



TOKYO ELECTRON
SUSTAINABILITY
REPORT 2019

Cover photo: Rose of Sharon (Korea)
The cover photo shows flowers of the countries and regions in which we do business.



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TEL is a trademark or registered trademark of Tokyo Electron Limited in Japan and other countries.

Editorial policy

The purpose of this report is to communicate the roles and responsibilities of Tokyo Electron (TEL) in promoting a sustainable society, and various activities toward value creation. For each of TEL's five material issues, the report describes priority themes, medium- and long-term goals, and global initiatives aimed at contributing to the resolution of industry and social issues. Data sets are included at the end of the report, with an accompanying third-party assurance report attached for those items which are considered to be of particularly high importance.

TEL remains committed to understanding the demands from all of its stakeholders and committed to disclosing information in a timely and transparent manner. For more detailed information, please consult the company's website.

URL www.tel.co.jp/csr/



Scope

This report covers the entire Tokyo Electron Group (34 consolidated companies), with some exceptions (indicated in the content).

Reference guidelines

Global Reporting Initiative (GRI): Sustainability reporting standards
Environmental Reporting Guideline 2018, Ministry of the Environment, Government of Japan

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Period covered

Fiscal year 2019 (April 1, 2018 to March 31, 2019), some content also covers fiscal year 2020

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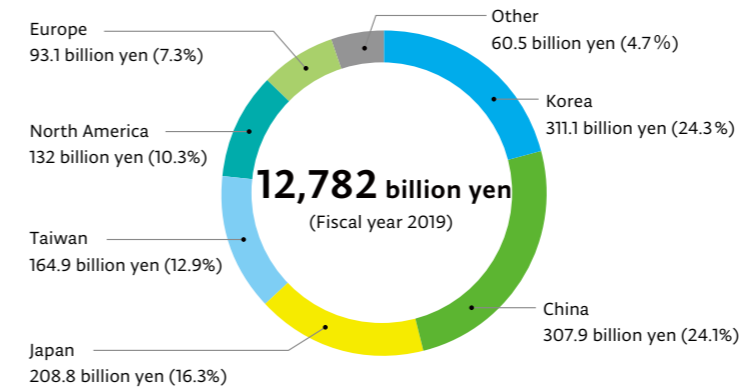
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Tokyo Electron's business

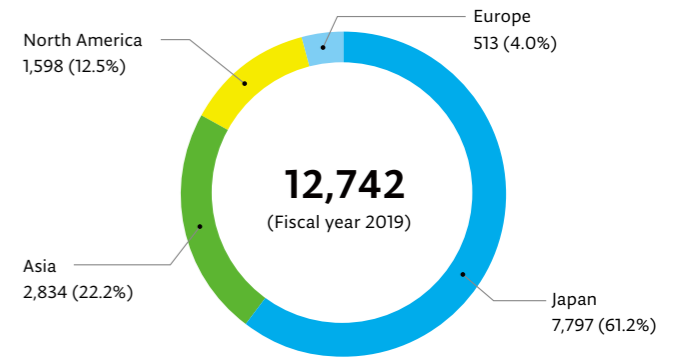
Tokyo Electron (TEL) operates worldwide as a leading company in semiconductor and flat panel display (FPD) production equipment. TEL will contribute to building and developing a sustainable society through its business.



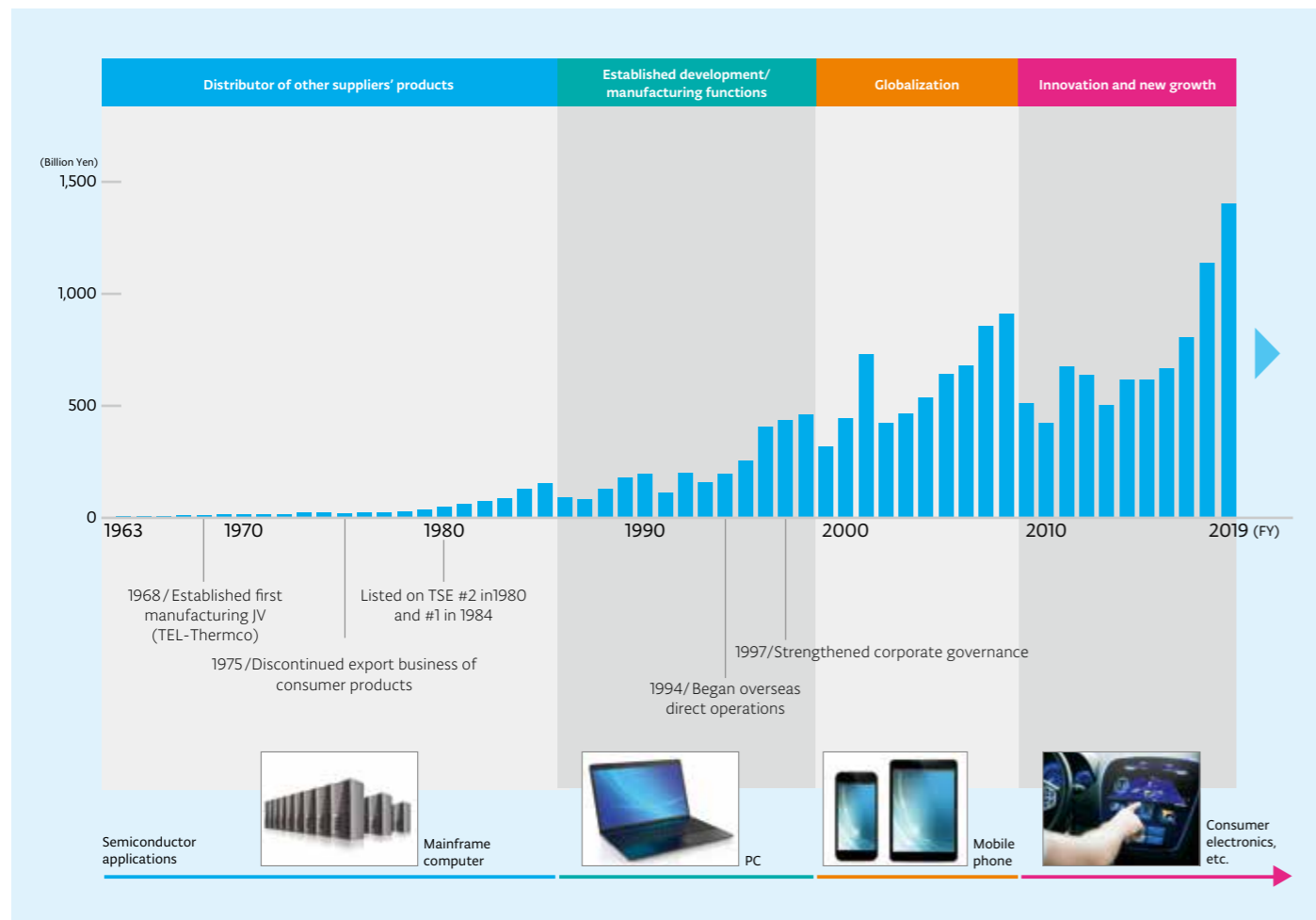
Sales by region (consolidated)



