Nanya Technology Corporation

Sustainable Raw Materials Report 2024

I. Sustainable Raw Materials Policy

Nanya Technology Corporation (hereinafter referred to as "Nanya") is dedicated in the development, manufacturing and distribution of DRAM (Dynamic Random Access Memory). Nanya is committed to green manufacturing with strategies centering around the goal of "creating shared value." We have established performance indicators to evaluate the impact on sustainability during each stage of the product life cycle (Figure 1), and regularly report to the Board of Directors. We cooperates with external stakeholders to develop solutions that minimize potential impacts of raw materials and avoid using raw materials from globally and nationally important biodiversity sites. In addition to complying with domestic and international regulations and directives on restricted substances, we also created the Hazardous Substance Free Policy and Responsible Mineral Procurement Policy. We aim to obtain more third-party certification, increase the use of reclaimed materials, and improve our capabilities in green product development and management.

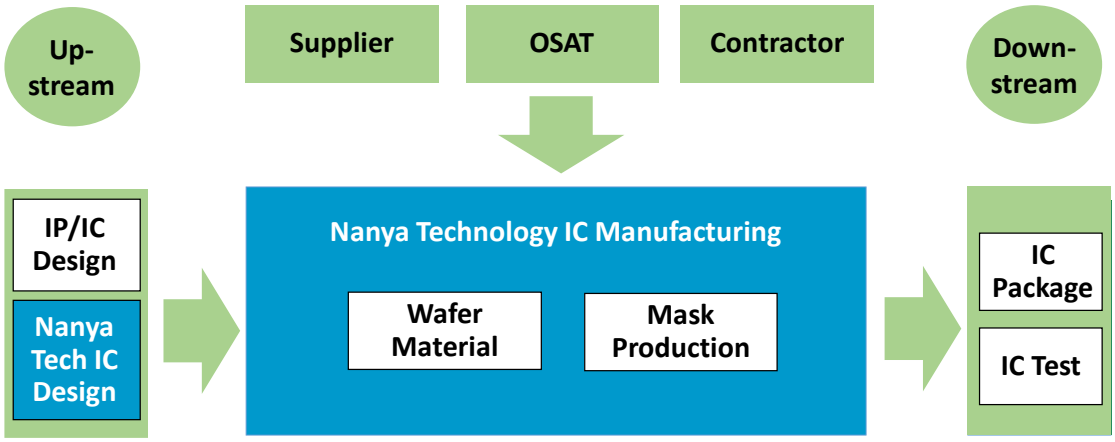


Figure 1 Schematic diagram of Nanya's industry chain

Nanya implements sustainable raw material plans as follows based on our policies aforementioned :

(I) Evaluate the impact of raw materials on sustainability and prioritize the procurement of raw materials with lower impacts.

(II) Establish raw materials traceability and leverage the best available techniques (BAT) to reduce social and environmental impacts during the production process of the materials.

(III) Set goals for the use of sustainable raw and reclaimed materials, and disclose sustainable raw material procurement goals.

(IV) Purchase advanced equipment, establish clean production processes, reduce

pollutants and wastes generated during production, decrease the use of hazardous substances and manage the wastes properly.

(V) Reduce water and energy usage and lower the emissions of GHG emissions while continuing to develop high energy efficiency products.

(VI) Assess the environmental impact of production activities based on product environmental footprint, and collaborate with suppliers and customers to reduce negative environmental impacts.

(VII) Implement biodiversity policy and prevent supply chain operations from being located in important ecological sensitive or biodiversity hotspots.

II. Sustainable Raw Materials Programs

Nanya manufactures DRAM products, and the main raw materials[1] come from virgin and reclaimed wafers, targets, and passive components, which contain metal and chemical materials including silicon, cobalt, tantalum, tungsten, titanium, niobium, copper, aluminum, and light rare earth elements. From product design, raw material procurement, manufacturing to transportation, each of the stage revolves around four major approaches: (1) Green product development, (2) sustainable supply chain management, (3) green manufacturing technologies, and (4) awareness-raising training.

