hiring have been explicitly stated in policies. This gives everyone job and training opportunities in a fair manner.

In 2020, 325 engineers were recruited into Taiwan operations to support organizational transformation and transition into advanced production processes. The Company recruits entry-level engineering talents through factory sites and campus recruitment programs. The Company approaches renowned local colleges each year to recruit engineering talents with various skill levels and matches them to open positions on-site. Around NT$820,000 was invested in recruitment in 2020, and the average cost per hire was NT$1,698. Influenced by the impact of the COVID-19 pandemic, the Company only participated in 5 college recruitment events in 2020. The Company approached campuses and engaged young students in a series of interaction, communication and discussion based on the theme "You be the Leader of the Future". It is our hope to encourage all willing students to pursue a dream career in the high-tech industry and contribute to semiconductor development in Taiwan. Recruitment of entry-level production line operators is carried out with the help of local employment service stations near the Company's plants. On-site interviews are held from time to time, and local residents are hired as a priority to promote local employment. Managers of Taiwan operations consist entirely of Taiwanese nationals for 100% localized hiring.

Nanya Technology Facebook Page
https://www.facebook.com/NANYArecruiting/

Statistics on recruitment costs from 2017 to 2020

	2017	2018	2019	2020
Total recruitment costs	1,724,700	1,642,395	2,118,234	820,261
Total number of recruits	605	539	309	483
Average (NT$)	2,851	3,047	6,855	1,698

Campus recruitment snapshots









In order to promote the development of the semiconductor indsutry and company operations, Nanya proactively recruits new employees into the Nanya big family. Company employees work coopearitvely to move foward together. New recruits accounted for approximately 10.6% of the Company's total employees in 2020. Gender distribution of new recruits was approximately4.34 (male):1 (female).

Statistics on new recruits of Taiwan and overseas operations from 2017 to 2020

	2017	2018	2019	2020
Number of new recruits	488	405	238	374

Age of New Recruits of Taiwan and Overseas Operations in 2020

New recruits[Note 4]	Female		Male		Total	
	Head Count	Percentage[Note 1]	Head Count	Percentage[Note 2]	Head Count	Percentage[Note 3]
Under 30 years old	56	80.00%	236	77.63%	292	78.07%
30-50 years old	12	17.14%	60	19.74%	72	19.25%
Over 50 years old	2	2.86%	8	2.63%	10	2.67%
Total new recruits	70		304		374	
As a percentage of total employees	1.98%		8.58%		10.56%	

Note 1: As a percentage of total female new recruits.
Note 2: As a percentage of total male new recruits.
Note 3: As a percentage of total new recruits.
Note 4: New recruits refer to: Personnel hired and remained employed in 2020 (excluding those who resigned during the year)

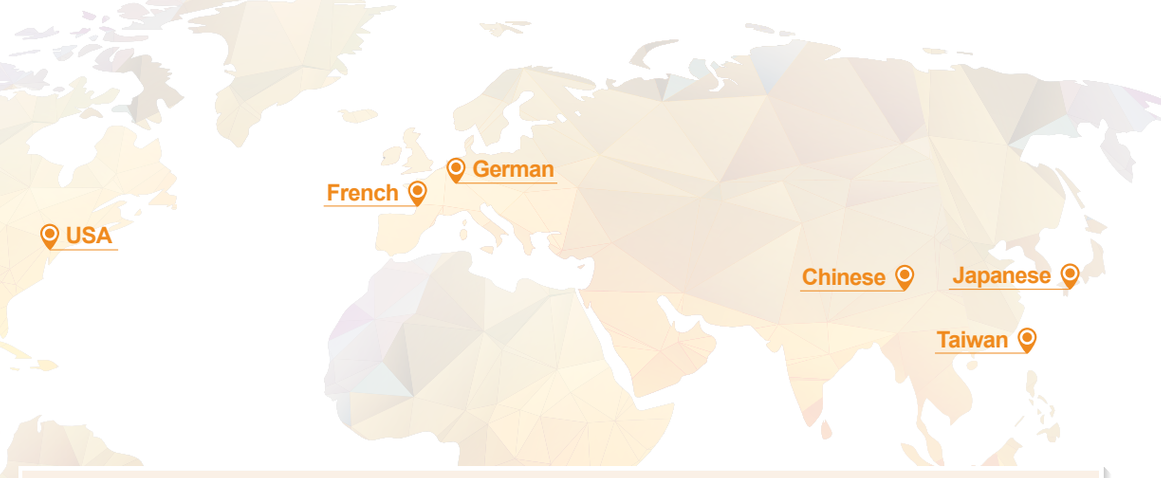
Diversified recruitment policy

Since Nanya has business operations based in Taiwan and overseas, the nationalities of the Company's employees are quite diverse. In addition to Taiwanese staff, employees of the following 15 nationalities were also hired in 2020: Chinese, Turkish, Japanese, Indonesian, French, Kenyan, USA, British, Hong Kong, Malaysian, Vietnamese, Italian, German, Burmese, and Korean. Our employees form an internationally diversified workplace. In 2020, there were a total of 126 foreign employees that were not Taiwanese nationals, representing 3.56% of all employees. Taiwanese nationals accounted for the largest proportion of employees in management levels, at 90.12%. In descending order, the top five nationalities of foreign managers were USA, Japanese, German, Chinese, and French. Employees with these five nationalities made up 8.14% of all employees in management levels.

Nanya also supports the government's policies of hiring people with disabilities as part of its workplace friendly diversity initiative. As of December 2020, Nanya hired a total of 36 employees with disabilities into Taiwan operations, which represented 1.05% of total employees. We continue to work towards hiring more people with disabilities and provide appropriate job positions. Through increasing job opportunities for people with disabilities, we intend to build a diversity-friendly workplace.

	2017	2018	2019	2020
Nationality count	9	10	11	16
Nationalities	Taiwanese, Chinese, German, Italian, Japanese, Korean, British, USA, French	Taiwanese, Chinese, German, Italian, Japanese, Korean, British, USA, French, Turkish	Taiwanese, Chinese, German, Italian, Japanese, Korean, British, USA, French, Turkish, Singaporean	Taiwanese, Chinese, Turkish, Japanese, Indonesian, French, Kenyan, USA, British, Hong Kong, Malaysian, Indonesian, Italian, German, Burmese, Korean
Percentage of foreign employees(%)	3.05%	2.95%	2.96%	3.56%
Number of employees with disabilities	25	27	26	36
Percentage of employees with disabilities(%)	0.87%	0.87%	0.81%	1.05%

Percentages of Management-level Employees of the Top Five Nationalities in 2020



Taiwan		USA		Japanese	
People	3,416	People	73	People	8
As a percentage of total employees	96.44%	As a percentage of total employees	2.06%	As a percentage of total employees	0.23%
Number of Managers	310	Number of Managers	15	Number of Managers	6
As a Percentage of Total Managers	90.12%	As a Percentage of Total Managers	4.36%	As a Percentage of Total Managers	1.74%

Chinese		German		French	
People	22	People	4	People	2
As a percentage of total employees	0.62%	As a percentage of total employees	0.11%	As a percentage of total employees	0.06%
Number of Managers	2	Number of Managers	3	Number of Managers	2
As a Percentage of Total Managers	0.58%	As a Percentage of Total Managers	0.87%	As a Percentage of Total Managers	0.58%

TALENT RETENTION AND EMPLOYEE CARE

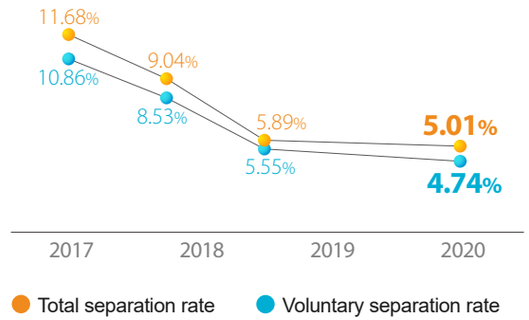
Nanya not only offers salary packages that are competitive for the semiconductor industry, but also introduces a full range of welfare measures and training systems that address employees' needs on all aspects from work, life to health. It is the goal of the Company to create a work environment where employees may realize their full potentials with a peace of mind, and for which we have implemented an employee assistance program as part of our corporate social responsibilities.

Enhanced work security

In response to changes in the industry and challenges in the business environment, the Company continues to not only push for fairness and reasonableness in various operations, but also prioritize the work rights and interests of employees. Under the human resource coordination system of the Formosa Plastics Group, employees are transferred first before they are made redundant. Transfer and redundancy of employees are announced and notified in advance in accordance with the Labor Standards Act and relevant laws, whereas department managers would also communicate fully with the employees in question and execution decisions in accordance with law. In order to motivate employees to achieve organizational goals and retain outstanding talents, the Company uses a quaterly incentive system to not only encourage employees to actively reach for business goals, but also share company profit.

With a favorable working environment and lifestyle security, Nanya has won the trust and recognition of employees. The Company continues to promote various retention and incentive measures—including employee stockoption, employee bonuses, incentive bonuses—to manage employee turnover risks and effectively retain talents. The voluntary separation rate in 2020 was 4.74% (the male to female ratio of those who resigned is approximately 3.97:1). Compared to the voluntary separation rate of 5.55% in 2019, there was a 0.81% decrease. For employees who have the intention to leave, the Company conducts interviews with them one by one to understand the reasons for their resignations and future plans; the Company also provides relevant suggestions based on employee needs.

Analysis of Separation Rate in the Past Three Years Note 1~4



Voluntary Separations in Taiwan and Overseas and Employee Age

Resigned / retired personnel	Female		Male		Total	
	Head Count	As a percentage of entire division	Head Count	As a percentage of entire division	Head Count	As a percentage of entire division
Age group						
Under 30 years old	13	41.94%	72	55.81%	85	53.13%
30-50 years old	16	51.61%	47	36.43%	63	39.38%
Over 50 years old	2	6.45%	10	7.75%	12	7.50%
Role						
Management level	0	0%	2	1.55%	2	1.25%
Non-management level	31	100%	127	98.45%	158	98.75%
Total resigned / retired employees	31		129		160	
As a percentage of total employees Note 5	0.90%		3.75%		4.65%	

To ensure employees' retirement-related rights and interests, for employees who choose the retirement scheme under the "Labor Standards Act", 2% of the total monthly salary is deposited into the designated Bank of Taiwan account. The accumulative labor retirement reserve in 2020 totaled NT$543,023,852, and had been fully contributed. For the others choosing the "Labor Retirement Pension" system, the Company contributes 6% of individual monthly salary to each employee's personal retirement account. Employees are eligible to contribute more amounts voluntarily, and the amount is deposited into the employee's retirement account along with the 6%, providing substantial retirement security.

Note 1: Calculating formula for separation rate = (number of resignations in January/total number of employees at the end of January) x 100% + (number of resignations in February/total number of employees at the end of February) x 100% +...+(number of resignations in December/total number of employees at the end of December) x 100%

Note 2: Voluntary separation refers to resignation initiated by the employee. The Company calculates separation rate mainly based on voluntary separation. Total separation rate includes voluntary (including retirement) and involuntary separation (including dismissal, redundancy, death etc.)

Note 3: In 2019, the calculation of separation rate began excluding direct interns (personnel turnover due to expiration of internship contracts).

Note 4: In 2020, the calculation of voluntary separation rate began excluding those who went on unpaid leaves. Based on the calculation that excluded those who went on unpaid leaves, the adjusted voluntary separation rate of 2019 was 5.55%; adjusted total separation rate was 5.89%.

Note 5: As a percentage of total employees: Refers to the number of resigned/retired females, males, and employees as a percentage of total employees as of December 2020 (excluding direct interns).

Employee Engagement Survey

Nanya conducts an organization-wide Employee Engagement Survey annually to gain insight into employees' level of approval towards the Company on several aspects, including work, management, and organizational vision. This survey used 29 questions to collect employees' opinions on 6 aspects. It received a response rate of 93%, which was a 2% increase from the previous year. The results revealed that the average level of approval from all employees was 71%, showing a slight drop of 1% from the 72% received in the previous year. It is speculated that this was caused by the way that some employee benefits became limited due to the pandemic.

In recent years, the company has been actively launching various practical and effective programs to meet employees' basic needs, including creating comfortable office environments as well as providing food, clothing, accommodation, and transportation services. We hope to achieve the goal of creating a group of joyful technology talents through building a happy workplace.

Average Approval Rate[Note 1]

Aspects	2017		2018		2019		2020	
	Male employees	Female employees	Male employees	Female employees	Male employees	Female employees	Male employees	Female employees
Individual work performance	65%	69%	60%	66%	60%	71%	70%	65%
Engagement with line manager	68%	73%	66%	73%	60%	73%	73%	67%
Understanding of corporate vision / culture	66%	70%	64%	72%	65%	75%	74%	70%
Performance of the managed team	67%	70%	63%	74%	63%	75%	74%	69%
Relationship with peers	77%	79%	75%	81%	71%	81%	81%	76%
Satisfaction with promotion / compensation	64%	65%	58%	65%	56%	65%	65%	59%
Rate of reaching average approval	70%		68%		72%		71%	
Response rate	44%		85%		91%		93%	

Improvement Plans in 2020:

- Introduce professional psychological counseling: Combine psychological counseling with the original counseling program for new recruits to help new employees familiarize themselves with the work environment more quickly.
- Communication group trainings for mid-level managers: Set up group trainings for mid-level managers to help them strengthen leadership and communication skills.
- Formulate a "Female Empowerment Plan": In light of female employees' relatively lower level of satisfaction with promotion/compensation, we have made evaluations and plans for a "Female Empowerment Pan". We hope to improve women's opportunities in work and life as well as increase diversity.

Attractive compensations

Nanya's salary packages for new recruits are determined based on individual educational background, salary standards in the industry, local economics, and supply/demand of the local labor market, and they are outlined in employment contracts. Employees of similar job role, education and career experience are remunerated with equivalent salaries and benefits without gender difference of any kind. Adjustments to employees' salaries and benefits are evaluated primarily based on work performance.

The Company's compensation and welfare systems have been developed through local salary surveys and discussions with regional salary associations, after taking into account factors such as industry competitiveness, macroeconomics, corporate culture and business sustainability. This process ensures the competitiveness of our overall salary package. Monthly salary include base salary, food/transportation/region-based allowance, operational allowance, and efficiency bonus. We also offer additional bonuses and variable compensations based on employees' individual performance and accomplishment of organizational goals (or profitability), and in doing so, we reward employees for their excellent performance and share with them the profits we make as a group, regardless of their gender. In 2020, the average salary of non-managerial full-time employees was 1,412 thousand NTD, a 0.86% increase compared to 2019. The median salary of non-managerial full-time employees was 1,166 thousand NTD.

Non-managerial Full-time Employees

	2019	2020	2020's figure compared with the previous year
Head Count	3,133	3,310	177
Average Salary (thousand NTD)	1,400	1,412	12
Median Salary (thousand NTD)	1,163	1,166	3

Note 1: This survey uses a ten-point system. "Average approval" refers to 7 points or more. The percentages in the columns represent the percentages of survey responses that indicated 7 points or more.

Terms of compensation that enhance talent retention

Nanya is a composition of Taiwan High Compensation 100 Index, indicating the strong competitiveness of the Company's compensations.	Year-end bonus, festive bonus, Dragon Boat Festival/Mid-autumn diligence bonus, grade bonus	Long-term incentives: Include employee remuneration, employee stock option certificates, incentive bonus and annual salary adjustments

Employee remuneration — Subject: **All permanent employees**

- Amount allocated to employees from previous year's earnings, subject to resolution of the board of directors and shareholders

Employee stock option certificates — Subject: **Employees conferred with warrants**

- Employees' rights to subscribe a certain quantity of the Company's shares at the specified price within the effective duration in the future

Incentive bonus — Subject: **All permanent employees**

- Bonus is allocated based on quarterly target accomplishment, individual performance and percentage of days on the job

Annual salary adjustment — Subject: **All permanent employees**

- Salary is adjusted in line with increased price level, peer standards, and competitive margin over peers

Starting salary and terms of compensation are indifferent between male and female employees in Taiwan. Female managers received slightly lower compensation on average than males in 2020. In terms of total salary package, females received 93.72% that of males on average; in terms of total salary plus remuneration, females received 94.91% that of males on average. This difference was mainly attributed to the higher average years of service among males, which entitled them higher compensation and remuneration compared to females. In 2020, female employees of non-managerial role received total salary package at 110.34% that of male counterparts on average, and remuneration at 113.49% that of male counterparts on average. Females received higher compensation and remuneration than males in this respect mainly because of their higher average years of service. Overall, the Company offers competitive compensation along with full benefits and facilities that enable employees to maintain job security and quality lifestyle.

2.17%
Increment of starting salary[Note 1] for entry-level production line operators over the minimum wage

NT$24,520 up
Starting salary for entry-level production line operators

58.83%
Increment of starting salary for employees with bachelor degree in engineering over the minimum wage

NT$38,120 up
Starting salary for employees with bachelor degree in engineering



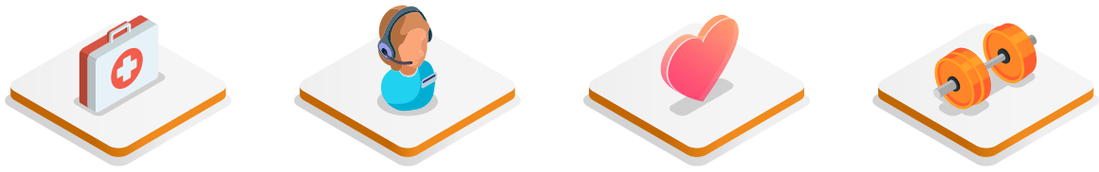
Comparison of average gender compensation - Taiwan

Compensation Between Male and Female	2017	2018	2019	2020
Female-to-male total salary[Note 2] ratio of managing supervisors[Note 4]	-	-	-	-
Female-to-male total salary + remuneration[Note 3] ratio of managing supervisors	-	-	-	-
Female-to-male total salary ratio of managerial roles[Note 5]	86.77%	88.64%	92.35%	93.72%
Female-to-male total salary + remuneration ratio of managerial roles	89.43%	92.07%	93.24%	94.91%
Female-to-male total salary ratio of non-managerial roles	110.35%	109.11%	109.02%	110.34%
Female-to-male total salary + remuneration ratio of non-managerial roles	116.37%	115.31%	113.15%	113.49%

Note 1: The minimum wage was adjusted to NT$24,000 on January 1, 2021.
Note 2: "Total salary" refers to the regular salary (including basic salary, efficiency bonus, meal/location/transportation allowance, operational/professional bonus, and other payable items) + grade bonus.
Note 3. "Remuneration" refers to incentive bonus + employee remuneration + festive bonus + Mid-autumn and Dragon Boat Festival Diligence bonus + year-end bonus.
Note 4. "Managing supervisor" refers to assistant vice president grade and above, and the Company had 0 female senior manager in the last 3 years.
Note 5. "Managerial role" refers to section chief + department head + plant/division head.

W.A.K.E - A Friendly Workplace with an Energized Workforce

In addition to providing salaries that are competitive for the industry, Nanya also promotes the Employee Assistance Program. It is combined with WAKE Up actions—a full range of employee benefit measures based on the themes of "wellness", "assistance", "kindness", "exercise". We hope to achieve the goal of creating a group of joyful technology talents through building a happy workplace.