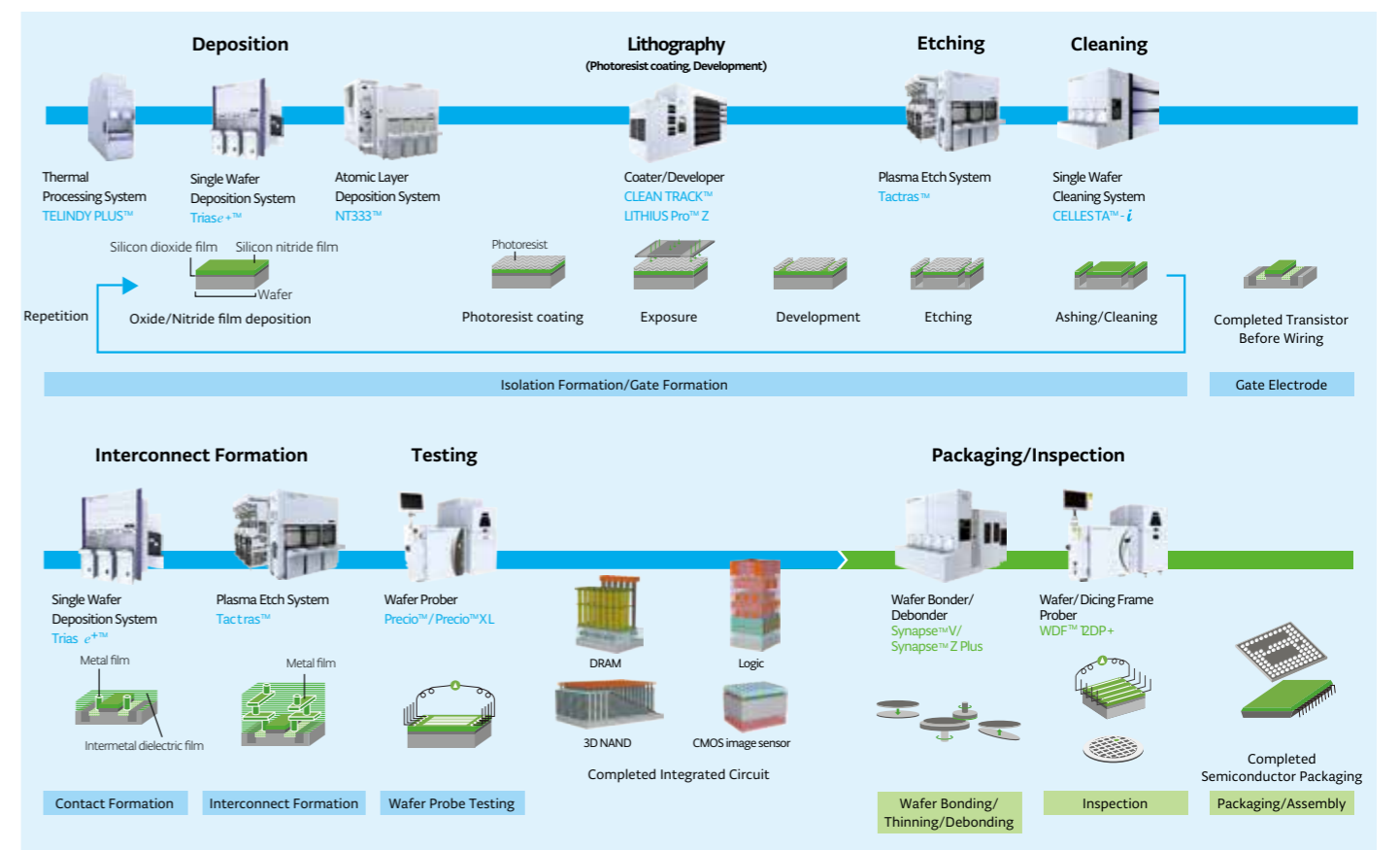
Number of employees by region (consolidated)