Green Product Development	Supply Chain Management	Green Manufacturing	Awareness Training
• Prioritize low-impact materials • Establish raw material traceability • Assess product environmental footprint and reduce negative impacts	• Reduce the environmental and social impacts of raw material production with BAT • Responsible mineral management	• Establish clean production processes • Respond to climate change risks and opportunities • Implement biodiversity policies	• Internal training • Cross-departmental communica-tion meetings

Figure 2 Nanya's Sustainable Raw Materials Management Practices

(I) Design: Green Product Development

We integrate life cycle and green design thinking into our advanced and eco-friendly solutions, which powers products of higher energy efficiency at our customers' end. We extend the efforts to our suppliers by practicing hazard management and responsible minerals procurement. Supervised by Nanya's Green Product Promotion Committee (GPPC), our product development takes into account the environmental impacts from procurement, manufacturing, transportation, product use, disposal, and

[1] Refer to the definition of sustainable raw materials, including animals, plants, plastics, and metals, in the CSA Methodology Updates for 2024 CSA cycle announced by S&P Global. Based on industry characteristics, our raw materials are mainly metals, and we referenced the EU's critical raw materials list and 2.8.3 Metal Raw Materials when compiling the list of raw materials.

recycling.

Nanya uses wafer manufacturing as the boundary (Cradle to Gate) and conducts life cycle assessment (LCA) on all products to calculate the 28 impacts of the Environmental Footprint [2]. The life cycle emissions inventorying in 2023 and improvement plans cover the main hotspots as indicated in Table 1.

Table 1 Life cycle emissions inventory 2023 and improvement plans

Hot spot item	Product carbon footprint share (%)	Improvement plans	Results in 2023	Future direction
Electricity	83.13%	● Improve energy conservation	● Completed 36 energy conservation projects under ISO 50001, saved 5,513 kWh ● Purchased 35.23 million kWh of renewable energy	● Continue energy conservation projects ● Increase the use of renewable energy
LIQUID NITROGEN (LN2)	2.45%	● Require suppliers to reduce energy consumption and emissions	● Suppliers joined SBTi and plan to reduce 25% of emissions (Scope 1+2) by 2030.	● Require suppliers to continue to reduce energy consumption and emissions
Production wafer	2.40%			

(II) Procurement: Sustainable Supply Chain Management

1. Sustainability risk assessment and management

Nanya's Sustainable Development Committee reports supply chain management results to the Board of Directors every year. Our supplier management process consists of 5 steps: (1) Sustainability requirements, (2) operational risk assessment and survey,

[2] According to The Environmental Footprint (EF) 3.0 and EU Commission (2010) data. Environmental footprint assessment items include greenhouse effect (fossil fuels, biology, land use, and changes in land use), ozone layer destruction, acid rain, water body eutrophication, ionizing radiation, eutrophication (land, water body, ocean), photochemical effects, freshwater ecotoxicity (organic matter, inorganic matter, metallic materials), particulate matter, human toxicity non-cancerous effects (organic matter, inorganic matter, metallic materials), human toxicity cancerous effects (organic matter, inorganic matter, metallic materials), land conversion, water resource depletion, and resource use (mineral and metal materials, fossil fuels).

(3) sustainability risk survey, (4) sustainability audits/improvement measures, and (5) supplier capability building. Details elaborated as follows:

(1) **Sustainability requirements:** The "Nanya Technology Supplier Code of Conduct" covers environmental and social impact, including labor, health and safety, environment, ethics, and governance.

(2) **Operational risk assessment and survey:** We annually review the region, procurement amount, and supplied products of all suppliers for preliminary risk assessment.

(3) **Sustainability risk survey:** All tier 1 suppliers are required to complete the Sustainability Risk Assessment Questionnaire, which is based on Nanya's Supplier Code of Conduct and examines the potential economic/social/environmental impacts). Top 5% high-risk suppliers are subject to audit and improvement requirements.

(4) **Sustainability audits/improvement measures:** High-risk suppliers are subject to audits and required to propose improvement plans according to the correction action request. The improvement measures should be completed in two years. Suppliers that are unable to meet the requirements will be reviewed by the Material Review Board for further actions, including reducing order quantity, redirecting orders, or terminating supply contracts.

(5) **Supplier capability building:** Nanya continues to help suppliers increase awareness and improve performance in sustainability by hosting seminars and providing assistance in ESG projects.