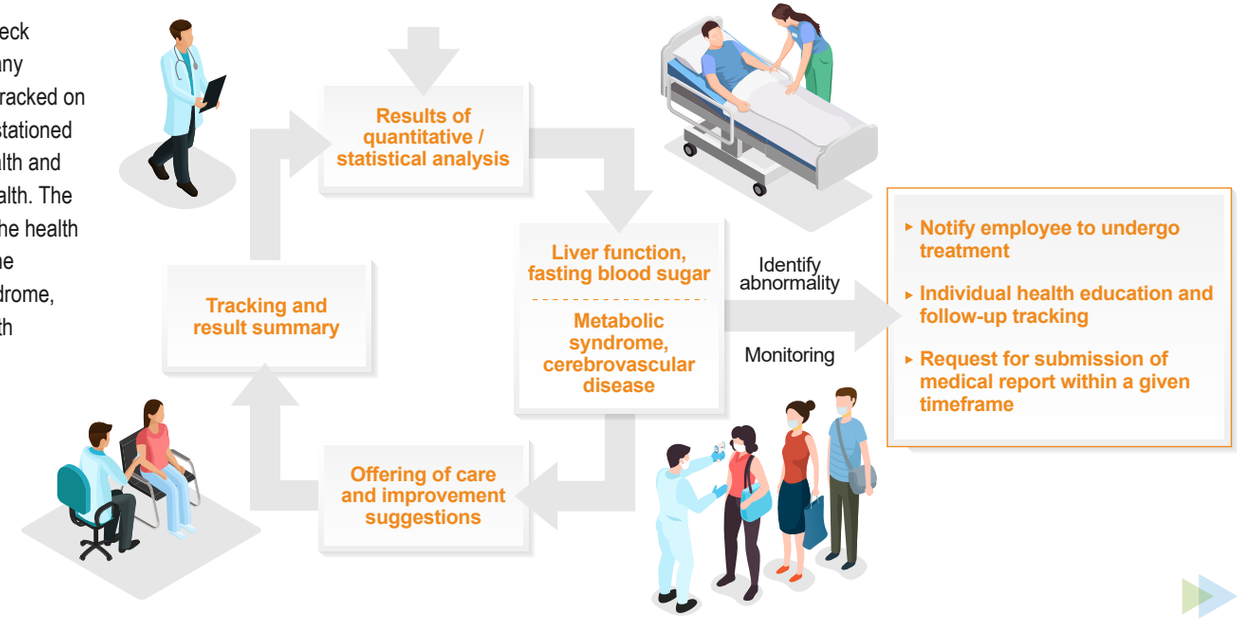


Wellness

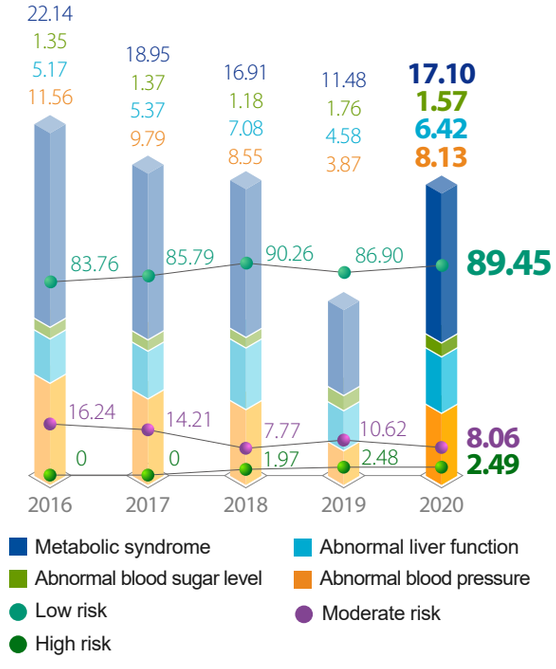
The Company collaborates with professional medical team from Chang Gung Hospital to provide annual health check service for employees. A total of 1526 employees had completed their health checks in 2020, for which the Company incurred total expenses of NT$1,699,405 in expenses. Employees who exhibit abnormal health check results are tracked on an ongoing basis and subjected to health management. All of our factories have a medical room with a physician stationed on site to provide employees with professional medical and consultation services. Seminars on spirituality and health and healthcare courses are arranged each quarter to meet employees' need for knowledge on physical and mental health. The Company offers regular employee health check services that are more favorable than what the laws require, and the health checkup also includes cancer screenings for α-Fetoprotein, carcinoembryonic antigen and oral cancer and waistline monitoring. Employees who exhibit abnormal health conditions (such as liver function, blood sugar, metabolic syndrome, cerebrovascular disease etc) are identified based on the health check results, and the Company provides them with healthcare information, suggestions and follow-up tracking.

Nanya Technology Friendly Workplace Video
https://youtu.be/sYVw-f_f45o

	2017	2018	2019	2020
Abnormal blood pressure	9.79%	8.55%	3.87%	8.13%
Abnormal liver function	5.37%	7.08%	4.58%	6.42%
Abnormal blood sugar level	1.37%	1.18%	1.76%	1.57%
Metabolic syndrome	18.95%	16.91%	11.48%	17.10%
Low risk	85.79%	90.26%	86.90%	89.45%
Moderate risk	14.21%	7.77%	10.62%	8.06%
High risk	0	1.97%	2.48%	2.49%
Total employees completing health checks for the year	950	1,017	1,420	1,526
Total	5,726			



Health promotion



Note: Risk levels are determined by using health check data (age, cholesterol, high-density cholesterol, blood pressure, diabetes, smoking history) to estimate the risk of developing ischemic heart disease within ten years.

In addition to arranging health check for employees, the Company also has a Health Center available to provide services such as preliminary treatment of injuries, preventive healthcare, weight management, and smoking cessation consultation. As a member of the Formosa Plastics Group, the Company is supported by the medical resources of Chang Gung Memorial Hospitals, including medical center-grade treatment and healthcare services. Employees of the Company and dependents are subsidized when seeking treatment at Chang Gung Memorial Hospitals, and are entitled to discounts on health checkups and various deductibles not covered by National Health Insurance Scheme. The Company started holding charitable weight loss competitions in 2019. Employees are encouraged to sign up individually or as a team of 5 people. For every 1,000 grams of weight lost by employees, the Company donates NT$1,000 to charitable organizations (the maximum donation amount is NT$500,000). The competitions not only help employees with weight control, but also serve as a measure to donate funds to those in need. In 2020, a total of 419 employees participated, and their weight loss totaled 834.7 kg.

Response to epidemic disease

The Company has assembled an Epidemic Response Team based on recommended practices for SARS and avian influenza to facilitate quick response in the outbreak of epidemic disease, such as influenza virus. Response measures are being devised and conveyed to employees on an ongoing basis. At the end of 2019, when sporadic COVID-19 cases emerged, the Company immediately put the Epidemic Response Team into action, conducting work allocation and drills for various tasks. For example, when any infection cases occur, investigations based on the activity histories of the infected people issued by the Central Epidemic Command Center are immediately initiated, then results are reported back to the Company's Epidemic Response Team in order to promptly set up lists of those going on quarantine leaves or self-health monitoring periods. If necessary, further disinfection and cleaning for the surrounding environment is carried out. The Company's epidemic prevention and response work focuses on the following ten areas: epidemic prevention and control measures, preparation of epidemic-prevention supplies, tracking of atyical cases, personnel health assistance, attendance management, control measures for guests and manufacturer personnel, subsidiary management, compliance with laws and regulations, business operation, and supply chain. With a cautious and prepared attitude, we hope to take preemptive and preventive actions. We have been making every effort to reduce the risks of infection in all of the Company's operations with a diligent attitude and preparedness.

Epidemic prevention propaganda

- Influenza virus response measures are announced internally
- Large posters are placed throughout plant premise to convey the importance of epidemic prevention and test employee understanding.
- Distribution of health self-management notice and rules.

Epidemic prevention measures

- Reporting, containment and epidemic prevention leave.
- Restricting business travels and business errands, as well as number of people in meeting rooms.
- Epidemic prevention for contractors and visitors


Seminar on "Healthy Living According to Traditional Chinese Medicine and Acupoint Massage"



Nanya held 2 blood donations in 2020. The event received a total of 210 blood donation visits, and 327 bags of blood were donated.



Seminar on "My Food Plate and Calorie Counting"



The Company cooperated with the Public Health Center in providing female employees with Pap tests and lessened their inconvenience of arranging transportations for such tests.

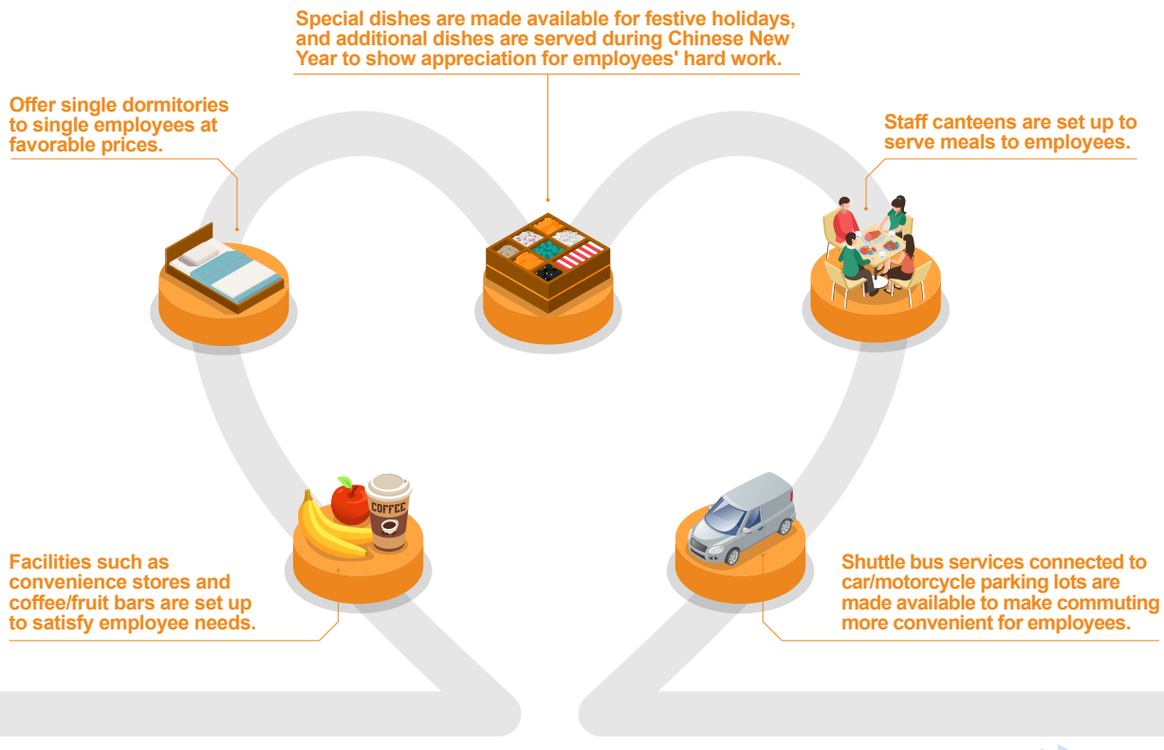

"Love Does Not Hinder" Weight Loss Charity Event



2020 health checkup

Assistance

The Company offers a wide range of benefits from dining, accommodation, shuttle bus to parking to improve the friendliness and convenience of the work environment for employees (please see the attached picture). The Company also has an Employee Welfare Committee available to arrange diverse benefits and activities for employees. The Employee Welfare Committee comprises 9 members, 1 of whom is appointed by the Company whereas the other 8 are elected by employees from different departments. The Employee Welfare Committee received approximately NT$42 million in funding in 2020; the majority of which was spent on incentive trips, festive gifts, birthday vouchers, children's scholarship, group insurance, entertainment, and childbirth and hospitalization subsidies. Due the impact of COVID-19 and to follow government epidemic-prevention policies, in 2020, many routine benefit activities arranged by the Employee Welfare Committee—including BBQ outings, movie carnivals, and end-of-year parties—were canceled. When the pandemic slowed down in November, we were able to hold an expanded "Family Day" with increased quota and sum of money for entertainment.



Main Employee Benefit Measures



Come Gather! 2020 Nanya Family Day - Animal Crossing Activity


Coffee/fruit bar


Convenience store


Clean single dormitory


Staff trips decreased significantly due to the pandemic, but after the pandemic slowed down, employees still took the opportunity to form a few tour groups.

In addition to providing employees with a friendly and convenient work environment as well as various activities that foster a harmonious atmosphere, the Company also has an unpaid parental leave system. Employees may apply for parental leave at their own will. This contributes to the stability of families and society by enabling employees to maintain a balance between work and family without worrying about child care issues. In 2020, a total of 364 employees (112 female and 252 male) were entitled to take unpaid parental leave, and a total of 23 people (19 female and 4 male) had actually applied.

Application of unpaid parental leave and reinstatement rate - Taiwan[Note]

	2018			2019			2020		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
No. of employees entitled to unpaid parental leave	86	219	305	112	244	356	112	252	364
No. of employees applied for unpaid parental leave	24	3	27	19	4	23	19	4	23
No. of people due for reinstatement in the current year (A)	15	1	16	10	2	12	7	3	10
No. of people applied for reinstatement in the current year: (B)	10	1	11	5	1	6	6	2	8
No. of employees still on the job 12 months after reinstatement	9	1	10	9	1	10	5	0	5
Reinstatement rate % (B/A)	66.67%	100.00%	68.75%	50.00%	50.00%	50.00%	85.71%	66.67%	80.00%
Retention rate %	75.00%	100.00%	76.92%	90.00%	100.00%	90.91%	100.00%	0.00%	83.33%

Note:
1. "No. of people due for reinstatement in the current year": does not include employees who applied to extend their unpaid leave during the year.
2. "No. of people applied for reinstatement in the current year": includes employees who applied for reinstatement in the current year before the end of their leave.
3. "Retention rate" refers to the percentage of employees reinstated from unpaid parental leave who continued to work for one year and above.

Kindness

In order to help new recruits adapt to the new workplace as quickly as possible, a counselor is made available to offer regular assistance, counseling, and guidance services to new employees who have joined the Company for less than two years, those who have taken the initiative to ask for help, referrals from supervisors, and employees who have taken long sick leaves. The goal is to reduce employees' feeling of insecurity caused by being in a new environment, and help them integrate into the Company as quickly as possible. In addition, an external professional psychological counseling organization, Teacher Chang Foundation, was introduced to the Company in 2019. Using scientific methods, employees who are facing difficulties are helped to "clarify the nature of the problem", "face difficulties", and then "find solutions". The service is available to employees 6 times a month free of cost; each session is one hour-long; and employees may utilize it for unlimited number of times. By using systematic methods to prevent and help with employees' problems, we stabilize employees' work quality as well as physical and mental well-being.

Number of times a new recruit received counseling service for adapting to new workplace:

	2018	2019	2020
Individual Counseling	106	45	107
Group Counseling	163	291	179

Results of Teacher Chang Foundation's Counseling Service



Used **63** times.

Usage rate: **95.45%**

Level of Satisfaction with the Counseling (5-point scale): **4.91**

Improvement of the Problem (10-point scale): **8.81**



For the convenience of female employees, the Company offers priority parking lots for pregnant employees and has nursery rooms in place to support gender equality in the workplace. The Health Center also conducts maternal health hazard evaluations for pregnant and breastfeeding women.

Mental Health and Stress Relief Seminars



3 Mental Health Seminar were held

83 people participated

Level of Satisfaction: **4.56**





The Company complies with the Occupational Safety and Health Act, and as an employer, it undertakes hazard evaluation, control and classification measures for work activities that are hazardous to maternal health. For female workers who are pregnant or have given birth less than a year ago, the Company adopts health protection measures and adjusts work details as recommended by physicians, and keeps relevant details on record. The Company disseminates health-related information and organizes women's health seminars on a regular basis. There are professional nurses stationed at plant sites to offer counsel on infant care for pregnant women. Nursery rooms fully equipped with lockers, refrigerators and water heaters have been deployed at all plant sites for the peace and comfort of all breastfeeding employees.



Priority Parking Lots for Pregnant Employees



Lactation Room

Exercise

The Company organizes sport and entertainment activities from time to time to advocate work-life balance. By encouraging the creation of sport clubs and exercise space, we aim to promote sport habit and employees' physical as well as mental health. Full-fledged sports/fitness center:

Full-fledged sports/fitness center

The multi-purpose sports and recreation center includes air track, basketball court, badminton court, KTV, pool table, table tennis, aerobics room, massage chair, and fitness equipment



43,595 visits
Number of visits to the sports and recreation center in 2020

Promotion of sports habits

To help employees maintain sound physical and mental health, Nanya holds various events to promote the value of exercising. Fundings are also provided to sports clubs such as the jogging club, basketball club, table tennis club, badminton club, and slow pitch club. In 2019, a series of "Sports Festival" activities were launched. Through the combination of creative proposals from various departments and clubs, as well as the sports venues and facilities, we successfully promoted sports, creative thinking, and vitalized the Company's organizational atmosphere. Nanya's multiple initiatives to promote exercising led to the Company being awarded the "2019 Exercise Enterprise Certification Award" issued by the Sports Administration, MOE. The Company also won the "2020 Outstanding Healthy and Active Workplace Award" issued by the Health Promotion Administration, MOHW, which shows the improvements in the Company's sports ambiance and the external recognition it receives.



Nanya receiving the "2020 Outstanding Healthy and Active Workplace Award".


The 2020 Sports Festival Activity consisted of 13 departmental teams, with more than 1,000 participants.


The fully-equipped recreation center is the best place to head to after work for employees who are sports enthusiasts.

Diverse club activities

The Company has a total of 24 clubs with diverse themes, including parenting, jogging, basketball, table tennis, badminton, slow pitch and hiking. More than 1,215 employees participated in the above club activities in 2020. The Company also encourages the clubs to hold annual recruitment events to increase staff participation and work-life balance.



The jogging club formed teams to enhance team chemistry through participation in competitions.


The basketball club holds 3 on 3 tournaments every year. Members' strengths are enhanced through competitions.



With the "2020520" slogan, the cycling club successfully completed the challenge of cycling from Taiwan's northernmost lighthouse to the southernmost lighthouse in a day on May 20.

HUMAN RIGHTS

Human rights policy

Nanya places great emphasis on employees' rights and has formulated the Labor and Ethics Policy. The Company complies with relevant international human rights standards, including the behavioral guidelines of Responsible Business Alliance (RBA), Social Accountability 8000 Standard (SA8000), International Labour Organization (ILO), The Universal Declaration of Human Rights, The UN Guiding Principles on Business and Human Rights, General Data Protection Regulation (GDPR) and local government regulations. By implementing human rights risk assessment and management, the Company hopes to create an inclusive and diversity-friendly workplace.

The Company commits not to hire child labor younger than 16 years of age and has never hired child labor. For the protection of employer's and employees' rights, all employees are given an employment notice prior to the work commencement date. The Company signs employment commitment in writing with all new recruits on the work commencement date, and 100% of employees have signed the commitment, meaning that all employees of the Company are fully protected by the terms of the employment contract. All employees have been hired with employment terms established under the free will, consent and consensus of both parties; no employee was forced or coerced to perform work activities unwillingly. In addition, there were no anti-discrimination incidents in 2020. "2020 Policy and Code of Conduct Training" and "2020 Unsafe Workplace Behavior and Prevention Training" are some of the training courses related to human rights policies and procedures in 2020, and the trainings mentioned are compulsory for all employees. The percentage of employees who have received the trainings is 100%, and the total person-hours of training is 6,879 hours.

Statistics on human rights policies and procedures training hours from 2017 to 2020

	2017	2018	2019	2020
Total person-hours of training	685	1,510	1,059	6,879

Note: Human rights policies and procedures training include the Company's labor and ethical regulations, the RBA Code of Conduct, unsafe workplace behavior and prevention, and the training mentioned is arranged for all employees. In response to the redefinition of the scope of training, total person-hours of training of the previous three years was adjusted correspondingly.