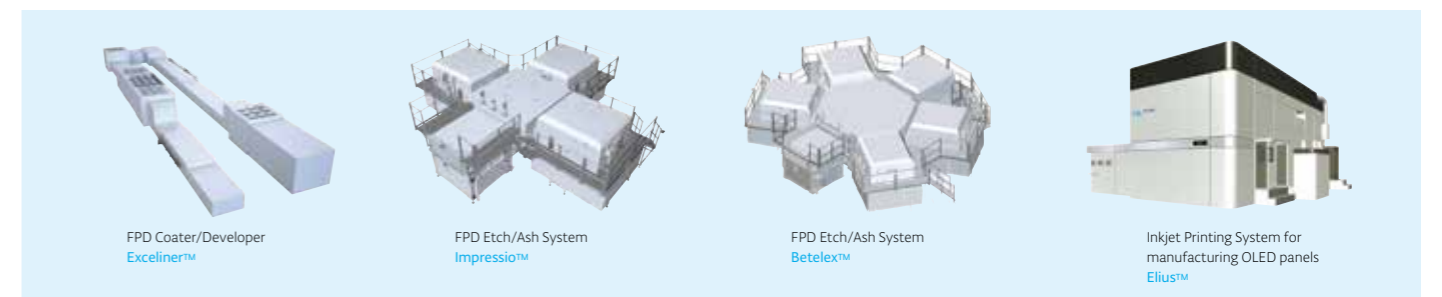
TEL's changing business conditions



Semiconductor manufacturing process and TEL main products



FPD production equipment





CEO's message

On behalf of Tokyo Electron (TEL), I would first like to express my sincere gratitude to all stakeholders for their continued support and patronage.

Recently, activities are being expanded in various fields worldwide for building a sustainable society, such as an increase in United Nations Sustainable Development Goals (SDGs) initiatives, and Environmental, Social and Governance (ESG) investment activities. Companies are required to utilize their management resources effectively and to create and provide new value through their business activities in order to contribute to the resolution of social issues.

The arrival of the age of IoT, where almost everything is connected to the Internet, is seeing the spread of big data and AI, and progress in preparation for the introduction of 5G next-generation communication standard on a global level. Semiconductors and flat panel display (FPD) are taking on a central role for the data society, and expanded application and demand for technological innovation is leading further growth in their production equipment market.

Our Corporate Philosophy urges us to "contribute to the development of a dream-inspiring society through our leading-edge technologies and reliable service and support." In order to realize our Corporate Philosophy, we strive for the steady promotion of effective governance and compliance, as well as contributing through business to the development of the industry and society, and improving our corporate value both in terms of financial and social value.

In fiscal year 2017, we established three pillars of product competitiveness, responsiveness to customers, and higher productivity in our medium-term management plan, and identified two additional material issues: people and workplaces, which is important as a source for value creation, and management foundation, which relates to corporate governance, the environment, and human rights. This fiscal year, we again set annual medium-term goals tied to these material issues and are deploying company-wide activities for their achievement. Moving forward, we will continue to promote sustainability-focused management, aiming to remain a company which is trusted by the community, and in which our employees take pride.

TEL became a signatory to the UN Global Compact in 2013 to promote sustainability management in line with international frameworks, and is implementing SDGs initiatives on a company-wide basis.

Your continued support and patronage are very much appreciated by all of us at TEL.

Toshiki Kawai
Representative Director, President & CEO
Tokyo Electron Limited

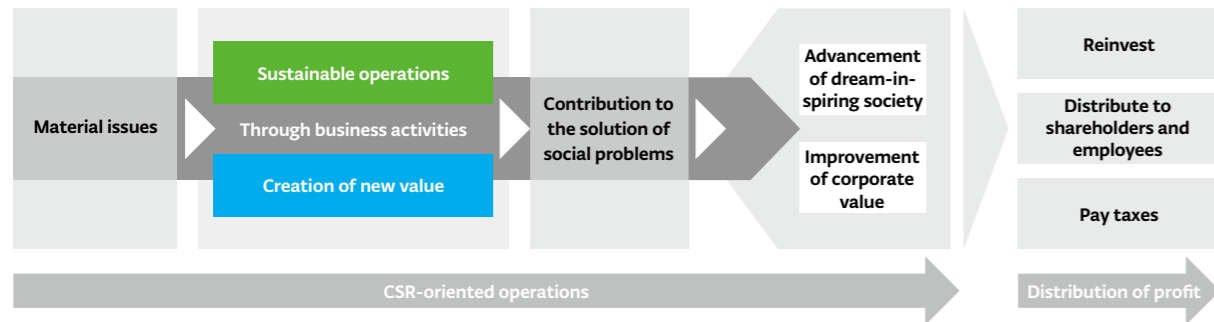
CSR-oriented operations

Tokyo Electron's Corporate Philosophy

We strive to contribute to the development of a dream-inspiring society through our leading-edge technologies and reliable service and support.