Table 2 2024 Supplier Education Training and Seminar Topics

Item	Topic
1	Supplier environmental compliance training
2	Supply Chain Information Security
3	Environmental and human rights sustainability project promotion
4	Water resources management practices and case sharing
5	Nature and Climate Positive Supply Chain Workshop

2. Supply Chain Sustainability Projects

Project name	Content of project	Project benefits
Three-zero human rights program	● We promote the human rights program that advocates zero crimes against humanity, zero forced labor, and zero discrimination to	● 31 suppliers Initiatives and implementation in 2022-2024: 1. Continue to communicate with and provide guidance to suppliers that support

	significant suppliers. ● Project start and end date: 2022-2030 ● Expected benefits: Strengthen human rights protection, reduce the exploitation of human rights, create a friendly workplace, and avoid becoming a sweatshop	the Three-Zero Human Rights Program in coordination with the audit schedule and investigate the company's current system to evaluate its inclusion as a key supplier. 2. Continue to communicate with suppliers that have not responded to the Three-Zero Human Rights Program each month.
Product carbon footprint inventory	● Encourage raw materials suppliers and packaging and testing plants to compile their carbon footprint inventory ● Project start and end date:2023-2025 ● Expected benefits: 1. Aligned with climate change issues; 2. Reduces the Company's product carbon footprint; 3. Achieving the SBTi in 2030 will be beneficial	● Results in 2023: 1.The Industrial Technology Research Institute and National Taiwan University of Science and Technology provide guidance for suppliers' carbon footprint inventory and carbon reduction projects over a two-year period. 2.Create and share the supplier product carbon footprint inventory on the platform.
Low carbon transportation project	● Nanya established an upstream and downstream joint carbon reduction model and implements carbon reduction plans to strengthen the development of green suppliers. Nanya is worked with wafer suppliers through projects in 2023 to use shipping instead of air transport for wafer	● Results in 2024: 1. GHG emissions was reduced by approximately 35,162 kg CO_2e 2. Carbon emissions per wafer are reduced by 0.671 kg CO_2e.

	transportation. The quality assessment process has been completed and the goal of 100% low-carbon transportation mode is expected to be achieved in 2030. ● Project start and end date:2022-2030 ● Expected benefits: 1.Nanya established a demonstration project and will expand it to other suppliers in the future, increasing the selection of green suppliers 2.Optimizing the transportation process, reducing the number of forklift operations, and saving manpower.	
4. Joint Renewable Energy Procurement Project	● To actively expand our sustainability impact, we jointly procure renewable energy with Formosa Advanced Technologies to achieve our green transformation goals together.	● Starting in 2024, Nanya Technology will procure 25 million kWh of green power annually, totaling 250 million kWh in ten years. ● Formosa Advanced Technologies will procure 15 million kWh annually, totaling 150 million kWh in ten years.

3. Responsible Mineral Procurement Management

Nanya is committed to its Responsible Mineral Procurement Policy (URL: https://www.nanya.com/ESG/storage/file/42978bb1-4d9d-4932-88f3-9e95cc0b0ea9?v=1715232284) and conducts supply chain survey at least once a year. We leverage the Conflict Minerals Reporting Template (CMRT) to survey the 3TG suppliers or miners; and cobalt and mica suppliers or miners are surveyed with the Extended Minerals Reporting Template (EMRT). Such efforts help us avoid procuring from illegal armed groups and forced labor. Our suppliers are

required to sign Nanya's Responsible Mineral Sourcing Policy and Conflict-free Minerals Commitment to ensure that the partnering smelters comply with RBA's requirements of Responsible Sourcing of Minerals.

In 2024, all of the 284 smelters identified in the supply chain survey are accredited by the Responsible Minerals Initiative (RMI), and completely comply with the conflict-free minerals and responsible minerals policy.

(III) Production: Green Manufacturing

All of Nanya's plants are green factories certified by the government. We adopt standards that are higher than legal regulations to manage the potential impacts generated throughout the production process, including energy and resource consumption, emissions and waste management. We develop advanced solutions to enable end products that are more energy efficient with lower carbon emissions.

Nanya adopted the Task Force on Climate-related Financial Disclosures (TCFD) Recommendations in 2020 to identify climate change risks and opportunities of the value chain with practical targets and metrics. In 2024, Nanya took a further step forward to implement the Task Force on Nature-related Financial Disclosures (TNFD). We leveraged the LEAP methodology to assess nature and climate-related dependencies, risks, and opportunities of our operation sites, upstream supply chain, and downstream customers. With the assessment results, we developed corresponding strategies and actions to mitigate impacts and annually review the performance.