Human rights risk survey

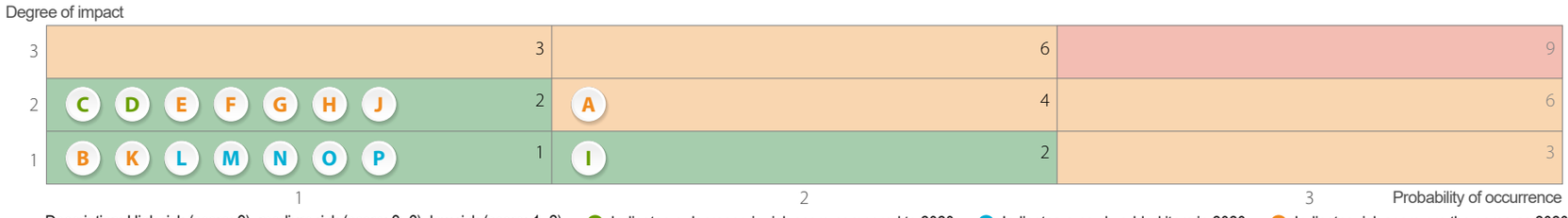
Nanya assesses human rights risks using RBA and workplace health principles. The Company has an internal audit system in place to regularly assess employees' risk exposure and devise mitigation measures accordingly. We constantly identify human rights issues, susceptible parties and departments, and perform human rights risk assessments on a regular basis. Risk values are calculated to reflect the percentage of people at risk relative to total employees; based on the assessment results, the Company is able to devise annual improvements and set mitigation targets for human rights risks in the future.

In 2020, the Human Rights Risk Assessment Framework was updated to include issues of human trafficking, equal remuneration, non-discrimination, freedom of association, and right to collective bargaining. A high-risk assessment method was also set up to calculate risk values based on the percentage represented by high-risk persons. The human rights risk value was 3.6% in 2020, which was a decrease of 6.8% compared to 2019. However, overtime work was still a medium-risk issue with exposure risks. We also launched mitigation and remedial measures in response to human rights risk factors.

Human rights risks of Nanya

Human rights issues	Parties susceptible to influence	Assessment tools	2019 risk	2020 risk value	2020 risk	2020 risk value
Occupational injury	Production/new recruit	Occupational injury report	Low	10.4%	Low	3.6%
Overtime	Production engineer / technician / R&D personnel	Attendance system	Medium		Medium	
Employment dispute	All employees	Government correspondence on employment disputes	Medium		Low	
Workplace violence	All employees	Grievance investigation	Medium		Low	
Child labor	Employees aged 18 and below	Identity proof	Low		Low	
Forced labor	All employees	RBA internal audit	Low		Low	
Protection of Personal Data	All employees	Cases of violation on personal data protection	Low		Low	
Maternity protection	Females in pregnancy or within 1 year of labor	Pregnant women or women who have given birth within less than a year are included in the tracking list if the work environment has caused harm to the mother or fetus.	Low		Low	
Protection of occupational health	People with blood pressure >140 / 90mmHg or metabolic syndrome	Health figures that did not become under control after assistance, health education, and medical treatments.	Medium		Low	
Abnormal workload	Overtime working exceeding 37 hours a month for 6 consecutive months	Physical and mental health test scale	Low		Low	
Ergonomic engineering	People with ergonomic engineering risk grade >2	Tests for musculoskeletal injury and disease	Low		Low	
Human trafficking	All employees	Grievance investigation			Low	The risk values for the newly added assessment items in 2020 are zero.
Equal remuneration	All employees	Grievance investigation			Low	
Non-discrimination	All employees	Grievance investigation			Low	
Freedom of association	All employees	Grievance investigation			Low	
Right to collective bargaining	All employees	Grievance investigation			Low	

Human rights risk matrix



Description: High risk (score: 9), medium risk (score: 3~6), low risk (score: 1~2) Indicates a decrease in risk score compared to 2020 Indicates a newly added item in 2020 Indicates risk score are the same as 2020

Human rights issues	2020 risk	Mitigation measures	Remedial measures
A. Overtime	Medium	Attendance system prompt and control	Provide overtime pay and rest time in accordance with the law, conduct abnormal workload assessments and provide counseling, assign tasks in a reasonable and fair manner, implement educational trainings to improve work efficiency, increase manpower in accordance with organizational needs.
B. Occupational injury	Low	Regularly conduct risk identification, perform preventive educational trainings for drivers, eliminate workplace hazardous factors and increase protective equipment.	Provide emergency medical and first aid treatment, complete medical assistance; allow leave of absence and provide compensation in accordance with the law.
C. Employment dispute	Low	Have reasonable and clear company policies, multiple employee complaint and communication channels; proactively collect information on labor laws and modify relevant management policies in a timely manner.	Establishing and fulfilling the rights and obligations of workers and management.
D. Workplace violence	Low	Have a complete internal mechanism for handling sexual harassment complaints, conduct sexual harassment prevention trainings, have a complete internal mechanism for handling workplace bullying, conduct workplace bullying prevention trainings.	Immediately make effective corrections and implement remedial measures; assist in arranging counseling when necessary; make referrals to professional counseling services or medical institutions; adopt appropriate corrective, disciplinary, and issue-solving measures.
E. Child labor	Low	Explicit prohibition on the use of child labor in the manufacturing process; implementation of identity checking measures.	Terminate child labor immediately, and the personnel is subject to the redundancy process; the parents and legal guardians of the child worker shall be notified; the Company covers the transportation/accommodation/other expenses involved in sending the child home.
F. Forced labor	Low	Explicit prohibition on the use forced labor in the manufacturing process.	Terminate the personnel's work immediately, and the personnel is subject to the redundancy process.
G. Protection of Personal Data	Low	Personal data risk register and assessment; formulate and execute improvement measures for items with high-risk ratings.	Immediately notify affected persons and execute appropriate actions.
H. Maternity protection	Low	Implement the health management plan of "Maternal Health Protection for Female Workers", conduct workplace hazard assessments, provide prenatal- and postpartum-related health education.	Perform evaluations by on-site professional doctors and related teams; arrange doctor interviews and health assistance.
I. Protection of occupational health	Low	Dietary education, health promotion events (quiting smoking, weight loss).	Arrange doctor interviews and health assistance.
J. Abnormal workload	Low	Conduct hazard assessments and make improvements; provide health-related counsel and recommendation.	Arrange doctor interviews and health assistance.
K. Ergonomic engineering	Low	Implement prevention programs against disease caused by abnormal workload; identify and evaluate high-risk groups; conduct health inspections, management, and promotion.	Arrange doctor interviews and health assistance.
L. Human trafficking	Low	Explicit prohibition on the use forced labor in the manufacturing process.	Terminate the personnel's work immediately, and the personnel is subject to the redundancy process; notify police agencies and relevant authorities.
M. Equal remuneration	Low	Explicit prohibition on discriminatory practices in recruiting or hiring processes.	Immediately make effective corrections and implement remedial measures; re-examine company policies and promote correct concepts in the management level.
N. Non-discrimination	Low	Explicit prohibition on discriminatory practices in recruiting or hiring processes.	Immediately make effective corrections and implement remedial measures; re-examine company policies and promote correct concepts in the management level.
O. Freedom of association	Low	Conduct educational trainings for new recruits; promote correct concepts in the management level.	Immediately make effective corrections and implement remedial measures; adopt appropriate corrective, disciplinary, and issue-solving measures.
P. Right to collective bargaining	Low	Have clear and fair company policies, multiple employee complaint and communication channels; negotiate with the labor union before modifying labor conditions and work rules.	Immediately respond to appeals and conduct good faith bargaining.

Workplace Violence Prevention Measures

Nanya has a "Written Statement on Prohibition of Workplace Violence". It is signed by the top leader to demonstrate the Company's commitment to having zero tolerance for workplace violence. Before the release of the guidelines on workplace violence, the Company already had the "Workplace Sexual Harassment Prevention, Grievance and Disciplinary Policy" and "Nanya Employee Complaint Guidelines" in place; regarding the improper treatment of workers in the workplace, relevant preventive measures and follow-up investigations had been formulated. In 2019, these two sets of policies were integrated into the "Nanya Employee Protection and Complaint Measures" to make management more complete. In 2020, the Company started conducting employee protection measures, hazard prevention and identification, and risk assessments for each department. People with potential risks are listed as subjects of management as a measure to prevent and reduce risks in advance. Division, department, and section managers are also subject to policy education and asked to make declarative statements. Managers' self-check lists are also used to ensure the elimination of workplace violence. In August 2020, the complaint investigation mechanism was further strengthened and a complaint review standing committee was established. Upholding the principles of fairness and impartiality, appropriate punishment is imposed on the violators in valid complaint cases according to proportionality and severity of the situations. There are no sexual harassment cases in 2020.

2017	2018	2019	2020
Sexual harassment cases			
0	0	1	0

In addition, the Company not only has counseling rooms but also cooperate with the Teacher Chang Foundation to offer on-site counseling services. This provides space for employees to talk and receive counseling. Workplace mental health improvement seminars are also held regularly to provide workers with relief channels.

Grievance channels

The following grievance channels have been implemented according to "Nanya Employee Protection and Complaint Measures", "Workplace Sexual Harassment Prevention, Grievance and Disciplinary Policy," and "Nanya Whistleblower Policy": The Human Resource Department is responsible for handling inappropriate or unfair work requests, workplace harassment and other work-related issues. Illegal, non-compliant and inappropriate conducts involving the Company can be reported to the President's Office through mail or phone.

Labor-management relations and communication

The Company has diverse, open and transparent communication channels in place to maintain harmonic employment relation, facilitate labor-management collaboration and improve workers' benefits. These communication channels not only enable employees to express opinions on various issues concerning health, safety, benefits and basic work conditions, but also allow the Company to take initiative in learning employees' thoughts and address problems in a timely manner. The Company also has complaint mailbox, whistleblower hotline and sexual harassment prevention hotline available for reporting illegal matters, and any opinions concerning corporate policies may be raised using the "Management System Improvement Opinion Form". Employees are entitled to communicate openly and thoroughly with the management about work-related or personal affairs, terms of employment, salary, benefits and personal opinions through the following channels:

Meetings

- Regular convention of employee meetings
- Administration contact window forum
- Production line workers' quarterly meetings
- Unscheduled department meetings

Bilateral communication platform

- Life Space
- Feedbacks and opinions
- Epidemic prevention mailbox

Electronic survey

- Satisfaction with catering service
- Satisfaction with activities
- Employee Engagement Survey



Employee meetings are held two times a year.



Interactive opinion section

68 cases
Number of feedbacks and opinions raised in 2020

Within 5 days
Average time of reply per case



The TOP 3 issues

- Parking issues - 19 cases (27.94%)
- Plant environment issues - 16 cases (23.53%)
- Epidemic prevention issues - 8 cases (11.76%)

The employees of Nanya have established a labor union since April 2012. Although the Company and the labor union have not signed a group agreement, we still actively maintain communication and harmony. Monthly meetings with the labor union have been suspended due to the COVID-19 pandemic, but various communication channels are still utilized to exchange information, allowing the labor union to fully perform its functions and express opinions. This strengthens the harmonious employment relationship and benefits.

Union members in the last 3 years - Taiwan

	2018	2019	2020
Number of union members	71	81	82
Percentage of employees with union membership	2.27%	2.53%	2.39%

TALENT DEVELOPMENT

Talent Development System

Talent Development Guidelines



Ideals

Nanya is people-oriented and sustainability, and advocates lifelong learning while assisting employees with their career development. It is the Company's goal to create a competitive talent cultivation and development system that is suitable for the semiconductor industry.



Policies

To improve talent quality and support employees' ongoing education and career development. To optimize the training system and offer diverse, systematic training solutions needed for employees to develop proper skills, knowledge and attitude, and thereby accomplish the Company's annual strategic objectives.



Goals

- 2021 Goals: Percentage of key talents among all employees ≥ 3%; Internal employee substitution rate for job openings ≥ 60%
- 2025 Goals: Percentage of key talents among all employees ≥ 6%; Internal employee substitution rate for job openings ≥ 65%



System

Training procedures, education/training implementation rules, structured on-the-job training policy, on-the-job training management policy, internal instructors training policy, mid-level management and executive talent cultivation policy, and training materials management policy.



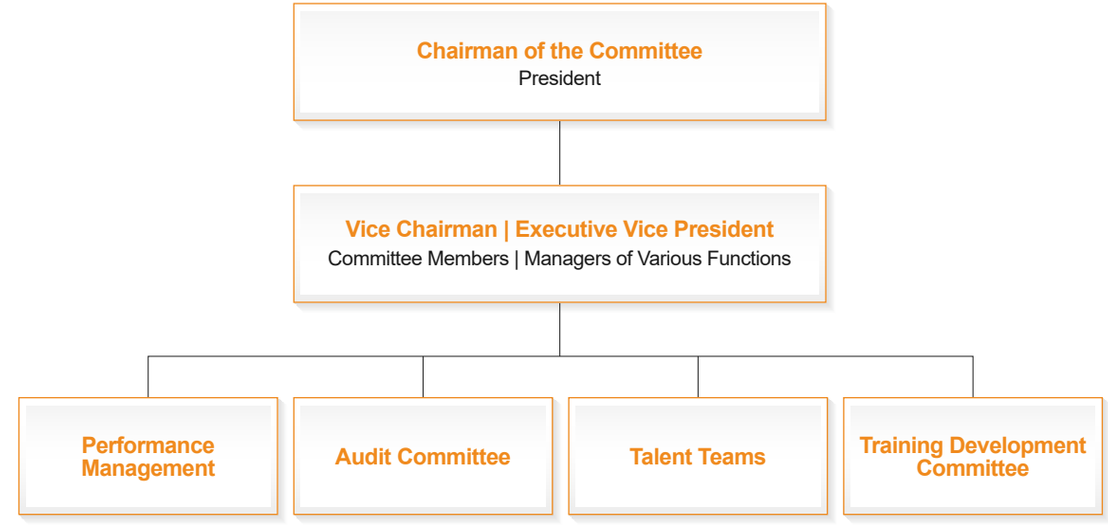
Implementation

Devise and execute annual talent cultivation and development plans according to corporate strategies, and implementation indicators are reviewed monthly. On a quarterly basis, senior executives and members of the Talent Cultivation and Development Committee come together to review the plan implementation progress and the effectiveness of talent cultivation and development efforts.

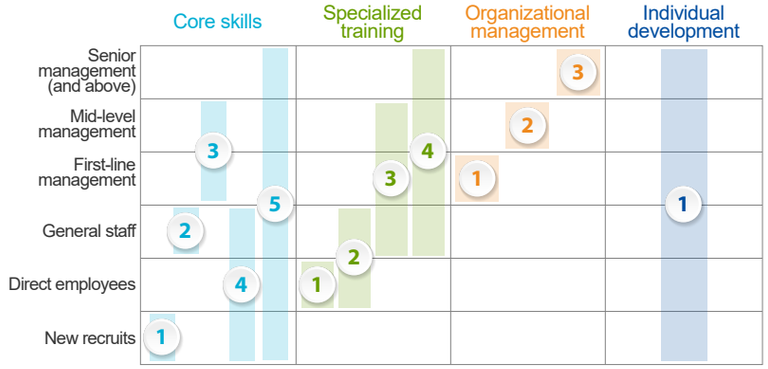
Talent Cultivation and Development Training System

Despite the ravages of COVID-19 in 2020, Nanya still continues to improve the quality and effectiveness of the talent cultivation and development strategies formulated for employees. Several management systems—including training, promotion, reward, and disciplinary systems—have been integrated; the Talent Cultivation and Development Committee has been established; and the Company's overall talent cultivation and development training system is continuously developing and improving. In addition, talent development pathways are structured. With the themes of [Talent "Smart" Incubator] and [Intelligent "Dream" Factory], the Company conducts various training and development courses according to the talent cultivation and development training system. The courses include managerial skill training for managers, new recruit training, general training, position-specific training, key talent cultivation, internal instructor training, direct personnel training. Independent learning plans are also incorporated to encourage on-the-job personal career development. The Company continuously enhances the effectiveness of its skill development efforts while inspiring creativity within the organization. Through internal trainings and the knowledge management system, employees are able to engage in online and offline learning, share and generate the needed skills, knowledge, courses, and information. External trainings, seminars, technical forums, and other learning resources are also provided to create a learning organization and improve the overall training result.

Talent Cultivation and Development Committee



Talent Development Training System



Core skills

1. Orientation camp
2. ▸ Training and evaluation for new recruits
   ▸ Orientation phase 2
3. Consensus camp, core value, teamwork
4. On-the-job training (OJT), one-to-one mentorship
5. Policy, general knowledge, diversified themed seminar

Specialized training

1. Trainer's camp
2. Qualification evaluation, employee operation
3. ▸ Topic-specific training
   ▸ Specialist training
4. ▸ Technical thesis, conference, corporate forum, seminar, etc.
   ▸ Management reserve training, Formosa Plastics Group specialist

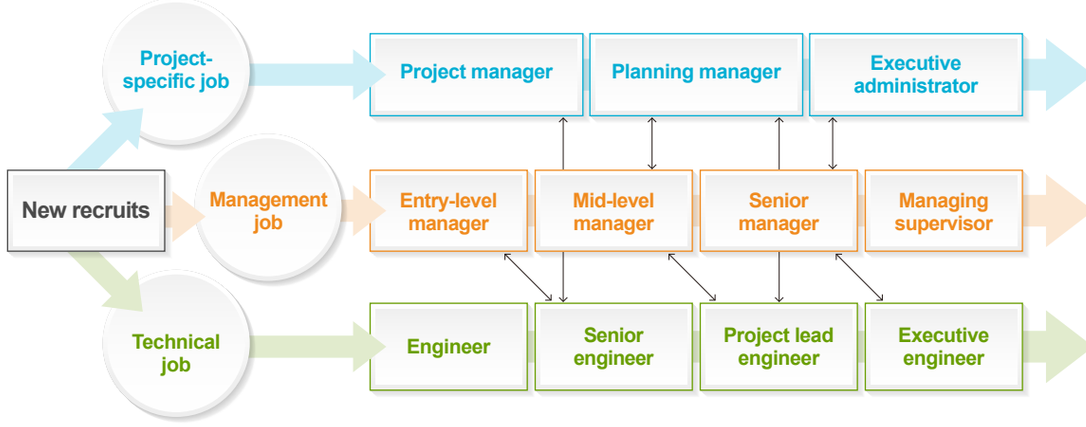
Organizational management

1. ▸ Entry-level management skills
   ▸ On-site supervisor training
2. Mid-level management skills
3. ▸ Strategic planning
   ▸ Senior management skills

Individual development

1. ▸ Language skill improvement
   ▸ Cultural quality development, instructor training
   ▸ Individual development plans, key talents, key talent evaluation
   ▸ Club activity, healthcare, investment seminar etc
   ▸ On-the-job education, external training, external assignments, job rotation (training) and promotion

Talent Cultivation and Development Pathways



Structural Components of the Talent Development Training System

The talent development training system is made up of four major components - core skills, specialized training, organizational management, and individual development. The descriptions of the components are as follows:

Core skills

▸ **Orientation**

The orientation is intended to provide new employees with a quick understanding of the corporate environment and the semiconductor industry, and help them adapt to the Company's organization and culture in shorter time. The orientation offers a comprehensive range of basic training and on-the-job training courses to shorten employees' learning curve and help them complete the basic training requirements for their jobs. The Company hired additional staff in 2020, and 472 new recruits completed their orientation during the year.

▸ **General knowledge training**

This training mainly comprises courses that have been structured in line with the government's legal requirements on worker safety, environment and health; compulsory position-specific trainings; or clients' product quality requirements; or the Company's business development strategies. In 2020, 29,042 hours of training in total were provided through various training programs.

Specialized training

▸ **Function-based specialized training**

Specialized training is a systematic way for employees to develop professional knowledge and the required skills. It incorporates one-to-one mentorship, operations certification, and external training assignment. This year, more emphasis was given to customer service precision training to help improve professional capabilities of individual employees. The completion rate of on-the-job training is 100%.