CSR policy

The CSR operations of Tokyo Electron (TEL) are initiatives that realize TEL's Corporate Philosophy. The company pursues sustainable operations from the viewpoints of corporate governance, legal and regulatory compliance, and business ethics while creating new value through its products and services. Based on these efforts, TEL implements CSR activities to help address social issues. The company will continue to pursue CSR activities to build stakeholder trust, improve corporate value and, by doing so, promote the growth of a sustainable and dream-inspiring society.



CSR promotion framework

TEL implements sustainability management which is integrated into the management strategy from a medium- to long-term perspective of corporate value enhancement. The company promotes CSR activities centered on the following three bodies. The CSR Management Council, the highest decision-making body regarding CSR, conducts discussions regarding the policy for the entire Group and important projects. CSR representatives from around the world participate in the CSR Global Committee, which discusses short- to medium-term CSR targets, promotion of global projects, and other matters. Representatives from each division attend the CSR Monthly Meeting, where information is shared regarding CSR activities, and which builds cooperative systems to tackle cross-division themes.



CSR Global Promotion Committee held in November 2018

| Conference name | Participants | Function | Meeting frequency |
|--------------------------------|---|---|-------------------|
| CSR Management Council | <ul style="list-style-type: none"> Chairman, Representative Director President and CEO Directors and Managers | <ul style="list-style-type: none"> Decide company-wide CSR policy Discuss important matters | Twice annually |
| CSR Global Promotion Committee | <ul style="list-style-type: none"> Chief CSR Director Heads of related departments CSR officers of affiliates and overseas companies | <ul style="list-style-type: none"> Set CSR targets Implement global projects | Twice annually |
| CSR Monthly Meeting | <ul style="list-style-type: none"> Person in charge of CSR at each division | <ul style="list-style-type: none"> Share information on CSR activities Discuss cross-division CSR initiatives | Monthly |

Internal initiatives—CSR Promotion Award

TEL is conscious of the connection between work, and industrial and social issues and development, and in order to promote CSR initiatives, invites contributions from employees worldwide of cases of CSR in the workplace that contribute to resolving issues in the industry and society. They are assessed with focus on their alignment with SDGs, contribution to the resolution of industry and social issues, and the improvement of TEL's corporate value and other aspects. Based upon this, TEL conferred one CSR Promotion Award and three CSR Merit Awards.



Participation in global initiatives

TEL is a corporate of the United Nations Global Compact the Responsible Business Alliance (RBA), both global CSR initiatives, whereby the company strives to build a sustainable management foundation from a global perspective.

The Ten Principles of the UN Global Compact

- An international initiative for sound globalization and sustainable societies
- TEL signed in 2013

RBA framework (five sections)

- A CSR promotion group focused on the electronics industry
- TEL signed in 2015



Evaluation from third-party institutions

TEL's CSR activities have received high appraisal from evaluation organizations in various countries, and the company has been selected as a constituent stock under leading global ESG investment indices.

In fiscal year 2019, following from the previous fiscal year, TEL was again selected as a constituent stock under indices including DJSI² Asia Pacific 2018, FTSE4Good,³ FTSE Blossom Japan Index,⁴ MSCI World ESG Leaders Index,⁵ and MSCI Japan ESG Select Leaders Index.



Initiatives for Sustainable Development Goals (SDGs)

The SDGs are a universal set of goals to achieve by 2030, which were unanimously adopted by the United Nations Sustainable Development Summit in 2015. TEL conducts activities on a company-wide level, and for each material issue, it has clarified the SDGs it is working toward through business.



¹ RBA: The RBA, formerly known as the Electronic Industry Citizenship Coalition (EICC®), was rebranded to the current name in October 2017.

² DJSI (Dow Jones Sustainability Index): ESG (Environmental, social and governance) investment indices developed by U.S.-based S&P Dow Jones Indices LLC and Switzerland-based RobecoSAM AG. The Asia Pacific index covers companies in that region.

³ FTSE4Good: An index related to environmental performance and corporate social responsibility developed by the UK-based FTSE Group.

⁴ FTSE Blossom Japan Index: An index that reflects the performance of Japanese companies that demonstrate strong environmental, social and governance (ESG) practices.

⁵ MSCI World ESG Leaders Index: Companies that have high ESG performance are selected from the MSCI Global Sustainability Index, an ESG investment index developed by Morgan Stanley Capital International (MSCI).

⁶ MSCI Japan ESG Select Leaders Index (The MSCI Japan ESG Select Leaders Index) is an index constructed from companies that have high ESG performance selected from its parent index (MSCI Japan IMI Top 500 Index: Top 500 securities based on free float-adjusted market capitalization). The Index targets 50% of the free float-adjusted market capitalization within each GICS sector of the parent index.

Identifying material issues

Tokyo Electron (TEL) uses the following process to identify important and priority material issues (key issues) to be addressed for the medium- to long-term enhancement of corporate value.