Nanya used 9 types of highly bio-sensitive maps disclosed by Taiwan's government to assess the area covers 2 km radius around Nanya's direct operation sites, significant supplier's locations and shipment locations. The mapping results indicated that no highly bio-sensitive area was found within 2 km radius around Nanya's fabs (Figure 3).

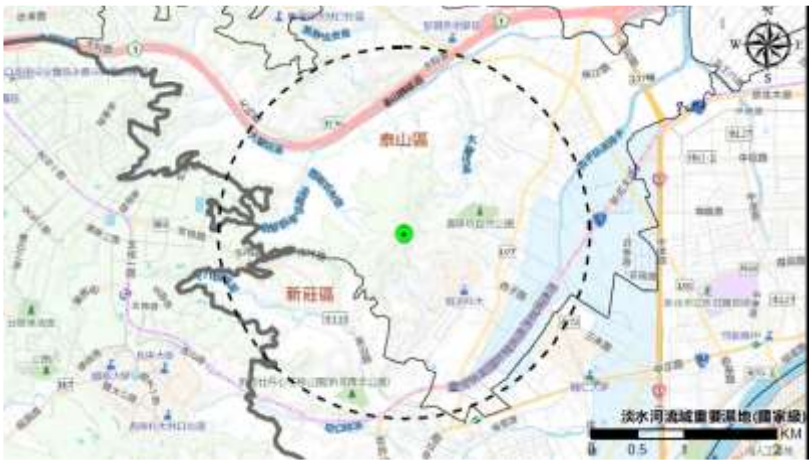
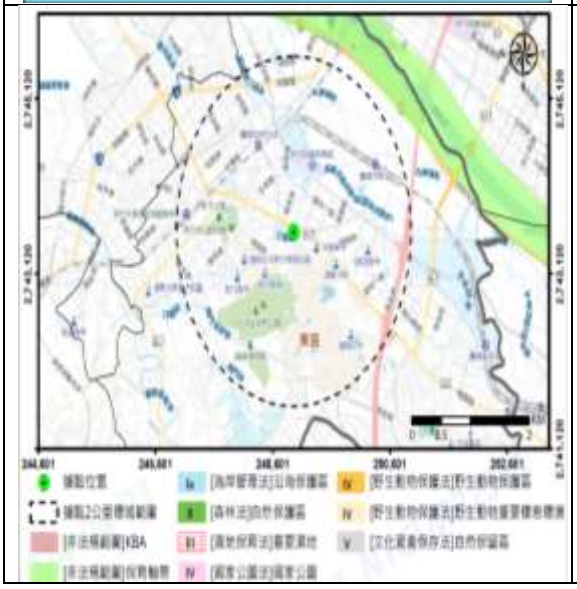
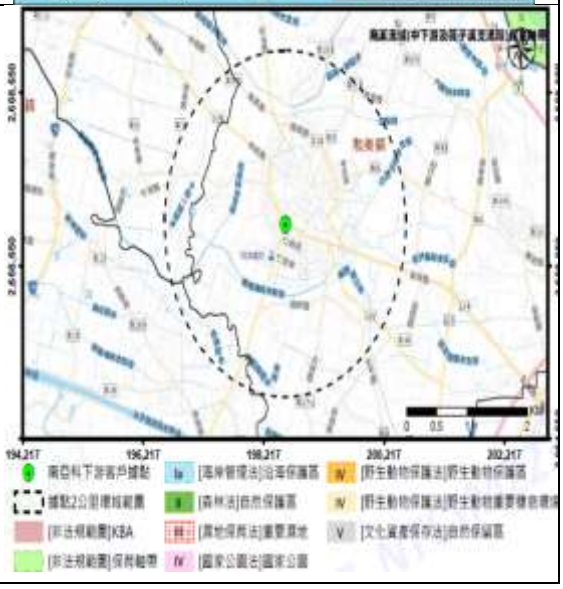


Figure 3 Map of bio-sensitive area identified by Nanya

Among the significant suppliers, the majority of high-risk ones are in Taoyuan City, and some of these high-risk suppliers located in the Dayuan Industrial Park of Taoyuan, which is close to a legally protected wetland. Within 2km radius around these suppliers we found no direct operation activities taking place within the legally protected area.

Among the 26 downstream customers surveyed, 10 may have legally protected areas within 2 km radius area (only 3 if based on the International Union for Conservation of Nature standards). Further analysis shows that these 10 companies do not actually operate in any bio-sensitive area, as shown in Table 3.