▸ **Direct employee training**

Direct employees are offered pre-job training on professional knowledge and machine operation skills. Seventy-four employees have successfully obtained the machine operation certification. By adopting the trainer system and offering rewards, direct employees are given the incentive to adapt quickly to the clean room environment and join the production line at an earlier time. A total of 115 direct employees had completed their training during the year.

Organizational management

▸ **Management competence training**

The Company not only regularly offer management competence training for managers of different levels, but grade 1 and grade 2 management reserves are also required to participate in advanced management workshops depending on their roles. These training courses are intended to improve leadership, decision-making and adaptation of management philosophy among management reserves. The Company's yearly strategy and team consensus are strengthened by the annual senior management strategy meetings and management team consensus camp. These effectively help with achieving the Company's goals. The total training time for managers of different grades reached 9,067 hours in 2020.

Individual development

▸ **Internal instructors training**

The Company has an internal training program in place to develop quality instructors for the purpose of transferring corporate knowledge and building training capacity. The company has developed a total of 305 internal instructors, and 4 were newly certified in 2020. As a show of gratitude and encouragement for instructors' continuous contribution to company training and the enhancement of internal education, the Company organizes instructor commendation events every September with the support and participation of senior management. A total of 16 top-performing and passionate instructors were commended in 2020.

▸ **Employee individual development**

The Company formulates independent learning plans to continuously encourage employees' individual development, promote lifelong learning, and support career development among employees. Administrative resource and incentives are also offered in accordance with the Company's on-the-job training policy to encourage continuous learning. In 2020, a total of 714 people engaged in on-the-job degree programs, and the internal employee substitution rate for job openings was calculated at 72.1%

The Company also uses professional certification and offers job rotation and project involvement opportunities as means for employees to expand their areas of expertise. To ensure effective control of materials used internally by various departments for Structured on-the-Job Training (S-OJT), the Company has established a set of training material management guidelines and integrated it with the approval process of the knowledge management system so that the training materials are managed, updated, accessed and shared more efficiently through a unified portal. The system currently holds 2,572 internal training materials contributed by various departments.



Management team consensus camp.



Award ceremony for outstanding instructor.

Talent Cultivation and Development Results

Despite the outbreak of COVID-19, talent development and training did not stop in 2020. Relevant training performance data and indicators continued to grow, and 51.7% of employees engaged in independent learning development plans (a 30% increase from the previous year). Talent training performance data and indicators for the last 4 years are presented below:

Employee Training Data by Gender

	Female				Male				Total			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Total man-hours of training (hours)	14,870	21,128	30,251	30,758	41.446	51,946	76,635	80,477	56,316	73,047	106,886	111,235
Total employee count (persons)	879	925	930	973	2,105	2,294	2,377	2,569	2,984	3,219	3,307	3,542
Average training hours per person (hours)	16.9	22.8	32.5	31.6	19.7	22.6	32.2	31.3	18.9	22.7	32.3	31.4

2020 Employee Training Data by Age

	Female			Male		
	Under 30 years old	30-50 years old	Over 50 years old	Under 30 years old	30-50 years old	Over 50 years old
Number of Employees	156	769	48	706	1,669	194
Man-hours of training (hours)	5,865	23,626	1,267	26.238	48,944	5,295
Average training hours per person (hours)	37.6	30.7	26.4	37.2	29.3	27.3
Training expense (NT$)	453,827	2,290,897	137,597	2,002,158	5,166,354	1,018,694
Average training expense per person (NT$)	2,909	2,979	2,867	2,836	3,095	5,251

Note: The average training expense per person for women over 50 years old is much lower than that for men over 50 years old, primarily becuase female direct employees over 50 years old represent the majority.

Average Employee Training Time by Category[Note 1]

	Female				Male				Total hours			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Managerial role	12.2	13.2	22.8	33.5	13.2	13.7	22.8	29.3	3,908	4,446	7,577	9,067
Professional technology	21.0	23.5	30.6	26.7	22.5	24.3	31.7	26.9	34,981	40,821	55,213	54,400
Administrative support	21.8	26.5	57.5	52.2	16.7	25.7	55.9	50.8	10,891	16,021	35,315	33,529
Direct employees	12.4	20.2	14.8	27.7	12.4	19.9	14.5	27.2	6,536	11,786	8,781	14,239

2020 Management Training Data by Level[Note 2~3]

	Female				Male			
	Entry-level manager	Mid-level manager	Senior manager	Managing supervisor	Entry-level manager	Mid-level manager	Senior manager	Managing supervisor
Number of managers (persons)	90	23	3	-	6	156	52	14
Man-hours of training (hours)	2,117	549	159	-	141	3,173	2,599	329
Average training hours per person (hours)	23.5	23.9	53.0	-	23.5	20.3	50.0	23.5
Training expense (NT$)	653,308	153,540	70,497	-	43,554	903,132	1,155,636	333,486
Average training expense per person(NT$)	7,259	6,676	23,499	-	7,259	5,789	22,224	23,820

Note1: Independent learning was strengthened in 2019. Individual development plans—including professional capability expansion, diverse lectures, and language skills—were provided, so "administrative support" shows increased numbers.

Note2: Employee training hours do not include training under mentorship.

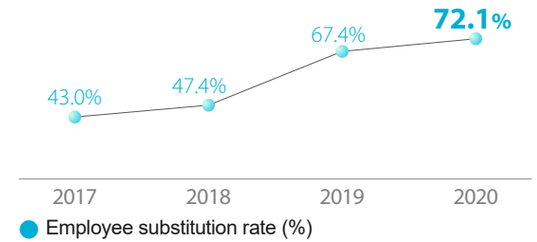
Note3: Managerial role refers to a position in the management level, including entry-level managers (team leader, shift leader), mid-level managers (department manager and section manager), senior managers (plant manager and directors), and managing supervisors (Assistant Vice President and above).

Note4: Employee substitution rate (%) = number of internal opening substitution of the year/total number of internal job openings of the year*100%

Data of Training Courses for the Past Few Years

2017	2018	2019	2020
Total course enrollments			
22,018	38,218	103,301	134,829
Total man-hours of training			
56,316	73,074	106,886	111,235
Total number of classes			
981	1,786	1,873	2,128
Total class hours			
2,524	5,689	5,982	5,254

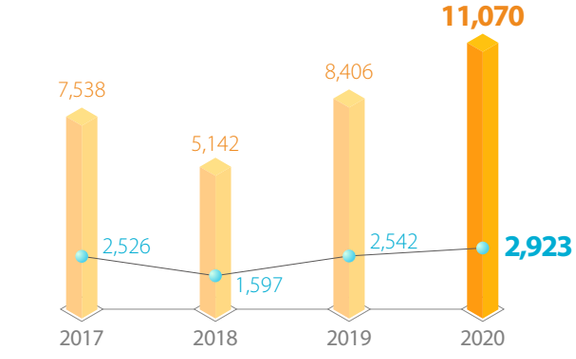
Employee substitution rate[Note 4]



Statistics on the number of internal employee substitution for job openings in 2020

Female	Male	Total
Under 30 years old		
14	43	57
30-50		
9	98	107
Over 50 years old		
0	9	9
Management level (A+B+C+D)		
0	12	12
Managing supervisor (A)		
0	0	0
Senior manager (B)		
0	6	6
Mid-level manager (C)		
0	6	6
Entry-level manager (D)		
0	0	0
Non-management level		
23	138	161

Training Expenses for the Past Few Years



In order to effectively connect the Company's strategic goals with training implementation, Donald Kirkpatrick's training evaluation model is adopted to evaluate the performance of each training courses. The definitions of the KPIs for each criterion (L1-L4) are established, and the Company's operational strategic goals are linked with L5—return on investment. Post-learning outcomes are assessed to comprehensively evaluate training effectiveness.

Item	KPI-2020 Goals	2020 Achievements	KPI-2021 Goals	Item	2017	2018	2019	2020	2020 Goals	Score (10-point scale)
L5 (Return on Investment)										
▸ Human capital rate of return	▸ Human capital rate of return ≥ 12.5 (According to company goal of the year)	▸ Human capital rate of return 12.8	▸ Human capital rate of return ≥ 12.5 (According to company goal of the year)	Human capital rate of return	15.3	20.8	11.9	12.8	>12.5	10
				Return on personnel training investments (%)	485	799	313	894	-	-
L4 (Results Evaluation)										
▸ Employee promotion rate ▸ Employee substitution rate ▸ Retention rate of key talents ▸ Result publication (patent count, national award) ▸ Productivity, sales value (volume) ▸ Improvement proposal	▸ Employee promotion rate ≥ 16% ▸ Employee substitution rate≥ 60% ▸ Retention rate of key talents≥ 90% ▸ Result publication (no. of patents proposed ≥ 250) ▸ No. of improvement proposals ≥120	▸ Employee promotion rate: 16.81% ▸ Employee substitution rate: 72.1% ▸ Retention rate of key talents:≥ 100% ▸ Result publication (no. of patents proposed: 438) ▸ No. of improvement proposals: 228	▸ Employee promotion rate ≥ 16% ▸ Employee substitution rate≥ 60% ▸ Retention rate of key talents≥ 98% ▸ Result publication (no. of patents proposed ≥ 350) ▸ No. of improvement proposals ≥120	Employee promotion rate (%)	16.08	16.12	16.13	16.81	>16	10
				Promotion rate of employees with <3 years of service (%)	2.07	3.67	4.35	4.11	-	-
				Promotion rate of employees with ≧3 years service (%)	14.02	12.45	11.77	12.7	-	-
				Total employee separation rate (%)	11.68	9.04	6.27	5.01	<6	10
				Separation rate of key talents (%)	-	-	0	0	<10	10
				Separation rate of new employees (%)	9.43	21.12	15.25	7.47	<12	10
				Substitution rate of employees (%)	43.0	47.4	67.4	72.1	>60	10
				Patent count (cases)	471	502	459	438	>250	10
				Improvement proposals (cases)	47	51	225	228	>120	10
L3 (Behavioral Evaluation)										
▸ Customer satisfaction ▸ Projects accomplishment rate	▸ Customer satisfaction score ≥ 90 ▸ Project accomplishment rate: 90%	▸ Customer satisfaction score: 93.7 ▸ Project accomplishment rate: 90.5%	▸ Customer satisfaction score ≥ 90 ▸ Project accomplishment rate: 90%	Customer satisfaction (score)	88.7	90.6	91.8	93.7	>90	10
				Skill enhancement accomplishment rate (%)	100	100	100	100	100	10
L2 (Learning Evaluation)										
▸ Test/rehearsal ▸ Written report ▸ Operational certification	▸ Course pass rate ≥ 90% ▸ Total annual plan accomplishment rate: 100%	▸ Course pass rate: 93.4% ▸ Total annual plan accomplishment rate: 100%	▸ Course pass rate ≥ 92% ▸ Total annual plan accomplishment rate: 100%	Course pass rate (%)	90.6	94.1	92.5	93.4	>90	10
				Total annual plan accomplishment rate (%)	90.8	98	100	100	>100	10
L1 (Reaction Evaluation)										
▸ Post-course satisfaction ▸ Closing report	▸ Post-course satisfaction score ≥ 4.5	▸ Post-course satisfaction score: 4.64	▸ Post-course satisfaction score ≥ 4.5	Satisfaction (5-point scale)	4.51	4.72	4.55	4.64	>4.5	10

Central Talent Cultivation & Development Plans

Nanya's vision is to “Become the Best DRAM Partner for Smart World” ,and the Company aims to create a competitive training system that is suitable for the semiconductor industry. While dynamic random access memory (DRAM) is the core technology of Nanya, the Company continues to improve the R&D, innovation work, and autonomy technology involving DRAM. The program of [Talent "Smart" Incubator] was launched to cultivate talents with various technical skills and refine the development direction of employee competence trainings. The central training projects for the past four years and their results are described below:

Training topic	Importance of the project to corporate operations	Assessment of training outcome and operational yields (NT$)

2020 Development and Sales of Application-specific DRAM Products

- Open-class specialized technical training program
- Organization and plan management project execution training
- Systematization of AI in production technologies
- Marketing and sales of non-standard advanced product servers, low-power automotive-grade and industrial-grade products

Sending all kinds of application-specific products to customers ahead of time for engineering verification enabled timely securing of a place in relevant non-standard DRAM markets. This not only increased the Company's profit but also stabilized revenue.

Employee participation rate (%; as a percentage of all employees): 85%

L1 Post-course satisfaction	Employee response: Post-course satisfaction score: 4.66
L2 Course pass rate	Employee learning: Student pass rate for the course: 95.8%
L3 Plan accomplishment rate	Employee behavior: Plan accomplishment rate: 90.5%
L4 Productivity	Improved efficiency: A total of 12 product R&D/validation tasks were completed; 109 productivity proposals and 228 improvement proposals were raised. Case study: Improve product yields and analytical efficiency 1. We efficiently lowered the manpower of yield engineering personnel and improved productivity. A total of 24 pieces of production products were implemented, and could reduce the manpower by 2.7 persons per day, equivalent to saving NT$116,000 per month. The annual benefit totaled NT$1.393 million. 2. The yields increased around an average of 2% during the period of implementation, accounting for 20% of the annual benefit. Based on the calculation formula of wafer sales benefit, the benefit reached NT$134.34 million. Output volume: Sales of non-standard products > 135M pieces
L4 Performance	Result publication: Patent count: 438
L5 Return on investment	Financial value: NT$9,667,000,000 (ROI: 1316%)

2020 Precise skill improvement training program

- Strengthen professional capabilities by having specific course requirements.
- Enhance organizational efficiency through practical utilization of professional capabilities
- Create employee experience and diverse learning channels
- TTQS evaluation

Effective training programs were formulated, and precise curriculum designs were used to enhance training effectiveness. Technical capabilities were also utilized practically to upgrade employees' professional knowledge and capabilities, and increase patent output, production improvement proposals, as well as the Company's overall competitiveness.

Employee participation rate (%; as a percentage of all employees): 77%

L1 Post-course satisfaction	Employee response: Post-course satisfaction score: 4.54
L2 Course pass rate	Employee learning: Student pass rate for the course: 90.3%
L3 Skill improvement	Employee behavior: Skill enhancement accomplishment rate: 100%
L4 Performance	Result publication: 1. Won Ministry of Labor's TTQS evaluation - Gold / 2. 109 productivity improvement proposals raised Case study: Enhance the efficiency of manufacturing equipment resumption system 1. The OHT-F Ratio of the manufacturing equipment automated dispatching system was improved from 86.3% to 99.6% (+13.3%). 2. Automated dispatching system saves manpower and work hours: 22.04 (hours/day), equivalent to saving NT$118,000 per month. The annual benefit totaled NT$1.416 million.
L5 Return on investment	Financial value: NT$244,000,000 (ROI: 78%)

2020 Improvement project for the smartization and automation of semiconductor production inspections

- Feedback for abnormal image (defect/chromatic distortion)
- Elimination of image quality problems and professional knowledge on yellow light
- Automation system control process and infrastructure establishment and maintenance
- AI model creation adoption optimization and program implementation development

The project reduced the complexity of personnel switching between different semiconductor equipment system interfaces. Adopting AI technologies also enhanced inspection coherence, inspection quality stability and efficiency, productivity, and revenue.

Employee participation rate (%; as a percentage of all employees): 35% (Core personnel represent 2%)

L1 Post-course satisfaction	Employee response: Post-course satisfaction score: 4.42
L2 Course pass rate	Employee learning: Student pass rate for the course: 97%
L3 Project accomplishment rate	Employee behavior: Sampling inspection enhancement rate: 100%
L4 Productivity Performance	Result publication: 1. 30% increase in volume of automatically-processed products / 2. Won the Excellence Award of the Outstanding Team Evaluation Competition
L5 Return on investment	Financial value: NT$39,000,000 (ROI: 54%)

Training topic	Importance of the project to corporate operations	Assessment of training outcome and operational yields (NT$)	
2020 Management capability enhancement project		Employee participation rate (%; as a percentage of all employees): 17%	
‣ Strengthen enterprise value; create momentum for being a leader of change. ‣ Use reliable communication as a cornerstone of an efficient team ‣ Lead with positive thinking and establish a corporate culture with shared values ‣ Elevate team member competitiveness through effective coaching.	The project established managers' organizational leadership vision and goals, and enabled them to make changes through actions. It pragmatically influenced and motivated teams to achieve high performance and maintain the Company's sustainable competitiveness.	L1 Post-course satisfaction	Employee response: Post-course satisfaction score: 4.77
		L2 Course pass rate	Employee learning: Manager pass rate for the course: 94.5%
		L3 Project accomplishment rate	Employee behavior: 1. Project accomplishment rate: 90.5% / 2. No. of improvement proposals: 228
		L4 Performance Retention rate	Result publication: 1. Employee retention rate: 95.5% / 2. Retention rate of key talents: 100%
2019 AI and smart manufacturing training program		Employee participation rate (%; as a percentage of all employees): 71%	
‣ Bring together field experts, information specialists, and statistics specialists to jointly develop AI applications ‣ Form a technical research team and launch basic/advanced technical practices and research projects ‣ Training and expansion for practical project application and development ‣ Establish an AI community and relevant knowledge documents	The program established an AI-assisted high-performance production line, improved the efficiency of wafer inspections and yield analysis, enhanced process control and optimal condition prediction, elevated productivity and machine efficiency, and increased the main scenarios in which the machinery prognosis system can be applied. It helped the Company to reach a new milestone in smart manufacturing.	L1 Satisfaction	Employee response: Post-course satisfaction score: 4.65
		L2 Pass rate	Employee learning: Student pass rate for the course: 99.25%
		L3 Structured on-the-job training (SOJT)	Employee behavior: SOJT completion rate = 100%
		L4 Technical projects	Employees' results: Technical projects: Basic theoretical studies, including 22 machine learning algorithms, 11 deep learning algorithms, and 7 project research topics were completed.
		L4 Productivity	Improved efficiency: 1. 38 AI projects were completed as enhancements for smart manufacturing production technologies: 21 applied deep learning models, 10 applied machine learning models, and 7 applied mathematical rules 2. Benefits: Labor costs: NT$14,000,000 / Contribution to revenue: NT$176,000,000 / Potential benefit of productivity: NT$50,000,000
		L5 Return on investment	Financial value: NT$240,000,000 (ROI: 56%)
2018 Training program for advanced procedure/niche DRAM development		Employee participation rate (%; as a percentage of all employees): 85%	
‣ Training on advanced procedures/new procedures/niche products ‣ Conference skill training for project managers ‣ Managerial skill training for managers ‣ Training for the improvement of training program	As the Company progresses into the next-generation production procedure (20nm), new marketing and product strategies are required to support development of this advanced procedure as well as demand for niche DRAM products. This training program has the potential to improve the Company's product competitiveness and stabilize product margins.	L3 Structured on-the-job training (SOJT)	Employee: SOJT completion rate = 100%
		L4 Productivity	Improved efficiency: A total of 239 product R&D/validation enhancement/advanced procedure adoption/productivity improvement tasks were completed, and 51 improvement proposals were raised.
		L4 Productivity	Output volume: >950M
		L5 Return on investment	Financial value: NT$2,045,000,000 (ROI: 783%)
2017 Advanced DRAM procedures and product development training program		Employee participation rate (%; as a percentage of all employees): 86%	
‣ Training for new procedures and product conversion ‣ Project management and execution training ‣ Training for the improvement of training program	This program has enabled the company to successfully adopt next-generation production procedures (20nm) and develop proprietary R&D capabilities for a number of benefits including reduced product cost, increased production capacity, enhanced product competitiveness, and sustainable business.	L3 Structured on-the-job training (SOJT)	Employee: SOJT completion rate = 100%
		L4 Productivity	Improved efficiency: Adoption and production capacity of new procedures and products A total of 717 enhancement tasks were completed, and 47 improvement proposals were raised
		L4 Result publication	Result publication: Patent count: 471
		L5 Return on investment	Financial value: NT$3,602,000,000 (ROI: 530%)

Diverse development and learning paths

The Company places great importance on talent development, promoting lifelong learning, and assisting employees with career development. A complete and diverse range of on-the-job education and learning channels are offered to satisfy employees' needs for diversified learning.