Issues awareness

Social environment

While steady growth is forecast for the global economy, humans are also faced with various social issues, including abnormal climate conditions and natural disasters, conflicts between states and cyber-terrorism, water and food crises. TEL is deepening its awareness of social environments that may affect the value chain as a whole, and social issues with a high degree of relevance to the business, giving consideration to SDGs, the United Nations Global Compact, RBAI, and recommendations from third-party organizations.

Business issues

With the spread of big data¹ and artificial intelligence (AI),² the dawn of IoT,³ and the introduction of the 5G⁴ next-generation communication standard, applications are expanding for semiconductors and flat panel displays (FPDs) that support social infrastructure and demand for technological innovation is also growing. In these circumstances, TEL, whose core business is semiconductor and FPD production equipment, must accurately grasp social trends and customer needs, and consider them from the early stages of development, in order to provide products for the market in a timely manner. Furthermore, it is important to provide high-value-added maintenance services for improving the productivity of delivered equipment, extending service life, and so on.

Risks and opportunities

TEL examined the risks and opportunities closely related to sustainable business development in consideration of social issues and social/business environments such as SDGs.

| Social trends | Risks for TEL | Opportunities |
|--|---|--|
| Dealing with environmental issues | <ul style="list-style-type: none"> Failure to comply with laws and regulations or industry codes of conduct Increases in business costs | <ul style="list-style-type: none"> Promotion of environmental management Improvement of product environmental performance and creation of business opportunities |
| Evolution of technology | <ul style="list-style-type: none"> Reduction in customer satisfaction Lost business opportunities | <ul style="list-style-type: none"> Generating of innovative products and services Maintaining competitive advantage |
| Increased reliance on cyber | <ul style="list-style-type: none"> Loss of core information Stoppage of business operation | <ul style="list-style-type: none"> Strengthening of information infrastructure Networking for productivity improvement |
| Governance and compliance | <ul style="list-style-type: none"> Ethics and compliance violations Loss of society's trust | <ul style="list-style-type: none"> Development of highly effective governance Sustainable corporate management |
| Supply chain management | <ul style="list-style-type: none"> Weakening of supply system Loss of business continuity | <ul style="list-style-type: none"> Creation of new value through collaboration Ongoing collaboration by building relationships of trust |

Stakeholder engagement

TEL learned about stakeholder opinions and requests through ongoing dialogue, before sorting through them and reviewing the important themes to be addressed.

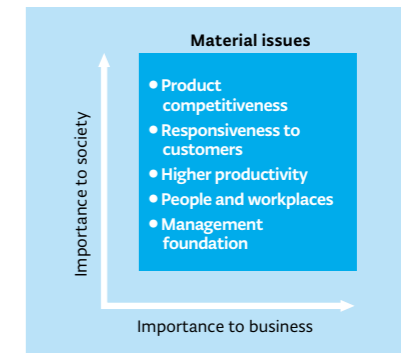
| Stakeholders | Communication opportunities | Key opinions and requests | Relevant material issues |
|----------------------------------|--|---|---|
| Shareholders/ investors | <ul style="list-style-type: none"> Earnings announcement ESG surveys Interviews | <ul style="list-style-type: none"> Medium- and long-term growth scenario and associated measures Further initiatives for corporate governance Sharing of market perspectives and improved accuracy of business forecasts | <ul style="list-style-type: none"> Product competitiveness Higher productivity Management foundation |
| Customers | <ul style="list-style-type: none"> Technology conference Customer Satisfaction Survey Individual technology collaboration | <ul style="list-style-type: none"> Understanding of diverse application needs Proposal of high-value-added solutions Comprehensive and optimal solutions | <ul style="list-style-type: none"> Product competitiveness Responsiveness to customers Higher productivity |
| Suppliers | <ul style="list-style-type: none"> Production update briefing Partners day STQA audit | <ul style="list-style-type: none"> Sharing of higher-quality, timely information Improvement of own processes through compliance with quality standards | <ul style="list-style-type: none"> Higher productivity Management foundation |
| Employees | <ul style="list-style-type: none"> Employee meetings Global engagement survey Career interest survey (Japan) | <ul style="list-style-type: none"> Sharing of management messages, direct dialogue Support for medium- to long-term career development for employees Creation of opportunities for promoting and recognizing productivity in the working environment and the spirit of challenge among diverse employees | <ul style="list-style-type: none"> People and workplaces Management foundation |
| Local communities | <ul style="list-style-type: none"> Community contribution activities Tours of factories and offices | <ul style="list-style-type: none"> Coexistence of company with communities Creation of employment Revitalization of local economies, such through purchasing and logistics | <ul style="list-style-type: none"> People and workplaces Management foundation |
| Governments/ associations | <ul style="list-style-type: none"> Industry group activities Collaboration with various initiatives | <ul style="list-style-type: none"> Creation of innovation leading to the resolution of social issues Initiatives targeted at climate change and respect for human rights Building of sound supply chains | <ul style="list-style-type: none"> Product competitiveness People and workplaces Management foundation |

* STQA: Supplier Total Quality Assessment

Analysis and selection

TEL has ascertained the social and business environment, has considered the risks and opportunities, and made arrangements according to the wishes of all stakeholders. The company has deliberated material issues from the perspectives of their importance to both the building of a sustainable society and importance to the business to lead to increasing TEL's corporate value.