Table 3 Bio-sensitive area identified around upstream and downstream company sites

Bio-sensitive area around upstream company sites	Bio-sensitive area around downstream company sites
 	 

(IV) Awareness-raising Training

Training are provided to employees every year to ensure up-to-date knowledge of sustainable raw materials management. The list of training in 2024 is shown in Table 4; the total number of participants was 27,173 and total hours was 38,820 hours. In addition, cross-departmental communication meetings are convened by the Sustainable Development Steering Center to discuss matters related to sustainable raw materials management in a timely manner.

Table4 List of training courses in 2024

Item No.	Course title
1	Information Security Regulations
2	Prevention of insider trading and handling of material insider information
3	Anti-corruption 101
4	Introduction to risk management
5	Introduction to ISO 50001 Energy Management Systems
6	Green product training
7	Labor and ethics policies
8	Responsible Mineral Sourcing Management

III. Sustainable Raw Materials Management: Goals and Results

The sustainable raw materials used in the products manufactured by Nanya (including processing, refining, assembly, transportation, and distribution) include silicon, cobalt, tantalum, tungsten, titanium, niobium, copper, aluminum, and light rare earth elements. The amount of metal raw materials purchased in 2024 (Table 5) accounts for 18.6% of the total purchase amount in 2024. We proactively assess the risk of raw material suppliers, four of which are key suppliers. In our 2024 assessment, none of the raw materials suppliers were found to be high-risk.

Table 5 Metal raw material procurement volume in 2024

Raw materials	Material amount of usage (Ton/Year)	Recycled material amount of usage (Ton/Year)
Silicon (Si)	82.143	49.434
Titanium (Ti)	0.784	0
Copper (Cu)	0.742	0
Aluminum (Al)	0.581	0
Tungsten (W)	0.357	0

Raw materials	Material amount of usage (Ton/Year)	Recycled material amount of usage (Ton/Year)
Light Rare Earth Elements	0.119	0
Tantalum (Ta)	0.038	0
Cobalt (Co)	0.08	0
Niobium (Nb)	0.002	0
Iron (Fe)	0 No metal of Fe/Ni/Li is used in the product	
Nickel (Ni)		
Lithium (Li)		

Nanya is a wafer manufacturing company. Due to the technical limitations of the current process, silicon raw material can only be reclaimed silicon and used as monitor wafer to monitor process conditions. Defects are regularly reviewed with suppliers, who then implement process improvements and revise specifications. The used monitor wafers can be reproduced and used repeatedly; each monitor wafer can be repeatedly used for 8-11 times based on the applied process. The approach could reduce the cost of purchasing new dummy wafers and waste. Since 2021, suppliers have adjusted their manufacturing processes to reduce scrap caused by defects, raising the average yield of returned products from 80% to 85%. As a result of the stable yield of returned products, reclaimed wafer input rate increased from 79% in 2021 to 83% in 2023, and remained steady at 83% in 2024 (Figure 4); it is projected to reach 85% in 2025.