While a "Language Learning Plan" is formulated to provide internal English courses, the Company also has a "TOEIC Exam Simulation System" set up for employees to practice for exams. Simulation exams are organized internally to prepare employees for the real event. The Company has established associations between TOEIC results and personnel assignment as well as promotion. In 2020, 1,825 employees registered their TOEIC scores, with a growth rate of 28%.

The Company's internal training & development system incorporates a video center as a more flexible method and environment for learning. This digital environment provides employees with more freedom on how they wish to proceed with their learning. The Company released 89 digital courses onto the digital learning environment in 2020, and employees as a whole completed 28,806 hours of training and reading online.

In addition to industry-academia collaboration and technology development projects, the Company also offers subsidies and incentives through its on-job training policy to encourage employees' participation in tertiary education outside work hours. To date, a total of 714 employees have attained a new degree through on-the-job education programs.

The Company encourages employees to expand their professional capacity and obtain certifications relevant to their works through participation in external training courses, as the knowledge is likely to benefit the Company in the form of new product development and added product value. External training courses received a total of 186 enrollments in 2020.

Diverse OJT and learning channels

	2017	2018	2019	2020
Total hours of online courses (hours)	10,958	14,408	25,987	28,806
Language learning subsidy (NT$)	194,660	447,466	403,070	462,372
Accumulated number of people enrolled in on-the-job degree programs (persons)	696	699	708	714
No. of participants in external training (persons)	113	171	279	186

Recognition for Talent Cultivation and Development

Nanya continues to adjust its course structures in line with corporate strategies and goals, and takes step to improve the effectiveness, yield and output of its training efforts. In addition to performing regular internal audit, analysis and tracking of training quality, the Company also participated in the Talent Quality-management System (TTQS) developed by the Workforce Development Agency, Ministry of Labor, in 2020. The TTQS reviews the planning, design, execution, audit and yield of training programs, and the Company was able to stand out among the many participants to claim the Gold Award in the Large Enterprise category once again. Motivated by the recognition for the Company's training and talent development efforts, the Company will be participating in the People Development Award Category of the 2021 Taiwan Sustainable Corporates Awards to continue upgrading the Company's talent development philosophy.



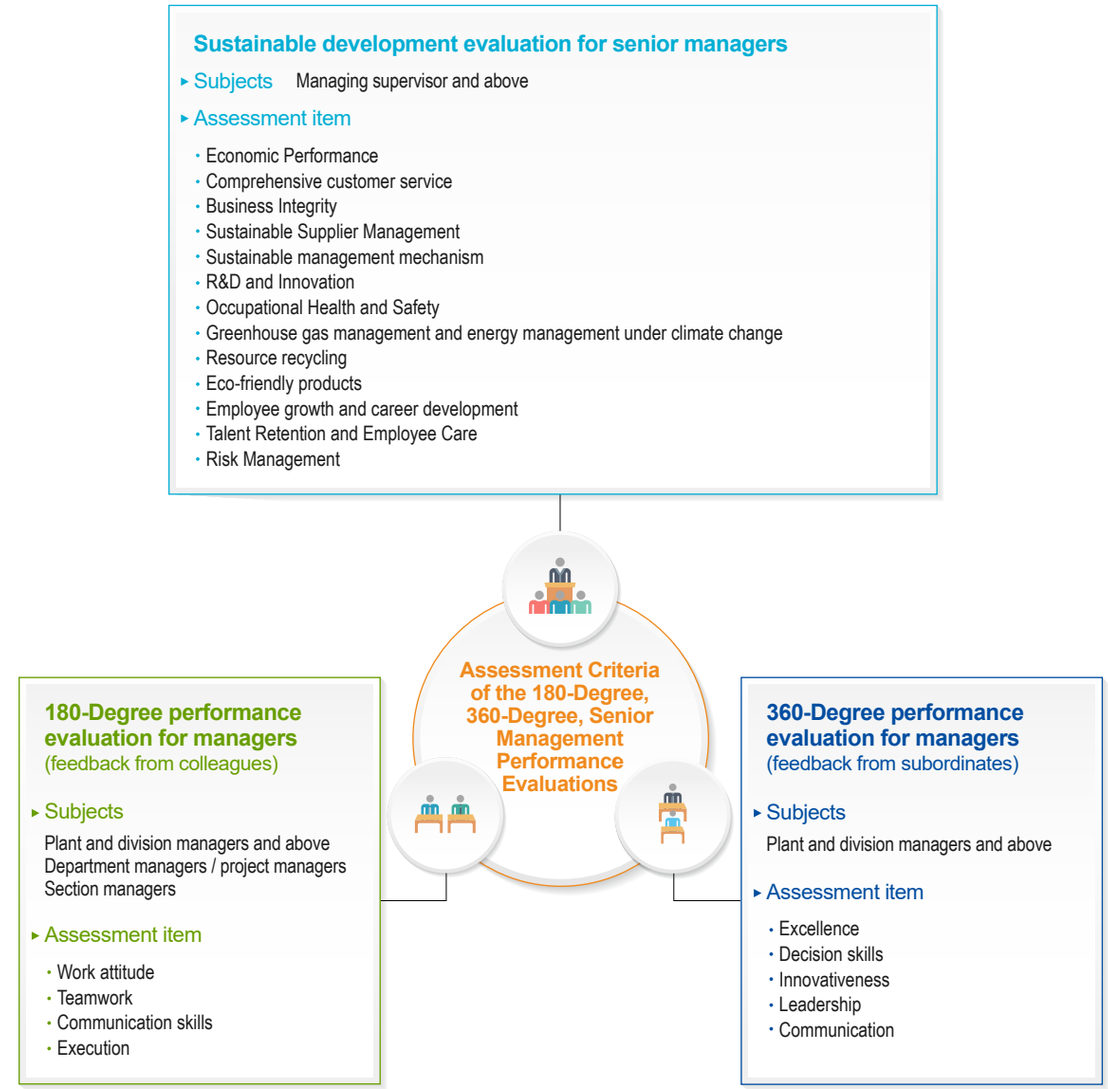
TTQS - Enterprise - Gold

Maximizing employee performance

The purpose of Nanya's performance management system is to maximize employees' potentials. In addition to providing good learning environment and implementing sound performance management systems, the Company also emphasizes productive interaction between line managers and their subordinates. Apart from annual performance evaluation, line managers are also required to engage subordinates in quarterly performance reviews. Through interaction and communication, employees are given the care and assistance they need to improve and accomplish individual as well as organizational goals.

The review process begins with the line manager breaking down organizational goals and setting individual work objectives for subordinates face-to-face, and is followed by feedbacks on the execution of work objectives and performance review at the end of the period. Between 2015 and 2020, 100% of employees were subjected to objective management and performance ranking. Performance management tools used by the Company in 2020 included: Annual performance evaluation for all employees, quarterly general staff performance evaluation, 180- and 360-degree performance evaluations for managers, and sustainable development evaluation for senior managers. In 2020, people who underwent multi-dimensional performance evaluations (180- and 360-degree performance evaluations for managers) represented 10%. It is expected that, in 2021, more employees will be subjected to the 180-degree performance evaluation for managers. Different talent development tools will be utilized to provide employees of different levels with the most appropriate suggestions for work performance improvement. We plan to increase the percentage of people subjected to multi-dimensional performance evaluation to more than 20% in 2021.

The 180-degree management performance evaluation is intended for section managers and above, and involves review from 4-6 colleagues or managers that the subject has business dealing with, as chosen by the line manager. The 360-degree management performance evaluation is intended for plant and division managers and above, and involves feedbacks from subordinates on the subject's managerial skills. The items assessed by each assessment tool are shown in the table below. Employees who exhibit good performance are rewarded; for those who exhibit poor performance, the system actively reminds their line managers to direct attention and provide assistance until there is significant improvement in performance. This treatment is not differentiated by gender in any way.



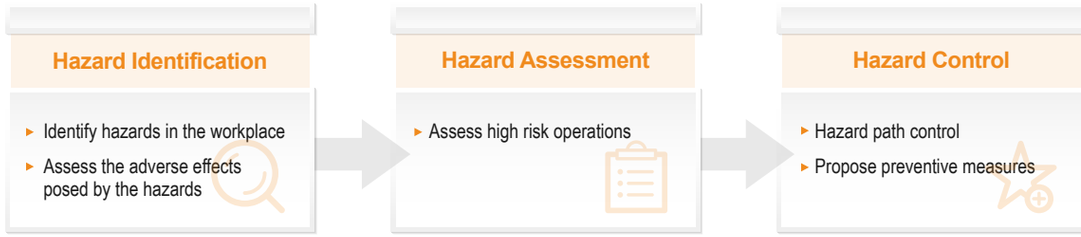
OCCUPATIONAL HEALTH AND SAFETY

Promoting a Safety Culture and Providing a Safe, Healthy Excellent Work Environment

The president of Nanya has signed a safety and health policy declaration to promise the provision of a safe, healthy excellent work environment to all workers at Nanya. The Company is committed to ensuring that all workers of the Company have the ability to recognize hazards when conducting business activities so that occupational injuries can be prevented. We have formulated the "Environmental Safety and Health Management Manual" in accordance with the ISO 450001 management system. Monthly reviews are conducted to assess the level of compliance with local regulation updates. Regulation reviews, hazard identification, and risk assessments are performed regularly every year. If there is any change in manufacturing processes, assessment measures are also conducted immediately. We conduct risk assessments on routine and non-routine high-risk operations and keep risk-levels at the minimum. For example, special health checks are performed for high-risk employees, including those exposed to noise, chemical substance (arsenic/mercury/indium) and ionizing radiation, and health managements of different grades are carried out according to the health check results.

The Company uses ongoing educational trainings, drills, interview activities, and advocacy to enable employees to develop ways of thinking and habits that support a safety culture, enhance emergency response capabilities, minimize chances of accident caused by unsafe behaviors, and promote the Company's principles of having a safety culture. In 2020, a total of 57 safety and health training courses were completed, and 11,603 enrollments were recorded. New recruits and senior employees/managers were trained for certifications required by the law and hazardous operations. An emergency response team (ERT) was established, and educational trainings such as the safety and health seminar and motorcycle safety and preventive driving courses were provided. A total of 57 emergency response drills were completed in 2020, including emergency response drills based on the items identified as medium and high risks (such as chemical spills, fires, etc.) The Safety and Health Division conducted monthly on-site work safety observations and interviews at the workplace of various teams (SWAT - Safety Walk and Talk) based on 36 themes, and 32 suggestions for improving operational behavior safety were put forward.

Management Process for Continuous Improvement on Occupational Safety and Health



Nanya's Proactive Safety and Health Improvement Plan for Clean Room Work Environment

	2018	2019	2020
No. of medium and high risks and improvement plans	12	17	12
Medium and high risks improvement completion rate	100%	100%	100%
Improvement plan Money invested	NT$ 1.584 million	NT$ 3.964 million	NT$ 3.837 million
Summary of Improvement Plan	Fall protection for machine maintenance personnel working on platforms, liquid suction device for residuals in empty buckets, pipeline support enhancement and protection measures for pipeline modification, residual risk management.	Earthquake-proof construction for clean room machines and material shelves, lighting improvement for clean room areas, efficiency improvement for clean rooms' local air exhaust equipment, leakage prevention measures for pipeline valve and chemical storage areas.	Work safety for working aloft in clean rooms (adding lifelines), lighting improvement for clean room areas, adding protection nets for material shelves in clean rooms, fall protection for machine maintenance personnel working on platforms, rust and leakage prevention for pipeline valves.

Statistical Analysis of Safety and Health Organization and Disabling Injuries

Nanya places great importance on occupational safety and health. Occupational safety and health committee meetings are held every month at a regularity higher than what is required by the law. Each meeting is directed by the executive vice president, while the whole process is participated by senior managers, department heads, and committee members. Labor representatives make up 34% of the committee members. They jointly review the achievement statuses of various safety and health management goals, accident investigations, and the performance of safety and health projects.

A total of 42 near miss accidents were recorded in 2020, but there was one accident in which an employee got an head injury from tripping over while walking. After investigating the incident, anti-slip mats were added to the floor and employees were encouraged to regularly check the friction of shoe soles as improvement measures. This resulted in the disabling injury frequency rate (no. of disabling injuries/million work hours) and severity of disabling injuries (No. of work days lost/million work hours) being recorded at 0.14 and 6, respectively. We failed to keep the number of disabling injuries in plants at zero. The Company will implement continuous improvement measures for work behaviors and environment to achieve the goal of having zero disabling injuries in plants. For "unsafe behaviors", the Company supervises workers' unsafe behaviors through the implementation of job safety analysis, strengthened safety and health trainings, and launched SWAT work safety observations and interviews with the aim of fostering employee safety awareness and reducing potential operational hazards.

The Company has made improvements to "unsafe environments" by ensuring the intrinsic safety of equipment, implementing pipelines and machine maintenance and inspections, noting mechanical safety and protection, maintaining environmental hygiene, encouraging employee on-site autonomous management, conducting managerial tasks through walking managers, and implementing industrial safety audit and grading measures. The 5S method is implemented to keep the workplace clean and tidy so that safety and health can be maintained in the work environment.

Statistical Data on Total Work Hours of Employees, Occupational Injuries, and Occupational Illness[Note]

	2018	2019	2020
Total work hours (hours)	5,974,816	6,398,888	6,778,840
No. of serious occupational injuries (no. of people)	0	0	0
Rate of serious occupational injuries	0	0	0
No. of recordable occupational injuries (no. of people)	0	0	1
Rate of recordable occupational injuries (frequency of disabling injuries)	0	0	0.14
Severe disabling injuries rate	0	0	6
Frequency-severity indicator	0	0	0.03
No. of occupational illnesses certified by physician	0	0	0

Note:
1. In 2020, no deaths caused by occupational injuries occurred in the Company. The rate of serious occupational injuries (excluding number of deaths and those who lost more than six months of work days) was calculated with every million work hours as a unit.
2. In 2020, the Company had no financial loss resulted from compensations or fines as outcomes of lawsuits involving employee occupational injuries or occupational illness.
3. Frequency of disabling injuries (FR) and severity of disabling injuries (SR) are based on occupational hazard data reported by the Company, and do not include contractors, traffic accidents outside production facilities, or minor injuries (that can be treated via first-aid on site).

Strengthening hazard notices for contractors and building a safe work environment

Nanya has never relaxed its efforts in preventing accidents. To keep contractors' disabling injuries at zero, the Company follows the principle of continuous improvement embodied in the PDCA management cycle. A complete range of contractor management regulations is formulated. The following management mechanisms are adopted before, during, and after constructions:



Pre-entry notices and training: All contractors that will enter plants must sign a construction contract and construction safety notice. In addition, all personnel of the contracted company must undergo Nanya's "Contractor In-plant Safety and Health Training" before they enter in-plant construction sites. The training helps contractors understand the work environment, hazardous factors, and relevant safety and health regulations.



Control and inspection during in-plant construction: The Company has work safety and health rules as well as detailed operational guidelines and forms in place to regulate contractors' work activities; these include checklists for high-risk construction workers and hot work application forms. Various inspection mechanisms are also used, such as self-inspection conducted by each unit, inspection by Work Safety Department personnel, examination of work and interviews with personnel. Employees are encouraged to monitor contractors for unsafe conducts, and may make immediate reports of abnormal findings to Central Control or work safety personnel for immediate tracking and improvement.



Inspection and prevention after construction completion: Unsafe errors and behaviors frequently displayed by contractors are collected and added to trainings for internal safety supervisors. The aim is to equip the Company's on-site supervisors with the capacity to perform their jobs and prevent occupational accidents.

Measures to Strengthen Contractors' Construction Safety

Selection of quality contractors
- Select contractors with quality technologies and safety management.

Contractor work safety review
- Review contractors' work safety (such as qualification of occupational safety and health personnel).

Pre-entry safety and health education and training
- Conduct regular classroom trainings every month.

Pre-construction safety notice:
- Fulfill the duty to notify of work environment hazards.

Pre-construction job safety analysis
- Conduct step-by-step analysis of hazards and preventive measures to achieve construction safety.

Construction permit application and restrictions for high-risk operations
- Application for permission is required for all construction; high-risk operations, including hot work and operations in confined spaces and high places, are regulated.

Daily toolbox meetings
- Daily toolbox safety meetings are required to notify of safety issues and keep records.

Contractor inspections before, during, and after constructions
- Require daily independent inspections on construction sites and operations (using the 5S method, for example).

2020 Total Work Hours, Injuries and Lost Work Days of Contractors

Total work hours (hours)	404,054
No. of injuries	0
No. of lost work days	0

2020 Pre-entry Safety and Health Training for Contractors and Training Completion Rate

Enrollment count	3,024
Training completion rate	100%

8 Common Good

P119. Social Influence

P123. Social Engagement

An Active Participant in Giving Back to the Society

Nanya is committed to social engagement and participates in public affairs and local care to become an active participant that gives back to the society. We promote social influence and community development to lead society to a better and sustainable future.

49,326 participants

As of 2020, a total of 49,326 people consumed fair trade coffee and assisted community development and economic growth in the Third World

3,060 participants

There was a total of 3,060 participants in 51 seminars.

92.87%

Business initiatives investments account for 92.87% of Nanya's investment in social engagement



Strategy and Performance

2021 Goals	2020 Goals	2020 Performance
Social engagement Talent cultivation: Conform with the education system and cultivate outstanding semiconductor talent. Environmental protection: Connect different types of NPOs and promote environmental protection ideals. Humanistic care: Improve social welfare by working with local art and charity groups Good neighbor: Participate in public affairs in the neighborhood communities and build a harmonious and mutually beneficial living sphere.		
Total investments increased by 15% from 2020	Total investments increased by 15% from 2019	**Total investments increased by 7.44% from 2019**
Establish a volunteer team and the number of volunteers ≧ 100 people	Number of credit courses opened (unit: course) doubled compared with the number in 2019	**Number of credit courses opened (unit: course) tripled compared with the number in 2019**
Awarded the Work-Life Balance Award	Awarded the Work-Life Balance Award	**Suspended and postponed this year owing to the COVID-19 pandemic**
Acquired the Accredited Healthy Workplace certification	Acquired the Accredited Healthy Workplace certification	**Awarded the Accredited Healthy Workplace certification and the Healthy Workplace Best Practice Award**

Exceeded Achieved Partially achieved

SOCIAL INFLUENCE

As an industry leader, Nanyaearnestly commits itself to creating positive influences. The Company has responded to the challenges proposed by the United Nations in the Sustainable Development Goals (SDGs) by combining our core capabilities with SDGs. We have connected our core capabilities with three SDGs and developed four main developmental directions. We continue to promote these four directions to exert social influence. One of the three SDGs we have connected to is SDG 8 (Decent Work and Economic Growth), which is our driving force for talent cultivation and industry-academia collaboration to actively promote technology upgrades and enhance economic value through innovation so as to help young people and students develop professional skills. By connecting to SDG 8, we have set up a main public welfare theme of talent cultivation. SDG 13 (Climate Action) allows us to deeply experience the impacts that extreme climates have had on the community environment and the ecology. Therefore, we have set up a main direction of environmental conservation to safeguard environmental biodiversity and move toward a low carbon society. SDG 17 (Partnerships for the Goals) is the foundation for the Company's public welfare implementation, so we have built two main themes of humanistic care and community harmony so that we are able to make long-term contributions to the communities and neighborhoods in which we have been operating.