As a result, the company has defined its material issues as product competitiveness, responsiveness to customers, and higher productivity, which are items identified for enhancement in the medium-term management plan, in addition to people and workplaces, which are important as a resource for creating value, and management foundation, which concerns corporate governance, the environment, human rights, and other issues.



Examination of validity

With regard to the defined material issues, an examination of validity was conducted at the review council which included external experts.

| Key opinions and advice obtained from Review Council |
|--|
| <ul style="list-style-type: none"> Integrated thinking is exhibited in the fact that goals are set after identifying material issues which are linked to the medium-term management plan and which relate to both strengthening management foundation and creating value High-level goals as well as unique indicators are evident, reflecting an eagerness for action Going forward, further improvements are expected, such as combining both outcome indicators and process indicators for goals |

Material issues

| Material issues | Medium-term goal | Priority themes |
|------------------------------------|--|---|
| Product competitiveness | <ul style="list-style-type: none"> Create strong next-generation products | <ul style="list-style-type: none"> Tackling technological innovation Environmental contribution of products |
| Responsiveness to customers | <ul style="list-style-type: none"> Become the best and sole strategic partner | <ul style="list-style-type: none"> Solutions that create value for customers Improvement of customer satisfaction |
| Higher productivity | <ul style="list-style-type: none"> Constantly pursue higher management efficiency | <ul style="list-style-type: none"> Quality management Improvement of quality in the value chain |
| People and workplaces | <ul style="list-style-type: none"> Maximize dreams and drive | <ul style="list-style-type: none"> Diversity and inclusion Career development Work-life balance Health and safety |
| Management foundation | <ul style="list-style-type: none"> Build a management foundation for increasing value | <ul style="list-style-type: none"> Corporate governance Compliance Human rights Environmental management Supply chain management |









CSR goals and results

Tokyo Electron (TEL) sets fiscal year and medium-term goals taking into consideration each material issue and its priority themes. The departments responsible are made clear and efforts are undertaken systematically toward the achievement of these goals, going through the cycle of examining the status of conduct and making improvements. Besides contributing toward the achievement of related SDGs, TEL strives to improve its corporate value further.

FY2019

| Material issues | Priority themes | Annual goals | Results |
|---|--|---|--|
| Product competitiveness | Tackling technological innovation | <ul style="list-style-type: none"> Ensure that 20% or more (three-year moving average) of all equipment models are new products for next-generation technologies Maintain the previous year's global patent application rate | <ul style="list-style-type: none"> Achieved 20% or more Achieved 81.2%, higher than the level of the previous fiscal year |
| | Environmental contribution of products | <ul style="list-style-type: none"> Reduce per-wafer consumption of energy and pure water by 10% by fiscal year 2019 (as compared with fiscal year 2014) | <ul style="list-style-type: none"> Achieved for 8 out of 9 relevant models |
| Responsiveness to customers | Solutions that create value for customers | <ul style="list-style-type: none"> Increase TEL's value to customers Increase field solutions business sales from the fiscal year 2018 level | <ul style="list-style-type: none"> Achieved sales growth for major customers on the back of vigorous demand for memory Increase of 25% from the fiscal year 2018 level |
| | Improvement of customer satisfaction | <ul style="list-style-type: none"> Get 3 points ("Satisfied") or more on 100% of customer satisfaction survey items | <ul style="list-style-type: none"> Achieved 84.4% |
| Higher productivity | Quality management | <ul style="list-style-type: none"> Reduce quality improvement costs from the fiscal year 2018 level | <ul style="list-style-type: none"> Implemented medium- to long-term improvement plan that incorporates quality improvement costs |
| | Improvement of quality in the value chain | <ul style="list-style-type: none"> Revise business processes to reduce staff-hours used for sales operations from the fiscal year 2018 level | <ul style="list-style-type: none"> Developed systems that support sales operations |
| People and workplaces | Diversity | <ul style="list-style-type: none"> Double percentage of female managers by fiscal year 2021 (as compared with fiscal year 2018) | <ul style="list-style-type: none"> Increased from 1.8% in fiscal year 2018 to 1.9% in fiscal year 2019 |
| | Career development | <ul style="list-style-type: none"> Increase number of training sessions attended per person by 10% from the fiscal year 2018 level | <ul style="list-style-type: none"> Number of training sessions attended per person: 11.6 |
| | Work-life balance | <ul style="list-style-type: none"> Reach at least 70% of take-up rate of annual paid leave | <ul style="list-style-type: none"> Increased from 64.3% in fiscal year 2018 to 64.9% in fiscal year 2019 |
| | Health and safety | <ul style="list-style-type: none"> Reduce gap between health age* and actual age by 1.5 points by fiscal year 2021 (as compared with fiscal year 2018) * An indication of the risk of lifestyle diseases in years, based on the results of health checkups | <ul style="list-style-type: none"> Decrease of 0.02 points |
| <ul style="list-style-type: none"> Ensure that the number of workplace injuries per 200,000 work hours (the total case incident rate) is less than 0.5 | | <ul style="list-style-type: none"> Achieved 0.24 | |
| Management foundation | Governance | <ul style="list-style-type: none"> Improve on issues identified in evaluations of the effectiveness of the Board of Directors | <ul style="list-style-type: none"> Held discussions at offsite meetings and during exchanges of opinion with outside directors, in order to enhance consideration of medium- to long-term issues, such as growth strategies Continued to examine the ratio of outside directors on the Board of Directors, as well as its diversity, such as gender and international mindedness |
| | Compliance | <ul style="list-style-type: none"> Establish external hotline and reorganize internal hotline at group companies overseas | <ul style="list-style-type: none"> Conducted selection of outside agencies at which to establish external hotlines Reviewed structure of internal hotlines |
| | Human rights | <ul style="list-style-type: none"> 100% participation in human rights training | <ul style="list-style-type: none"> Achieved 100% |
| | Environmental management | <ul style="list-style-type: none"> Reduce energy consumption by 1% from the fiscal year 2018 level (per-unit basis*) at each plant or office * Per-unit basis: Calculated using complex weighting of the number of developed evaluation machines, units produced, floor area, and labor-hours for each district | <ul style="list-style-type: none"> Achieved at 5 out of 11 factories or offices |
| | | <ul style="list-style-type: none"> Maintain water consumption at the fiscal year 2012 level according to per-unit basis* set at each plant or office * Per-unit basis: Calculated based on floor area and labor-hours, etc. for each district | <ul style="list-style-type: none"> Achieved 10 out of 14 goals |
| Supply chain management | <ul style="list-style-type: none"> Implement supply chain CSR assessments for 80% or more of suppliers (procurement volume basis) | <ul style="list-style-type: none"> Assessed key suppliers accounting for more than 80% of our procurement spend | |