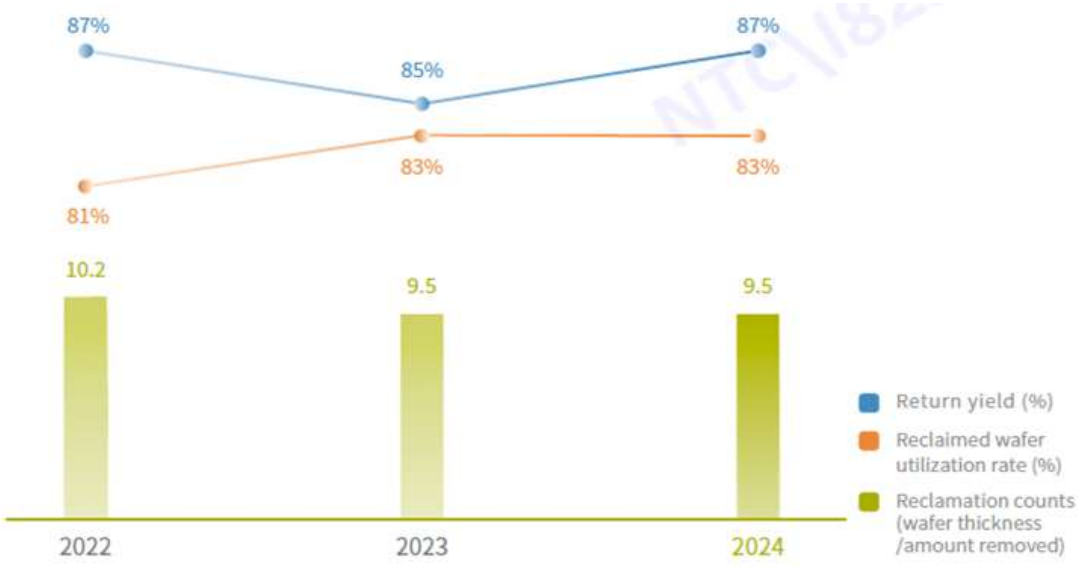


Figure 4 Reclaimed Wafer Indicators

The following table shows the 2024 activities of Nanya Technology's Sustainable Materials Plan:

Item	Material	Material of Suppliers
Tracking Mechanism	● Traceability: Regularly track the sources of the manufacturers and raw material suppliers that use or contain gold, tantalum, tin, tungsten (3TG), cobalt and mica. In 2024, new projects including aluminum, copper, nickel, zinc, natural graphite, and lithium will be added	● Investigation: Based on the business relationship between the supplier and the company, the company also examines the supplier's industry, product category, region, and potential negative impact risks in the environment, society and governance aspects as a preliminary assessment
Risk Identification and Impact Assessment	● Design: Analyze the environmental impact of products and raw materials through life cycle assessment (LCA) tools, identify hot spots and opportunities for improvement, and make products more environmentally friendly. ● Procurement： 1. The Green Product Promotion Committee (GPPC) promotes Hazardous Substance Free (HSF) management to ensure that products comply with regulations and customer requirements for green products 2. According to the due diligence process established by the Organization for Economic Cooperation and Development (OECD), we regularly investigate the source countries of raw materials (including conflict minerals) to avoid using raw materials from conflict areas ● Production: Silicon raw materials are recycled and used as control chips to	● Sustainability risk: Nanya Technology follow the Responsible Business Alliance (RBA) Code of Conduct and the UN Universal Declaration of Human Rights and other international standards, the Sustainability Risk Assessment Questionnaire (SAQ) was developed. We distribute sustainability risk assessment questionnaires to tier 1 suppliers and non-tier 1 significant suppliers ● Climate change risk: Using the World Resources Organization (WRI)'s Aqueduct Tools and the Taiwan Climate Change Information and Adaptation Knowledge Platform (TCCIP)'s climate change water resource hazard map, we assess suppliers' water stress (including extreme rainfall, flooding, landslide potential, etc.) to identify high-risk suppliers ● Biodiversity: Use the World Database of Protected Areas (WDPA) of the International Union for Conservation of Nature (IUCN) to assess whether the supplier's

Item	Material	Material of Suppliers
	monitor process conditions. Used control chips are remanufactured and reused	production area is a biodiversity-sensitive area
Engagement	● Low-carbon design: Low-carbon design is incorporated into the advanced technology development process and the 10nm product development process, including selecting materials with lower negative sustainable impacts without affecting product energy efficiency and quality factors, avoiding materials from important biodiversity areas, and avoiding the use of mineral raw materials from conflict areas	● Supplier's product carbon Footprint inventory: Prioritize the top 30 raw materials suppliers and contractors with the highest carbon emissions for promoting the carbon reduction project and long-term goal of net zero emissions. Nanya Technology aims to jointly reduce carbon emissions by 6,300 metric tons together with 10 supply chain partners over two years (2023/11-2025/10). ● Low carbon transformation Transportation project: Nanya established an upstream and downstream joint carbon reduction model and implements carbon reduction plans to strengthen the development of green wafer suppliers. Carbon dioxide emissions will be reduced 35,162 kg CO_2e in 2024
Goal	● 100% of non-conflict minerals used in wafer product lines ● 100% of products that conform to hazardous substance free regulations and customers' specifications ● 100% of raw materials that do not contain PFOA related substances ● 100% of products that completed the product life cycle inventory	● 100% of significant suppliers that completed the self-evaluation questionnaire ● 100% of completion rate of deficiency improvements by suppliers with high sustainability risk in audits ● 100% of suppliers that signed the Supplier Code of Conduct