Talent cultivation, environmental conservation, humanistic care, and community harmony became our four main themes of social engagement. We have set short, medium and long-term goals for the four main directions and promoted these goals step by step. In 2019, we launched the 4U (For You) projects: Focus On U for campuses, Light Up the globe, Power Up horizons, and Line Up with neighborhoods. We gathered our internal and external funding, supplies, and manpower to carry out concrete actions for social engagement. In 2020, we continued to stride forward on the basis of the promotion paths and cumulative results in past years, taking the lead in creating greater influence.


Focus On U


Light Up


Power Up


Line Up

Talent cultivation

Driving force

By using the Company's core operational capabilities, we conform with the strength of industry, government, and academia to connect with the government's technology policy; and we also conform with the education system to jointly cultivate talent.

Vision

Cultivate and reserve outstanding technological talent

Subjects

Students in colleges and universities

Social influence

- Promote general science education
- Implement industry-academia collaboration

Environmental conservation

Driving force

Integrate the strength of internal employees with that of external non-profit organizations to promote environmental protection awareness We also reach to business partners and initiate attention to climate change topics, hoping that we may exert greater influence.

Vision

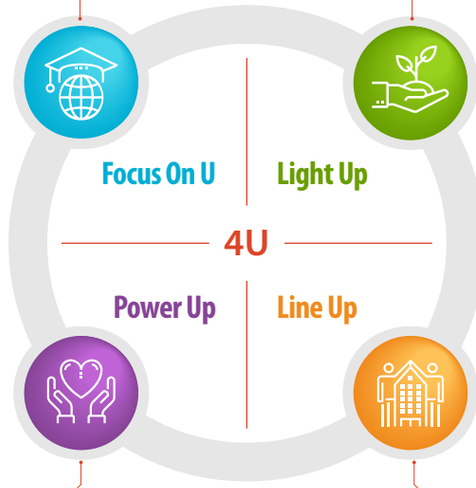
Build a green and sustainable ecological environment

Subjects

Community organizations and environmental protection groups

Social influence

- Mitigate ecological impact
- Popularize environmental protection knowledge



Humanistic care

Driving force

We work with local art and culture groups and charity establishments to implement the plans for humanistic activities to take root. Moreover, we aim to form a society of truth, kindness, and beauty with humanistic culture on the basis of expansive vision.

Vision

Create and convey the power of beauty and kindness

Subjects

Local arts and culture organizations and charities

Social influence

- Enhance social well-being
- Promote arts and culture

Community harmony

Driving force

Participate in public affairs in the neighborhood communities, and take practical actions, such as sponsoring local art and culture, and responding local needs to promote a harmonious and mutually beneficial living sphere.

Vision

Establish an inclusive and harmonious living sphere

Subjects

Local township offices and community organizations

Social influence

- Make contributions to the neighborhoods
- Realize community inclusion

Influence starts with change. Nanya has adopted the London Benchmarking Model (LBG) to evaluate the benefits and influence of each public welfare activity and adjust public welfare programs and invested resources step by step. Moreover, Nanya reviews the effects and results to tightly link core operations with social issues. To deepen and expand corporate long-term influence on society, the Company focuses on connecting its core operational capabilities with social demands. We hope that through our professional innovative capabilities, which are our most competitive advantage, we are able to resolve social issues and create a mutually beneficial and beautiful home. Shared value is the core concept of Nanya's participation in social public welfare. Our short-term goal is that our invested resources will deliver the maximum benefits. Our long-term goal is that the behaviors, awareness, and well-being of the entities we have helped will generate positive influence.

Talent cultivation

Content

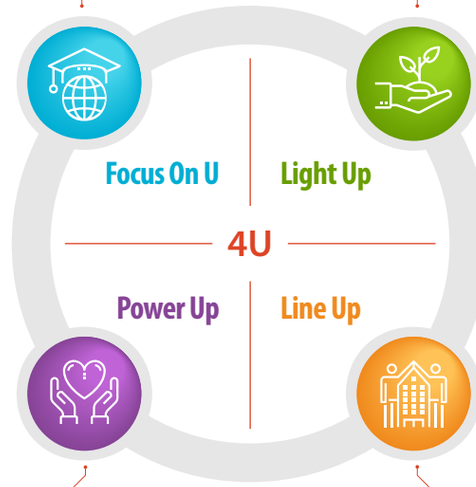
- Future Stars
- Outstanding Projects
- Cultivate Students
- Understanding Projects
- Speech Projects

Commercial benefits

- Future Stars Scholarship (9 recipients; 5 students got internship scholarships)
- Innovative technology R&D (4 industry-academia collaboration cases)
- Satisfaction of interns (average satisfaction of 4.4 points on a 5-point scale)
- Enterprise exploration projects (1,075 visitors)
- Nanya's supervisors serving as industry experts (29 supervisors)

Social benefits

- Cultivated students (around NT$615,000 in scholarship; the Future Stars Scholarship activity cost about NT$22,000)
- Assistance in employment opportunities (around NT$31.73 million was invested in internship projects)
- Enhanced technological capabilities (NT$5.95 million in industry-academia collaboration projects)
- Industry-academia connections (3,060 participants for the lectures of professionals from industries)



Environmental conservation

Content

- Environmental topic initiatives
- Safeguarding ecological environment
- Community assistance

Commercial benefits

- Cohesion of employees (170 employees participated)
- Innovative technology R&D (1492 hours of online media exposure)
- Environmental protection initiative (participated in 3 environmental protection initiative event)

Social benefits

- Environmental biodiversity (cleaned 1,763kg of garbage, 41kg of alien plant species, and 3,361 pieces of disposable garbage.)
- Reduction of plastic, paper, and carbon usage (120,000 kWh saved in electricity consumption through turning off the lights for one hour in all of Taiwan/carbon reduction of 63,960kg in all of Taiwan)

Humanistic care

Content

- Cooperating with public welfare groups
- Community care
- Charity bazaars

Commercial benefits

- Cohesion of employees (1,479 employees as participants)
- Media favorability (592 hours of online media exposure)
- Charity (8 certificates of appreciation)

Social benefits

- Prospering community environment (purchased 336kg of fair trade coffee)
- Reducing the wealth gap (provided financial aid to 5 entities)

Community harmony

Content

- Safeguarding ecological environment
- Community care
- Community assistance

Commercial benefits

- Cohesion of employees (25 employees participated)
- Media favorability
- Strengthening neighborhood relationship (2 certificates of appreciation)

Social benefits

- Deepen community communication (interacted with 5244 people in the neighborhoods)
- Environmental biodiversity (cleaned 1 hiking trail)

Nanya is committed to cultivating technology talent, and the investment amount has increased from over NT$2 million to over NT$40 million, with substantial increases year by year. The increased budget was mainly invested in talent cultivation under Focus On U for Campuses. The commercial innovative public welfare activities, which use our core capabilities to resolve social issues, have always been our priority in implementing our public welfare themes. Nanya has actively promoted technological upgrades and innovations for economic value enhancement in order to cultivate professional skills of youngsters and students, allowing us to be in line with the ideas of Decent Work and Economic Growth of SDG 8 on the aspects of talent cultivation and industry-academia collaboration.

Public welfare categories invested in by Nanya

Charities	Long-term community investment	Commercial initiatives
2020		
3.17%	3.96%	92.87%
2019		
2.11%	2.11%	95.78%
2018		
7.15%	0.64%	92.21%
2017		
3.02%	30.30%	66.68%

Resources invested in social public welfare

In recent years, cash and commodities have been the main resources Nanya has invested in public welfare activities, accounting for 90% of all resources, while employee volunteering accounts for a part of Nanya's participation. The main types of public welfare activities are commercial activities aimed at technological talent cultivation, followed by long-term investments in the communities. Only a small part of the activities are purely for charity. In the future, we will continue to review the effects of public welfare activities through the LBG, focusing on the ratio between commercial activities and long-term investment in the communities while considering the percentage of employee volunteering. In the meantime, we have also formulated long-term goals for public welfare activities, hoping that in 2021, the resources invested in public welfare will increase by 15% compared with 2020.

Cash contributions	2017	2018	2019	2020
Appropriation (NT$)	4,946,200	20,014,840	42,218,927	42,342,667
Ratio (%)	69.70%	97.57%	97.57%	93.35%
Commodity donation				
Appropriation (NT$)	2,142,000	43,000	112,597	951,592
Ratio (%)	30.18%	0.21%	0.26%	2.10%
Employee volunteers				
Appropriation (NT$)	8,500	30,400	86,400	167,236
Ratio (%)	0.12%	0.15%	0.20%	0.37%
Management costs				
Appropriation (NT$)	0	424,270	852,755	1,899,742
Ratio (%)	0%	2.07%	1.97%	4.19%

SOCIAL ENGAGEMENT

Nanya hopes that we may solve current social and environmental issues when participating in social engagement, rather than only sponsoring public welfare activities or making donations. Therefore, in the process of forming the four main themes, we were constantly thinking how we could connect the resources of industry, government, and academia to jointly exert influence, taking the lead in promoting the aspects of talent cultivation, environmental conservation, humanistic care, and community harmony. Moreover, we want to show the results to the public to convey Nanya's ambition to be interactive, mutually beneficial, local, and connected.

In addition to doing our utmost to promote social engagement, Nanya, whose core business is semiconductor, also takes advantage of its competitiveness in the technology industry, and utilizes the existing resources, manpower, and supplies to collaborate with universities and colleges as well as industrial and academic institutions. Not only do we make contributions to cultivating Taiwan's technology talent, but we also reinforce the Taiwan's competitiveness in the technology industry.

Focus On U
Talent cultivation

Social issues we would like to resolve

With the power of academic research, we assist college students on campus to reduce the gap between the campus and workplace so that they may more quickly adapt to the workplace. At the same time, we integrate the resources of industry and academia to jointly enhance the capabilities of Taiwan's technology industry.

Our role and methods	Major results in 2020
Future Stars	
We established several scholarships to encourage students to engage in academic research, make constant improvements, and put their education to use. We hope that outstanding students will continue to study in their field of interest.	▸ We invested around NT$637,000 in providing scholarships to 5 students, and holding the Future Starts selection activities.
Outstanding Projects	
To promote exchanges between the industry and academia and make good use of academic resources, we cooperate with well-known colleges on industry-academia research plans and sponsor campus activities (including, 5G Pilot Innovative Application Competition, providing the talent development platform, cooperating with enterprises, and reducing education-job mismatches). In addition, we strengthen teacher-student interactions, improve the quality of education, and enhance the competitiveness of domestic industries.	▸ We cooperated with four universities on four industry-academia research plans, and the invested amount totaled NT$5,950,000. ▸ The Company sponsored five campus activities with a total of NT$1,370,462.
Cultivate Students	
Through many campus projects and two-way cultivation, we provide college students internship platforms. For example, the Seed Talent Program (STP) combines academic resources and industrial ones, and provides training courses and opportunities for accumulating practical experiences. We hope that we become a bridge between enterprises and fresh graduates, and encourage students to develop abilities in different while reserving specialized talent in advance.	▸ We cooperated with12 colleges on the internship programs. A total of 215 interns worked at the plant, including 53 indirect and 162 direct staff members.
Understanding Projects	
We invite students to visit our company to help them better understand the industry's development. The alumni of the invited schools encourage the students to join the big family of Nanya by sharing their work experience to strengthen the sense of cohesion and belonging.	▸ Total 20 corporate visits and 1 event where our employees returned to alma mater were held, attended by about 1,075 teachers and students.
Speech Seminars	
To help students strengthen the connections between what they learn at school with the realities of the workplace, our middle management and executives began interacting with students face-to-face on campus as industry experts in seminars or programs.	▸ As industry experts, they shared their experience with key schools in northern Taiwan during 51 seminars and with a total of 3,060 attendees in 2020.

Our footprints

Future Stars

- We hold the Future Stars Scholarship activities to cultivate elite talent in the semiconductor field and encourage outstanding students to concentrate on related academic research and innovative technologies. A total of nine students received scholarships in 2020.
- We set up the Scholarship Regulations for interns and award outstanding students with scholarships after their internships. In 2020, we provided scholarships to 2 students.
- We sponsored three PhD students of National Taiwan University with scholarships to strengthen forward-looking R&D capability and carry out the development of next generation memory and advanced memory.



Future Stars Award Ceremony

https://www.nanya.com/CSR/en/article_add20.html

Understanding Projects

- We organized an event where our employees who graduated from National Taiwan University of Science and Technology (Taiwan Tech) returned to alma mater. During the event, these employees shared their work experience and provided information about the Company's generous salaries and benefits so as to create the image that the Company was an excellent employer.
- We invited teachers and students of the colleges in northern Taiwan to visit our plants, so students could further understand our company. A number of the visits were planned in line with the internship programs, so students could visit working environments in person before the internship. Moreover, students could figure out if they were suitable for certain positions through interviews and communication with executives.
- We sponsored the Electronics Camp organized by the NTU System-on-Chip (SOC) Center and the College of Electrical Engineering and Computer Science (EECS). Through group activities and an on-site plant visit, students were allowed to go into a semiconductor clean room to further understand the operation environment. Recruited students with superior engineering backgrounds across Taiwan
- To conform with the Development Base of Engineering Talents under the Industrial Development Bureau, MOEA, we collaborated with the 104 Job Bank on implementing corporate visit programs, which aimed to improve the Company's brand image among the universities and graduate students in semiconductor related disciplines.


Our employees who graduated from Taiwan Tech returned to alma mater


Visit of the Department of Electronics Engineering, Chang Gung University


Visit of the College of Electrical Engineering and Computer Science, National Taipei University of Technology (Taipei Tech)



Electronics Camp organized by NTU SOC Center and the EECS


Visit of the Development Base of Engineering Talents, Industrial Development Bureau

Nanya Facebook Page
https://www.facebook.com/NANYArecruiting/

Outstanding Projects

- We cooperated with universities on four industry-academia research projects which focused on semiconductor application technology, product design, and R&D. These universities included National Taiwan University, National Tsing Hua University, National Chiao Tung University (NCTU), and Chang Gung University.
- We sponsor domestic establishments that actively carry out academic research on semiconductor and make concrete contributions, including the International Electron Devices & Materials Symposium (IEDMS), NTU Very-Large-Scale Integration, NTU System-on-Chip Center, and NTU IC Summer Camp.

Cultivate Students

- We cooperated with 12 colleges on the internship programs, and established a complete internship system to effectively enhance the employability of students.
- We successfully retained eight interns to continue working at their internship units as a full-time employees. Moreover, we matched two interns to other suitable departments based on their professional competence. Therefore, students could extend their internship experience and link it up with employment opportunities.

Speech Seminars

- The Company continued executing the intelligent electronics institute program with National Taiwan University of Science and Technology to cultivate industry-academia talent through the Layout program. The Company's experienced executives served as industry experts to share their industrial practices.
- Seminars with industry experts held in 8 colleges. The easy-to-understand lectures gave students new perspectives on semiconductor.
- The Company continued collaborating with Ming Chi University of Technology (MCUT) to organize seminars on semiconductor industry practices (credit course). In addition, we started collaborating with the Department of Electronics Engineering, Chang Gung University and National Taipei University of Technology on periodical courses. Meanwhile, we arranged supervisors of major operation departments as industry experts, so courses could be linked to practice study so as to strengthen students' ability to connect with practice.



Taiwan Tech Layout industry-academia program


NTU Institute of Nano-Electronics


Seminar with industry experts participated by NCTU Institute of Electronics


Seminar on semiconductor industry practices participated by MCUT Department of Electronic Engineering (E.E. Dept.)


Seminar on industry-academia practices participated by National Taipei University of Technology


Seminar on industry-academia exchanges participated by the Department of Electronics Engineering, Chang Gung University

Light Up Environmental conservation

Social issues we would like to resolve

The burdens on our earth resulting from climate change and environmental pollution are getting serious and gradually becoming a global focus. Thus, it is imperative to fulfill our responsibilities as citizens of the Earth through enhancing environmental conservation awareness.

Our role and methods

Nanya connects environmental protection organizations with different attributes with each other and actively participates in various activities to promote environmental protection concepts, for example:

- Support the Earth Hour activity and save electricity consumption starting with small steps to safeguard the energy of earth.
- Hold activities to remove alien plant species, and seminars on climate change; support Taiwan's wetland ecological protection.
- Organize environmental protection parent-child camps to nurture ecological sustainability concepts from childhood.
- Support clean beach activities held by suppliers to implement ocean restoration by action

Major results in 2020

- About 170 employees participated in the initiative activities, and the amount of nearly NT$750,000 was invested.

Our footprints

Love our earth

- Initiate Earth Hour Event

Nanya has supported the event for three years in a row. However, owing to the COVID-19 pandemic, the physical initiative activity was held virtually instead in 2020. In addition to gathering video clips shot by our employees to support the initiative, we also invited business supervisors to participate in the activity by specifically making pandemic protection masks for Earth Hour. Facing the raging pandemic around the world, we should further hold our original intention and continue to cherish the earth that nurtures everything.



Earth Hour Event
https://www.nanya.com/CSR/en/article_add9.html



Love the ocean

- Clean beach activities

To advocate the concept of loving the ocean, Nanya and Air Liquide Far Eastern Ltd., one of our key suppliers, have jointly organized clean beach activities for two years in a row. Both of the companies called on their employees and family dependents to take action and clean beaches in person so as to safeguard ecological environment. On the day of activity, a total of 47 employees and family dependents picked up 1,763kg of garbage.

- Reduce waste for 21 days

Although employees and family dependents were unable to pick up garbage in person at the seaside under the sun this time, we specifically launched an internal activity titled “Reduce waste for 21 days”, with the concept that habits could be formed by completing a task for 21 days in a row. The activity encouraged all employees to reduce disposable supplies in daily life and keep a record for 21 days in a row. The 21-day results showed that we reduced 3,361 pieces of disposable supplies in total.





Protect rivers

- Remove Mikania micrantha

Mikania micrantha, also called as green cancer, can grow as long as 24cm a day. Its vines entangle trunks and branches form the bottom of trees so trees are unable to perform photosynthesis and wither in the end. The International Union for Conservation of Nature (IUCN) has listed the plant in the 100 of the World's Worst Invasive Alien Species. Nanya called on passionate employees to protect local environments under the lead of the Society of Wilderness. They removed the alien species of Mikania micrantha at the Wugu Wetland while sweating under the scorching sun. Although only 41kg of Mikania micrantha was removed after a half-day effort, through hands-on experience, both adults and children had preliminary understanding of alien species and the importance of biological diversity.

- Environmental protection parent-child camps

Nanya is located in the Taishan District, which is one of origins of the Tamsui River. The district possesses not only abundant biological patterns, but also profound humanistic and historical stories. We hope that our employees who work here every day and their children could further understand the land closely related to us, we have collaborated with the Society of Wilderness on organizing environmental protection parent-child camps since 2019. The aim of the parent-child camp is to have both adults and children understand the importance of caring for the forest environment so they would further feel grateful for the source of benefit. A total of 60 employees and their children participated in the camp. On the camp day, the attentive volunteer teams of the Society of Wilderness led children to use various tools to keep a record of measurements, and accomplish different challenges so as to further understand the profound and beautiful ecological environment of the land.







Removal of Mikania micrantha
https://youtu.be/gTeFszAWrF0

Environmental Education Day Camp
https://www.nanya.com/CSR/en/article_add16.html

Power Up Humanistic care

Social issues we would like to resolve

Enhance humanistic qualities of the public and broaden their horizons on the human-oriented base in order to build a loving and caring social atmosphere.

Our role and methods

Work with local academic establishments and public welfare groups to promote art and culture activities to sponsor local soft power of culture and creativity as well as assist vulnerable groups in need of help

Major results in 2020

- Donated to 5 social welfare foundations
- A total of 49,326 people consumed fair-trade coffee

Our footprints

Initiative fair trade

▸ Fair-Traded Pantry

The Company's pantries have become places where public welfare ideals have been implemented since June 2018. Nanya has joined the project of fair trade pantries promoted by Okogreen Co. Ltd., (the first Taiwanese trading company to receive certification from the Fairtrade International (FLO)), installing fair trade coffee machines in the pantries of the company. Our employees can drink a cup of fair trade coffee for NT$10 each. As of the end of 2020, a total of 49,326 people consumed fair trade coffee. To implement public welfare ideals, Nanya and its employees will continue to support fair-trade coffee so as to assist the community development in third world countries, and improve the lives of impoverished farmers.






Cultivate expertise and experts

▸ Parent-child Art Exploration guided activity

The year of 2020 was special because pandemic prevention disrupted schools' teaching plans and suspended extra-curricular activities of many children. To cultivate children's aesthetics and creativity during the pandemic prevention period, Nanya and the Taipei Fine Arts Museum (TFAM) jointly organized a “Parent-child Art Exploration” guided activity for the Company's 100 employees and family dependents to participate in. The entire activity was guided by the TFAM's professional commentators, and an arranged parent-child workshop gave parents and children a chance to jointly create art works.





Parent-child Art Exploration Day
https://www.nanya.com/CSR/en/article_add14.html

No hindrance to love

▸ Dragon Boat Festival Charity Street

During the COVID-19 pandemic, operations of many public welfare groups suffered drastic impacts because a lot of fundraising activities were suspended. Therefore, when the pandemic situation slightly subsided near the Dragon Boat Festival in June, Nanya launched an activity titled the “Dragon Boat Festival Charity Street”, inviting employees to enjoy life, improve the economy, and support public welfare. We invited four public welfare groups to participate in the charity bazaar to let love spread. The four groups, i.e., the Little happiness link Social Welfare Foundation, the Syin-Lu Social Welfare Foundation, the Eden Social Welfare Foundation, and the Down Syndrome Foundation R.O.C, brought their best-selling gift boxes, pastry, and cookies to the event. In addition to the proceeds of the activity, Nanya also donated NT$50,000 to each of the four charity groups to make a contribution for the operations of public welfare groups.



▸ Pandemic Prevention Quiz Games with Gift Masks

Nanya organized a questionnaire filling activity titled “Pandemic Prevention Quiz Games with Gift Masks” to comfort employees on cooperatively conforming with pandemic prevention policies, and to promote the idea of cherishing pandemic prevention supplies. During the period of activity, those who filled in pandemic prevention questionnaires could receive 5 masks as gifts.



▸ Call for Creative Works on Pandemic Prevention for Charity activity

To promote pandemic prevention awareness, Nanya launched an activity titled “Call for Creative Works on Pandemic Prevention for Charity”, inviting employees to submit creative posters/video clips on the theme of pandemic prevention to respond to nationwide pandemic prevention. Participants whose works had been selected were awarded Nanya's 25th anniversary souvenirs and masks, and their works were displayed on the Company's electronic board or poster area.



▸ Weight Loss for Charity activity

Nanya has held a 3-month weight loss activity and public welfare donations every year since 2018. During the 3-month period, the Company donates NT$1,000 to food banks every time one of our employees loses 1 kilogram, and the donation is capped at NT$500,000. A total of 419 employees participated in the activity, and they lost 834.7 kilograms in three months. The Company distributed the donations to the Little happiness link Social Welfare Foundation, the Syin-Lu Social Welfare Foundation, and the Eden Social Welfare Foundation.

Line Up
Line Up with Neighborhoods

Social issues we would like to resolve

Local prosperity and local value preservation should not be contradictory but complement each other. As cultivating local connections, how to incorporate themselves into community reconstruction is a crucial subject when enterprises think about social responsibility.

Our role and methods

Listen to local needs, and use concrete actions to display the enterprise's sincerity with respect to creating shared prosperity with local residents

Major results in 2020

- A total of 24 participants joined the mountain cleanup event at our plant (the mountain area)

Our footprints

Respond to local needs

- Mountain Cleanup Activity Attended by Nanya and Nan Ya Plastics Corp.

Nanya and the establishment of society within Nan Ya Plastics Corp. jointly organized a mountain cleanup activity at the Linkou plant, calling on nearly 120 passionate volunteers to attend the event. On the event day, many employees brought their dependents to remove garbage that did not belong to the mountains while clearing leaves and huge roots piled in the ditches for a long time and returning them to the nature. Mountain cleanup protects not only the mountains, but also our own health. It is also a good opportunity for parent-child education. Nanya hopes that the Company would help the society more and even become an active participant in repaying society. Through regular mountain cleanup activities, our employees have the chance to repay the surrounding community and create a mutually beneficial environment.





Mountain Cleanup Activity
https://www.nanya.com/CSR/en/article_add15.html

Support Local arts and culture

- Taishan Lion Dance Culture Festival Series

Nanya is located in the Taishan District of New Taipei City, where includes profound traditional communities. Nanya attend all arts and culture activities as well as folk customs celebrations held in the Taishan District to support local arts and culture. The Taishan Lion Dance Culture Festival has been held in the Taishan District for 13 years in a row, becoming one of the most important annual national activities. Every year, exceptional lion dance groups around Taiwan congregate in the district to compete for the championship of lion dance. Nanya sponsored the 2020 Taishan Lion Dance Culture Festival. In addition, our representatives attended the festival and cheered for participating teams on the spot, hoping that the local Taishan Down Temple would protect Nanya.

- Lion Dance Team performance by Shu Jen High School of Home Economics & Commerce

To make employees who worked in Taishan but knew little about the place further understand the Taishan District, we invited the lion dance team of Shu Jen High School of Home Economics & Commerce nearby to promote the Taishan Lion Dance Culture Festival and gave a perform in the plant. Through the invitation, we not only reminded employees to pay attention to local events, but also provided a performance opportunity for the school's lion dance team to show its skills while accumulating live experience.







Respond to local needs

- Chinese New Year's Eve Dinner held by the Taishan District Office

Treat our elders as they ought to be treated, and then treat the elders of others in the same way. The end of a year is also the time for giving back. When we reunited with our families for the Chinese New Year's Eve dinner, we shall remember that a group of lonely and helpless elders also need our care. The Taishan District Office annually holds the Chinese New Year's Eve Dinner activity for local elders in need to show care for the elders and let them feel the warmth of reunion. In 2020, Nanya along with Nan Ya Plastics Corp. and the Taishan District Office jointly cared for local elders in need. The Company donated NT$50,000 to the Taishan District Office, hoping that this donation could arouse the public's awareness of mutual assistance within their neighborhoods.



- Taishan Miracle Home Charity Bazaar

The end of a year is the time for thanksgiving. Nanya supported a charity bazaar titled "Love at Miracle Home, LOHAS at Old Age" held by the Taishan District Office and the Miracle Home Sisters of Providence to show grateful to the elderly while raising funds. A total of 2,000 people participated in the event. (The Miracle Home provides people suffered from dementia and disability in need with complete life and health care during the daytime.) The proceeds of the charity bazaar totaled NT$7,680, and all the amount was donated to the Miracle Home. Furthermore, the Company donated additional NT$20,000 to the establishment.



- Taishan District Fire Extinguishers Refilling

To show our sincerity to be friendly towards our neighborhood, Nanya donated 5,100 dry power fire extinguishers to 17 villages in the Taishan District of New Taipei City in 2017 to strengthen the home safety in the neighborhood. Owing to the aforementioned dry power fire extinguishers came to expire soon, the Company sponsored NT$892,500 to the Taishan District Office for arranging fire extinguishers refilling in 2020.



9 Appendix

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P130. CSR Performance
P135. List of Key Suppliers
P136. GRI Standards Index
P141. SASB Index
P142. Independent Assurance Opinion Statement



ABOUT THIS REPORT

Report Overview

This report is the 11th Corporate Social Responsibility Report issued by Nanya Technology Corporation, and contains information regarding the Company's corporate governance, environmental sustainability development, employee care and social welfare practices from , January 1, 2020 to December 31, 2020. The scope of this report mainly covers Nanya and its subsidiaries. Inconsistencies, if any, are explained separately in notes. The statistics provided in this report have been obtained from Nanya's audited financial statements.

Date of Publication

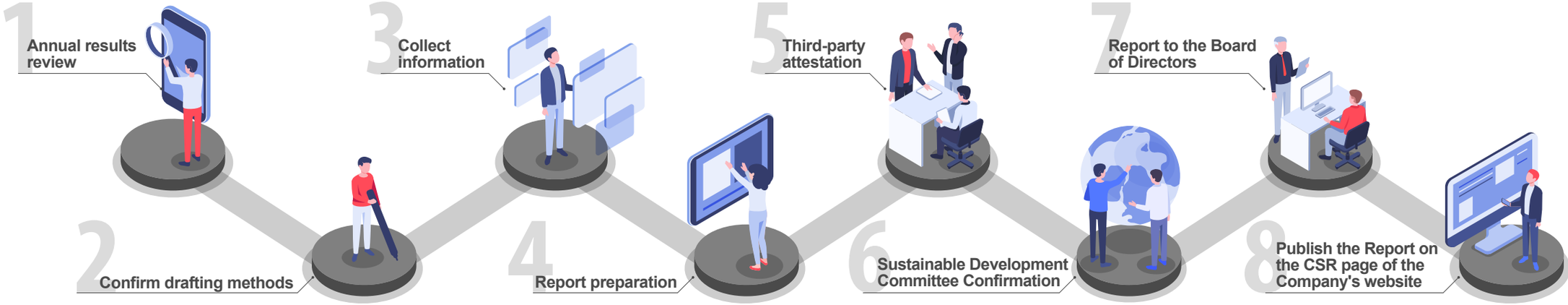
Nanya's CSR report is published annually.

- Current edition: June 2021
- Last edition: June 2020
- Next edition: June 2022



- **Information disclosure timeframe**
  January 1, 2020 to December 31, 2020
- **Scope of data**
  Nanya Technology Corporation's operations system includes Nanya Technology Corporation and its subsidiaries.
- **Data quality management**
  Financial data: KPMG Taiwan
  Quality Management ISO 9001, IATF 16949: LRQA
  Environmental Management ISO 14001: LRQA, ISO 14064: SGS
  Health and Safety ISO 45001/TOSHMS: LRQA
  Responsible Business Alliance RBA VAP (V5.1): TUV
  Sustainability Information AA1000AS 2008 with 2018 Addendum: BSI
- **Guidelines and Standards for Drafting**
  GRI Standards Core Options
- **Level of Guarantee**
  AA 1000 Type II High Assurance Level
- **Contact Window**
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Report Management Procedures



NANYA TECHNOLOGY CSR PERFORMANCE

Sustainability Indicators	Unit	2018	2019	2020
A Trustworthy Company				
Operating Revenue	NT$100 Million	847.2	517.3	610.1
Operating Expenses	NT$100 Million	72.6	69.8	72.6
EPS	NT$	12.80	3.23	2.51
Porportion of Independent Directors	%	25	25	25
Average Attendance Rate of Board Directors	%	92	98	100
"RBA Labor and Ethical Code of Conduct Course" completion rate	%	100	100	100
"Business and Ethical Code of Conduct Course" completion rate	%	100	100	100
"Anti-corruption Course" completion rate	%	100	100	100
Internal audit Anomaly improvement rate	%	100	100	100
Grievance and complaint case	case	4	2	3
The Best Memory Partner for Our Customers				
Appropriation for Innovative R&D/Revenue	%	5.7	9.5	8.4
Number of innovative R&D personnel/Total Number of employees	%	15.5	19.3	26
Number of patents granted	case	502	459	438
Number of Nanya Technology trade secrets	case	5,056	3,989	4,031
TAT meet rate of RMA cases	%	91	95	96
Score of satisfaction	points	90.5	91.7	93.7
Coverage rate of satisfaction survey	%	100	100	100

Sustainability Indicators		Unit	2018	2019	2020
A Promoter of Shared Value					
Number of major suppliers (Tier 1)		Number of suppliers	270	330	330
Number of key suppliers		Number of suppliers	80	82	82
Proportion of key suppliers		%	30	25	27
Proportion of procurement from key suppliers		%	77	68	68
Percentage of Signature Supplier/Contract COC	Major supplier (including key suppliers)	%	81.11	100	100
	new suppliers	%	100	100	100
	key suppliers	%	78.75	100	100
Percentage of high-risk suppliers by sustainability risk assessment	Major suppliers	%	5	5	5
	key suppliers	%	1.25	6.1	33
	Tier 2 key suppliers	%	9.4	5	3.75
Sustainability audit	Numbers of audited suppliers	Number of suppliers	28	19	20
	Average audit score	points	90	82	81
	Non-compliant audit item	Item	39	112	64
	Improvement rate	%	100	100	100
Local procurement(Taiwan)		%	38	31	27
A Producer of Green Technology					
Improved performance of raw material consumption	Extensions to use cycle	Item No.	1	6	1
	Formula development of new processes	Item No.	8	10	4
	Reductions of process consumption	Item No.	11	12	20
Greenhouse gas emissions (scope 1+2)		ton-CO_2e	448,216	478,722	469,744
Emission intensity-GHG emissions per unit area of product		kg-CO_2e/cm^2	0.77	0.77	0.78
GHG emissions/chip kpcs		ton/kpcs	473	445	420

Sustainability Indicators	Unit	2018	2019	2020
A Producer of Green Technology				
GHG emissions/revenue	kg/million NTD	5,322	9,255	7,700
PFC Performance	ton-CO_2e	519,291	569,563	589,870
Perfluorocarbons emissions per unit wafer output	kg/ton	352	405	433
Perfluorocarbons emissions per unit revenue	kg/million NTD	463	835	732
Electricity consumption	MWh/million NTD	7.6	13.7	11.7
Electricity consumption per unit capacity	MWh/k-pcs	0.68	0.66	0.64
Natural gas consumed per unit capacity	m^3/k-pcs	4.5	4.2	4.0
Natural gas consumed per unit revenue	m^3/million NTD	50.1	88.4	73.7
Energy costs per unit capacity	10kNTD/k-pcs	0.16	0.15	0.148
Energy costs per unit revenue	10kNTD/million NTD	1.76	3.19	2.71
Water consumption per unit capacity	ton/k-pcs	3.2	3.03	3.01
Water consumption per unit revenue	ton/million NTD	35.7	63.0	55.2
Ultra-pure water consumption per unit capacity	ton/k-pcs	3.17	3.13	3.05
Ultra-pure water consumption per unit revenue	ton/million NTD	35.7	65.2	56
VOCs emissions per unit capacity	g/k-pcs	21.0	17.6	14.2
VOCs emissions per unit revenue	g/million NTD	236.2	365.6	259.8
Waste water discharge volume per unit capacity	ton/k-pcs	2.62	2.45	2.42
Waste water discharge volume per unit revenue	ton/million NTD	29.5	50.9	44.3
Hazardous waste/chip kpcs	kg/k-pcs	14.6	15.1	15.5
Hazardous waste/revenue	kg/million NTD	164.5	313.6	284
Recycling rate of industrial waste	%	93.4	93.3	92.67
Amount of environmental accounting expenses	NTD thousand	1,119,320	1,026,293	822,139

Sustainability Indicators		Unit	2018	2019	2020
An Attractive Employer for Professional Talents					
Percentage of female managers	Total employees	%	28.74	28.12	27.47
	Females in management positions	%	34.64	35.63	33.72
	Females in top management positions	%	0.00	0.00	0.00
	Females in middle management positions	%	5.66	6.00	5.45
	Females in junior management positions	%	13.02	14.20	12.85
	Females in management positions in revenue-generating functions (Deduction of planning and license management, operation support, quality assurance, legal, and safety and health)	%	41.13	35.16	33.87
	Women in STEM-related positions	%	14.53	14.84	15.54
Nationality count		-	10	11	16
Number of employees with disability		Persons	27	26	36
Voluntary separation rate		%	8.53	5.55	4.74
Total separation rate		%	9.04	5.89	5.01
Number of union members		Persons	71	81	82
Percentage of employees with union membership		%	2.27	2.53	2.39
Female-to-male total salary ratio–management level		%	88.64	92.35	93.72
Female-to-male total salary & remuneration ration-management level		%	92.07	93.24	94.91
Female-to-male total salary ratio-non-non-management level		%	109.11	109.02	110.34
Female-to-male total salary & remuneration ration-non-management level		%	115.31	113.15	113.49

Sustainability Indicators		Unit	2018	2019	2020
An Attractive Employer for Professional Talents					
Reinstatement rate of unpaid parental leave		%	68.75	50	80
Retention rate of unpaid parental leave		%	76.92	90.91	83.33
Average training hours per person		hours	22.7	32.3	31.4
Substitution rate of employees		%	47.4	67.4	72.1
Human Capital Return on Investment		%	20.8	11.9	12.8
Return on personnel training investments		%	799	313	894
Disabling injuries frequency rate		Number of Injuries/Million Man-hours	0	0	0.14
Disabling injuries severe rate		Lost hours of Injuries/Million Man-hours	0	0	7
Frequency-severity indicator		-	0	0	0.03
An Active Participant in Community and Social welfare					
Category	Ratio of Charities	%	7.15	2.11	3.17
	Ratio of Community Investment	%	0.64	2.11	3.96
	Ratio of Commercial initiatives	%	92.21	95.78	92.87
Type of Contribution	Ratio of Cash Donation	%	97.54	97.57	93.35
	Ratio of Goods Donation	%	0.21	0.26	2.10
	Ratio of Volunteering	%	0.15	0.20	0.37
	Ratio of Management Cost	%	2.10	1.97	4.19

LIST OF KEY SUPPLIERS

- ASAHI KASEI CORP.
- KMG SINGAPORE PTE LTD
- NORTHERNWEST CORPORATION
- ROHM AND HAAS ELECTRONIC MATERIALS
- ROHM AND HAAS ELECTRONIC MATERIALS A
- SILTRONIC SINGAPORE PTE LTD
- SK SILTRON CO., LTD.
- TOKYO OHKA KOGYO CO., LTD.
- ULVAC, INC.
- Ever Team International Corp.
- Air Products San Fu Co., Ltd.
- Praxair Chemax Semiconductor Materials Co., Ltd.
- Toppan Chunghwa Electronics Corporation
- WORLDFULL INT'L CORP.
- GLOBAL PRECISE INSTRUMENT CORPORATION
- Formosa Biomedical Technology Corp.
- Formosa Sumco Technology Corporation
- INNOS TAIWAN INTERNATIONAL TRADING CO., LTD.
- Nippon Sanso Taiwan Co., Ltd.
- BASF Taiwan Ltd.
- Showa Denko International (Taiwan) Co., Ltd.
- Nikko Metals Taiwan Co., Ltd.
- TOSOH SMD TAIWAN LTD.
- TOK TAIWAN CO., LTD.
- TAIWAN MAXWAVE CO., LTD.
- SHIN-ETSU HANDOTAI TAIWAN CO., LTD.
- Photronics DNP Semiconductor Mask Corp.
- SUMITRONICS TAIWAN CO., LTD.
- Honeywell | Performance Materials and Technologies
- FUJIFILM Electronic Materials Taiwan Co., Ltd.
- Rohm and Haas Electronic Materials CMP Asia Inc., Taiwan Branch
- TAIWAN KANTO DENKA CO., LTD.
- TAIWAN POLYGAS TECHNOLOGY CO., LTD.
- KEMITEK INDUSTRIAL CORP.
- MARKETECH INTERNATIONAL CORP.
- Air Liquide Far Eastern Ltd.
- Air Liquide Far Eastern Ltd. Taichung Branch
- Nan Ya Plastics Corp. Mailiao Branch
- Showa Specialty Gas (Taiwan) Co., Ltd.
- ENTEGRIS ASIA LLC TAIWAN BRANCH (U.S.A.)
- Praxair Surface Technologies Inc.
- Versum Materials Technology LLC. Taiwan Branch
- Rohm and Haas Electronic Materials CMP Asia Inc., Taiwan Branch
- TES Solutions Co., Ltd.
- GIGA GAS & ELECTRONIC MATERIALS COMPANY
- TOPCO SCIENTIFIC CO., LTD.
- CMC Materials Taiwan Co,.Ltd
- Botai Advanced Materials Co., Ltd.
- WAH LEE INDUSTRIAL CORP.
- Versum Materials Taiwan Co., Ltd.
- Versum Materials Taiwan Co., Ltd. Taichung Branch
- Merck Performance Materials Ltd.
- GlobalWafers Co., Ltd.
- GlobalWafers Co., Ltd. Taisil Branch
- Asia Union Electronic Chemical Corporation
- Lienhwa Industrial Gases Co., Ltd. Chung Kang Branch
- Linde Lienhwa Industrial Gases Co., Ltd. Tao Ke Branch
- KANTO-PPC Inc.

Note: *Key suppliers include the following three characteristics, with high-volume procurement amount, providing critical component, and non-substitutable.

GRI STANDARDS INDEX

GRI Standards	Disclosure indicator	Indicator description	Chapter	Page
General Disclosures				
GRI 102 General Disclosures	102-1	Name of the organization	About Nanya Technology	9
	102-2	Activities, brands, products, and services	About Nanya Technology; Major Products and Operating Performance (Nanya is not banned from selling products or providing services in certain markets)	9,11
	102-3	Location of headquarters	About Nanya Technology	9
	102-4	Location of operations	About Nanya Technology	9
	102-5	Ownership and legal form	About Nanya Technology	9
	102-6	Markets served	About Nanya Technology	9
	102-7	Scale of the organization	About Nanya Technology; Major Products and Operating Performance	9,11
	102-8	Information on employees and other workers	Employee Diversity	91
	102-9	Supply chain	Sustainable Supply Chain Management	59
	102-10	Significant changes to the organizationand its supply chain	No significant change had taken placein 2020	-
	102-11	Precautionary principle or approach	Risk Management	33
	102-12	External initiatives	The Company participates in CDP byresponding to CDP questionnaires	-
	102-13	Membership of associations	About Nanya Technology	9
	102-14	Statement from senior decision-maker	Message from the President	3
	102-16	Values, principles, standards, and normsof behavior	Business Integrity	46
	102-18	Governance structure	Governance and Organization; Corporate Governance	15,31
	102-40	List of stakeholder groups	Materiality Analysis	17
	102-41	Collective bargaining agreements	Talent Retention and Employee Care	104
	102-42	Identifying and selecting stakeholders	Materiality Analysis	17
	102-43	Approach to stakeholder engagement	Materiality Analysis	17
	102-44	Key topics and concerns raised	Materiality Analysis	17
	102-45	Entities included in the consolidatedfinancial statements	Major Products and Operating Performance; Appendix – About this Report	11,129

GRI Standards	Disclosure indicator	Indicator description	Chapter	Page
General Disclosures				
GRI 102 General Disclosures	102-46	Defining report content and topic Boundaries	Appendix - About this report	129
	102-47	List of material topics	Materiality Analysis	17
	102-48	Restatements of information	None had occurred in 2020	-
	102-49	Changes in reporting	Materiality Analysis	17
	102-50	Reporting period	Appendix - About this report	129
	102-51	Date of most recent report	Appendix - About this report	129
	102-52	Reporting cycle	Appendix - About this report	129
	102-53	Contact point for questions regarding the report	Appendix - About this report	129
	102-54	Claims of reporting in accordance withthe GRI Standards	Appendix - About this report	129
	102-55	GRI content index	Appendix - GRI Standards Index	136
	102-56	External assurance	Appendix - Assurance Statements	142
GRI 200: Economic Series				
GRI 103 Management Approach	103-1	Explanation of the material topic and its Boundary	Materiality Analysis	17
GRI 103 Management Approach	103-2	The management approach and its components	Materiality Analysis; Talent Retention and Employee Care; Employee Diversity; Sustainable Supply Chain Management; Business Integrity	17,46,59, 91,95
	103-3	Evaluation of the management approach	Materiality Analysis; Talent Retention and Employee Care; Employee Diversity; Sustainable Supply Chain Management; Business	17,46,59, 91,95
GRI 201 Economic Performance	201-1	Direct economic value generated anddistributed	Major Products and Operating Performance	11
	201-3	Defined benefit plan obligations andother retirement plans	Talent Retention and Employee Care	95
GRI 202 Market Presence (Material topic)	202-1	Ratios of standard entry level wage bygender compared to local minimum wage	Talent Retention and Employee Care	95
GRI 203 Indirect EconomicImpacts	203-1	Infrastructure investments and services supported	Social influence	119
	203-2	Significant indirect economic impacts	Social Engagement	123
GRI 204 Procurement Practices (Material topic)	204-1	Proportion of spending on local suppliers	Sustainable Supply Chain Management	64

GRI Standards	Disclosure indicator	Indicator description	Chapter	Page
GRI 200: Economic Series				
GRI 205 Anti-Corruption (Material topic)	205-1	Operations assessed for risks related to corruption	The Company annually conducts assessments on operations in Taiwan and overseas based on the compliance status of the internal regulations on ethical corporate management and internal audit systems. No risk of corruption was found.	-
	205-2	Communication and training about anti-corruption policies and procedures	Business Integrity	46
	205-3	Confirmed incidents of corruption and actions taken	Business Integrity	46
GRI 206 Anti-competitiveBehavior (Material topic)	206-1	Legal actions for anti-competitivebehavior	No violation had occurred in 2020	-
GRI 300: Environmental Series				
GRI 103 Management Approach	103-1	Explanation of the material topic and its Boundary	Materiality Analysis; Energy Management	17
	103-2	The management approach and its components	Materiality Analysis; Energy Management; Water Management; Greenhouse Gas Management; Waste and Recycling; Sustainable Supply Chain Management	17,80,82, 84,85,59
	103-3	Evaluation of the management approach	Materiality Analysis; Energy Management; Water Management; Greenhouse Gas Management; Waste and Recycling; Sustainable Supply Chain Management	17,80,82, 84,85,59
GRI 301 Materials	301-1	Materials used by weight or volume	Eco-friendly products	74
	301-2	Recycled input materials used	Eco-friendly products	74
	301-3	Reclaimed products and their packaging materials	Eco-friendly products	74
GRI 302 Energy (Material topic)	302-1	Energy consumption within the organization	Energy Management	82
	302-3	Energy intensity	Energy Management	82
	302-4	Reduction of energy consumption	Energy Management	82
	302-5	Reductions in energy requirements of products and services	Energy Management	82
GRI 303 Water(2018)(Material topic)	303-1*	Interactions with water as a shared resource	Water Management	84
	303-2*	Management of water discharge-related impacts	Water Management	84
	303-3	Water withdrawal	Water Management	84
	303-4	Water discharge	Water Management	84
	303-5	Water consumption	Water Management	84

GRI Standards	Disclosure indicator	Indicator description	Chapter	Page
GRI 300: Environmental Series				
GRI 305 Emissions (Material topic)	305-1	Direct (Scope 1) GHG emissions	Greenhouse Gas Management	80
	305-2	Energy indirect (Scope 2) GHG emissions	Greenhouse Gas Management	80
	305-4	GHG emissions intensity	Greenhouse Gas Management	80
	305-5	Reduction of GHG emissions	Greenhouse Gas Management	80
	305-6	Emissions of ozone-depleting substances (ODS)	The Company does not use ODS	-
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	Waste and Recycling	85
GRI 306 Effluents and Waste (Material topic)	306-2	Waste by type and disposal method	Waste and Recycling	85
	306-3	Significant spills	No spillage of oil, fuel, waste or chemical had occurred in 2020	-
	306-4	Transport of hazardous waste	Waste and Recycling	85
GRI 307 Environmental Compliance	307-1	Non-compliance with environmental laws and regulations	There had been no violation of environmental protection law in 2020.	-
GRI 308 Supplier Environmental Assessment (Material topic)	308-1	New suppliers that were screened using environmental criteria	Sustainable Supply Chain Management	59
	308-2	Negative environmental impacts in the supply chain and actions taken	Sustainable Supply Chain Management	59
GRI 400: Social Series				
GRI 103 Management Approach	103-1	Explanation of the material topic and itsBoundary	Materiality Analysis; Employee Diversity	17
	103-2	The management approach and its components	Materiality Analysis; Employee Diversity; Talent Retention and Employee Care; Human Rights; Occupational Health and Safety; Talent Development; Social Engagement; Sustainable Supply Chain Management; Customer Service	17, 55, 59, 91, 95, 104, 107, 116
	103-3	Evaluation of the management approach	Materiality Analysis; Employee Diversity; Talent Retention and Employee Care; Human Rights; Occupational Health and Safety; Talent Development; Social Engagement; Sustainable Supply Chain Management; Customer Service	17, 55, 59, 91, 95, 104, 107, 116
GRI 401 Employment (Material topic)	401-1	New employee hires and employee turnover	Employee Diversity	91
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Talent Retention and Employee Care	95
	401-3	Parental leave	Talent Retention and Employee Care	95
GRI 402 Labor/Management Relations	402-1	Minimum notice periods regarding operational changes	Talent Retention and Employee Care	95

GRI Standards	Disclosure indicator	Indicator description	Chapter	Page
GRI 400: Social Series				
GRI 403 Occupational Health and Safety(2018) (Material topic)	403-1*	Occupational safety and health management system	Occupational Health and Safety	116
	403-2*	Hazard identification, risk assessment, and incident investigation	Occupational Health and Safety	116
	403-3*	Occupational health services	Occupational Health and Safety	116
	403-4*	Worker participation, consultation, and communication on occupational health and safety	Occupational Health and Safety	116
	403-5*	Worker training on occupational health and safety	Occupational Health and Safety	116
	403-6*	Promotion of worker health	Occupational Health and Safety	116
	403-7*	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Occupational Health and Safety	116
	403-8	Workers covered by an occupational health safety management system	Occupational Health and Safety	116
	403-9	Work-related injuries	Occupational Health and Safety	116
	403-10	Work-related ill health	Occupational Health and Safety	116
GRI 404 Training and education (Material topic)	404-1	Average hours of training per year per employee	Talent Development	107
	404-2	Programs for upgrading employee skills and transition assistance programs	Talent Development	107
	404-3	Percentage of employees receiving regular performance and career development reviews	Talent Development	107
GRI 405 Diversity and Equal Opportunity	405-1	Diversity of governance bodies and employees	Corporate Governance; Employee Diversity	31,91
	405-2	Ratio of basic salary and remuneration of women to men	Talent Retention and Employee Care	95
GRI 406 Non-discrimination (Material topic)	406-1	Incidents of discrimination and corrective actions taken	Business Integrity; Human Rights	46,104
GRI 409 Forced or Compulsory Labor (Material topic)	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Human Rights; Sustainable Supply Chain Management	104,59
GRI 412 Human Rights Assessment (Material topic)	412-1	Operations that have been subject to human rights reviews or impact assessments	Human Rights	104
	412-2	Employee training on human rights policies or procedures	Human Rights	104
GRI 413 Local Communities (Material topic)	413-1	Operations with local community engagement, impact assessments, and development programs	Materiality Analysis; Occupational Health and Safety; Social Engagement	17,116,123
GRI 414 Supplier Social Assessment (Material topic)	414-1	New suppliers that were screened using social criteria	Sustainable Supply Chain Management	59
GRI 417 Marketing and Labeling	417-2	Incidents of non-compliance concerning product and service information and labeling	None had occurred in 2020	-
	417-3	Incidents of non-compliance concerning marketing communications	None had occurred in 2020	-
GRI 418 Customer privacy (Material topic)	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Customer Service	55
GRI 419 Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	None had occurred in 2020	-

Note:
1. Reported the management approach for topic-specific disclosures in accordance with the GRI Standards version 2016.
2. Asterisk (*) indicates Management Approach disclosure items of the Specific Topic.

SASB INDEXV

Topic	Code	Category	Unit of measure	Accounting metric	CHAPTER/PAGE
Greenhouse Gas Emissions	TC-SC-110a.1	Quantitative	Metric tons (t) CO_2e	(1) Gross global Scope 1 emissions, (2) amount of total emissions from per fluorinated compounds	Greenhouse Gas Management/80
	TC-SC-110a.2	Discussion and Analysis	n/a	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	
Energy Management in Manufacturing	TC-SC-130a.1	Quantitative	Gigajoules (GJ); %	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable	Energy Management/82
Water Management	TC-SC-140a.1	Quantitative	Thousand cubic meters (m^3); %	(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Water Management/84
Waste Management	TC-SC-150a.1	Quantitative	Metric tons (t), %	Amount of hazardous waste from manufacturing, percentage recycled	Waste and Recycling/85
Employee Health & Safety	TC-SC-320a.1	Discussion and Analysis	n/a	Description of efforts to assess, monitor, and reduce exposure of employees to human health hazards	Occupational Health and Safety/116
	TC-SC-320a.2	Quantitative	Reporting currency	Total amount of monetary losses as a result of legal proceedings associated with employee health and safety violations	
Recruiting & Managing a Global & Skilled Workforce	TC-SC-330a.1	Quantitative	%	Percentage of employees that are (1.) foreign nationals and (2) located offshore)	Employee Diversity/91
Product Lifecycle Management	TC-SC-410a.1	Quantitative	%	Percentage of products by revenue that contain IEC 62474 declarable substances	Eco-friendly products/74
Materials Sourcing	TC-SC-440a.1	Discussion and Analysis	n/a	Description of the management of risks associated with the use of critical materials	Conflict minerals/65
Intellectual Property Protection & Competitive Behavior	TC-SC-520a.1	Quantitative	Reporting currency	Total amount of monetary losses as a result of legal proceedings associated with anticompetitive behavior regulations	R&D and Innovation/51
Activity Metric	TC-SC-000.A	Quantitative	Total production	The entity shall disclose total production from its own manufacturing facilities and those with which it contracts for manufacturing services.	Major Products and Operating Performance/11
	TC-SC-000.B	Quantitative	%	Percentage of production from owned facilities	

INDEPENDENT ASSURANCE OPINION STATEMENT

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By Royal Charter

INDEPENDENT ASSURANCE OPINION STATEMENT

Nanya Technology 2020 Corporate Social Responsibility Report

The British Standards Institution is independent to Nanya Technology Corporation (hereafter referred to as Nanya Technology in this statement) and has no financial interest in the operation of Nanya Technology other than for the assessment and verification of the sustainability statements contained in this report.

This independent assurance opinion statement has been prepared for the stakeholders of Nanya Technology only for the purposes of assuring its statements relating to its corporate social responsibility (CSR), more particularly described in the Scope below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the independent assurance opinion statement may be read.

This independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by Nanya Technology. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to Nanya Technology only.

Scope

The scope of engagement agreed upon with Nanya Technology includes the followings:

1. The assurance scope is consistent with the description of Nanya Technology 2020 Corporate Social Responsibility Report.
2. The evaluation of the nature and extent of the Nanya Technology's adherence to AA1000 AccountAbility Principles (2018) and the reliability of specified sustainability performance information in this report as conducted in accordance with type 2 of AA1000AS v3 sustainability assurance engagement.

This statement was prepared in English and translated into Chinese for reference only.

Opinion Statement

We conclude that the Nanya Technology 2020 Corporate Social Responsibility Report provides a fair view of the Nanya Technology CSR programmes and performances during 2020. The CSR report subject to assurance is materially correct without voluntary omissions based upon testing within the limitations of the scope of the assurance, the information and data provided by the Nanya Technology and the sample taken. We believe that the 2020 economic, social and environmental performance information are correctly represented. The CSR performance information disclosed in the report demonstrate Nanya Technology's efforts recognized by its stakeholders.

Our work was carried out by a team of (CSR) report assurors in accordance with the AA1000AS v3. We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that Nanya Technology's description of their approach to AA1000AS v3 and their self-declaration in accordance with GRI Standards: Core option were fairly stated.

Methodology

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- a top level review of issues raised by external parties that could be relevant to Nanya Technology's policies to provide a check on the appropriateness of statements made in the report
- discussion with managers on Nanya Technology's approach to stakeholder engagement. Moreover, we had sampled two external stakeholders to conduct interview
- interview with 30 staffs involved in sustainability management, report preparation and provision of report information were carried out
- review of key organizational developments
- review of the extent and maturity of the relevant accounting systems for financial and non-financial reports
- review of the findings of internal audits
- the verification of performance data and claims made in the report through meeting with managers responsible for gathering data
- review of the processes for gathering and ensuring the accuracy of data, followed data trails to initial aggregated source and checked sample data to greater depth during site visits
- the consolidated financial data are based on audited financial data, we checked that this data was consistently reproduced
- review of supporting evidence for claims made in the reports
- an assessment of the organization's reporting and management processes concerning this reporting against the principles of Inclusivity, Materiality, Responsiveness and Impact as described in the AA1000AP (2018)

Conclusions

A detailed review against the Inclusivity, Materiality, Responsiveness and Impact of AA1000AP (2018) and sustainability performance information as well as GRI Standards is set out below:

Inclusivity

In this report, it reflects that Nanya Technology has continually sought the engagement of its stakeholders and established material sustainability topics, as the participation of stakeholders has been conducted in developing and achieving an accountable and strategic response to sustainability. There are fair reporting and disclosures for economic, social and environmental information in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the Nanya Technology's inclusivity issues and has demonstrated social responsible conduct supported by top management and implemented in all levels among organization.

Materiality

The Nanya Technology publishes material topics that will substantively influence and impact the assessments, decisions, actions and performance of Nanya Technology and its stakeholders. The sustainability information disclosed enables its stakeholders to make informed judgements about the Nanya Technology's management and performance. In our professional opinion the report covers the Nanya Technology's material issues.

Responsiveness

Nanya Technology has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for the Nanya Technology is developed and continually provides the opportunity to further enhance Nanya Technology's responsiveness to stakeholder concerns. Topics that stakeholder concern about have been responded timely. In our professional opinion the report covers the Nanya Technology's responsiveness issues.

Impact

Nanya Technology has identified and fairly represented impacts that were measured and disclosed in probably balanced and effective way. Nanya Technology has established processes to monitor, measure, evaluate and manage impacts that lead to more effective decision-making and results-based management within an organization. In our professional opinion the report covers the Nanya Technology's impact issues.

Performance information

Based on our work described in this statement, specified sustainability performance information such as GRI Standards disclosures disclosed in this report, Nanya Technology and BSI have agreed upon to include in the scope. In our view, the data and information contained within Nanya Technology 2020 Corporate Social Responsibility Report are reliable.

GRI Sustainability Reporting Standards (GRI Standards)

Nanya Technology provided us with their self-declaration of in accordance with GRI Standards: Core option (For each material topic covered by a topic-specific GRI Standard, comply with all reporting requirements for at least one topic-specific disclosure). Based on our review, we confirm that social responsibility and sustainable development disclosures with reference to GRI Standards' disclosures are reported, partially reported or omitted. In our professional opinion the self- declaration covers the Nanya Technology's social responsibility and sustainability topics.

Assurance level

The high level assurance provided is in accordance with AA1000AS v3 in our review, as defined by the scope and methodology described in this statement.

Responsibility

This CSR report is the responsibility of the Nanya Technology's chairman as declared in his responsibility letter. Our responsibility is to provide an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

Competency and Independence

The assurance team was composed of Lead auditors experienced in relevant sectors, and trained in a range of sustainability, environmental and social standards including AA1000AS, ISO 14001, ISO 45001, ISO 14064 and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.

For and on behalf of BSI :

Peter Pu, Managing Director BSI Taiwan

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Statement No: SRA-TW-2020007

2021-05-14

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