FY2020

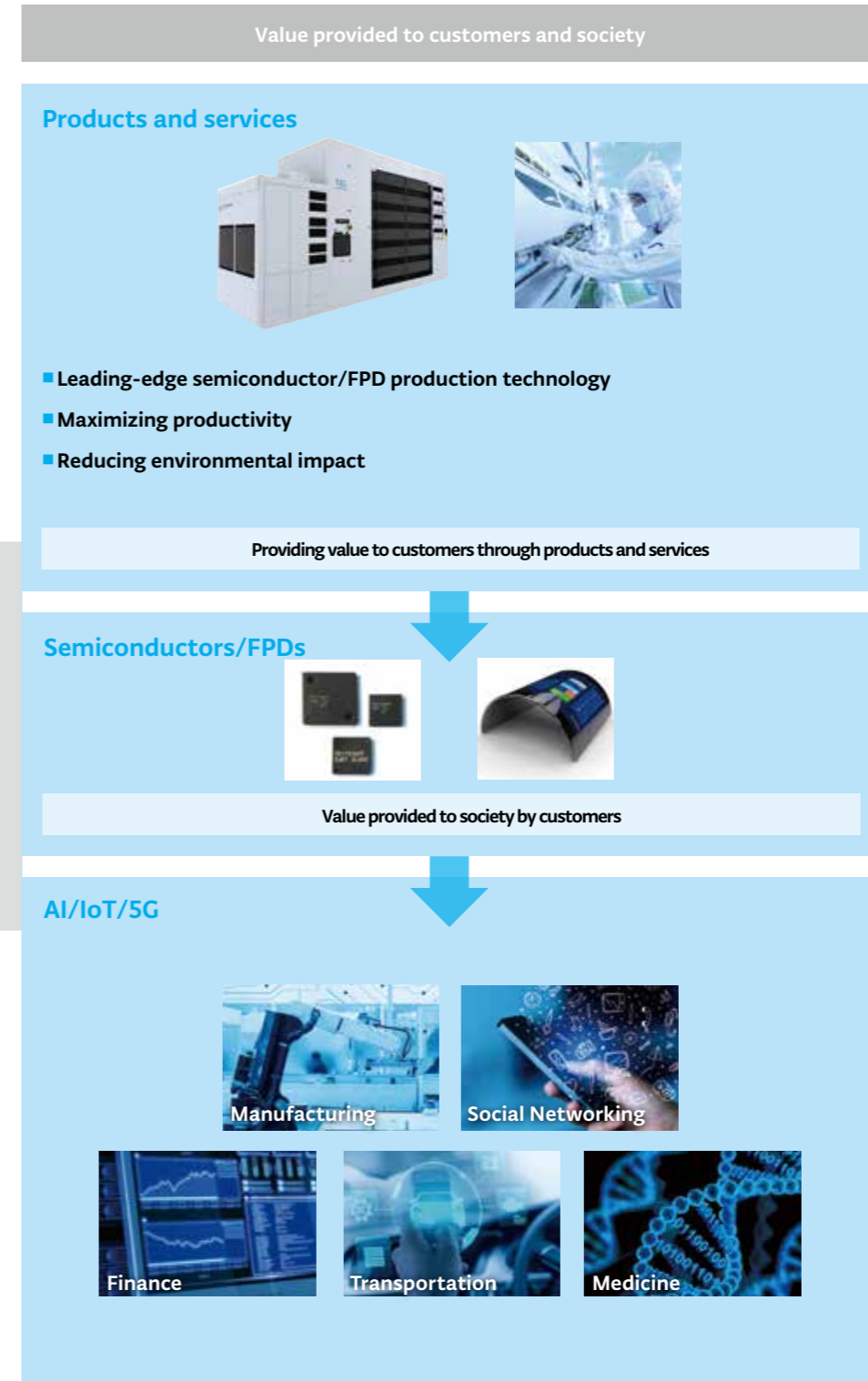
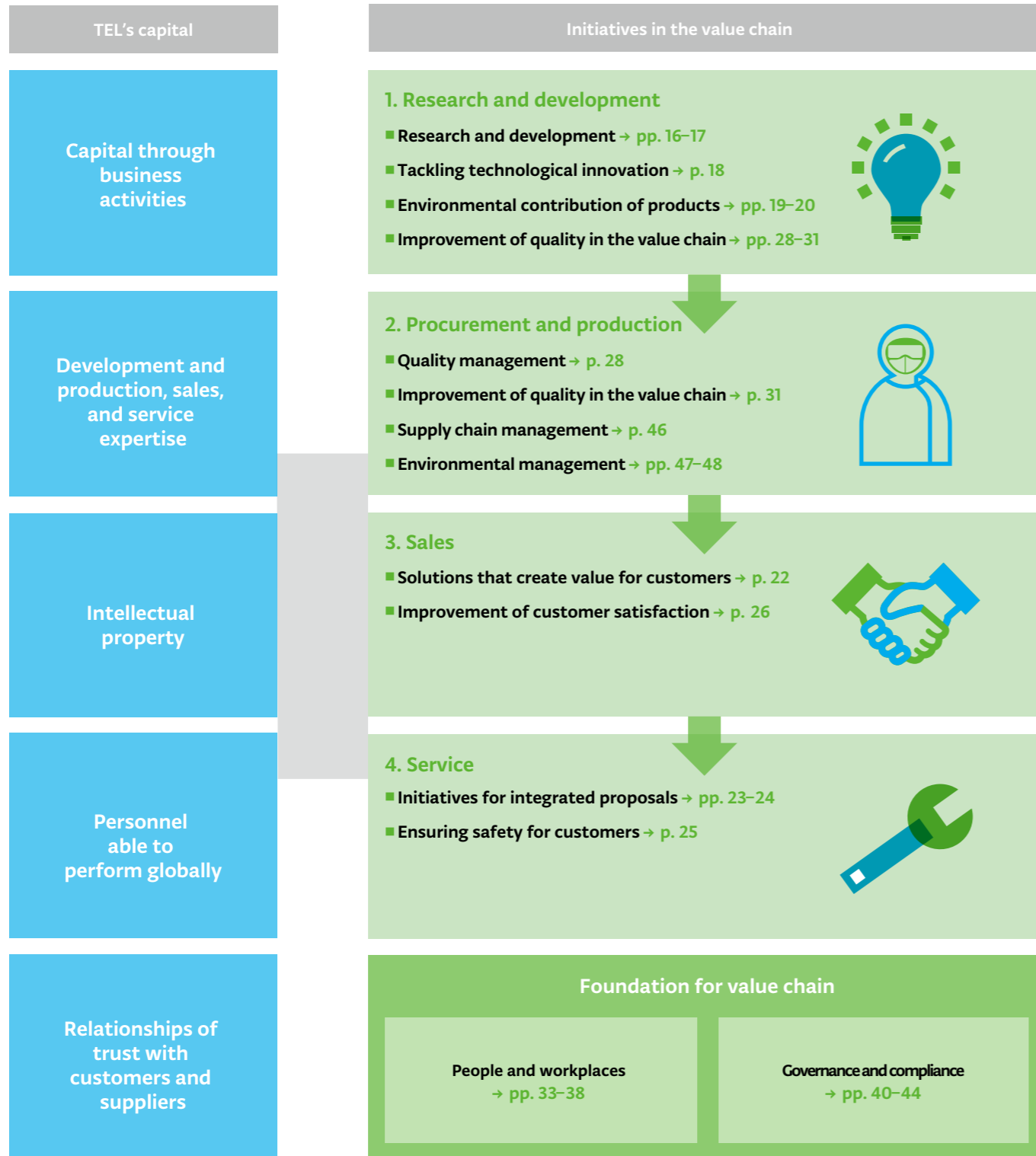
| Material issues | Priority themes | Annual goals | Medium-term goals | Relevant SDGs |
|---|--|--|--|---|
| Product competitiveness | Tackling technological innovation | <ul style="list-style-type: none"> Ensure that 20% or more (three-year moving average) of all equipment models are new products for next-generation technologies Maintain the previous year's global patent application rate | Create strong next-generation products |   |
| | Environmental contribution of products | <ul style="list-style-type: none"> Reduce per-wafer emissions of CO₂ by 20% by fiscal year 2025 (as compared with fiscal year 2014) | | |
| Responsiveness to customers | Solutions that create value for customers | <ul style="list-style-type: none"> Increase TEL's value to customers Increase sales in field solutions business from the fiscal year 2019 level | Become the best and sole strategic partner |   |
| | Improvement of customer satisfaction | <ul style="list-style-type: none"> Get 3 points ("Satisfied") or more on 100% of customer satisfaction survey items | | |
| Higher productivity | Improvement of quality | <ul style="list-style-type: none"> Utilize knowledge and strengths within the group | Constantly pursue higher management efficiency |   |
| | Improvement of customer productivity/yield | <ul style="list-style-type: none"> Promote and implement front loading and traceability | | |
| People and workplaces | Diversity | <ul style="list-style-type: none"> Double percentage of female managers by fiscal year 2021 from 1.8% in fiscal year 2018 | Maximize dreams and drive |    |
| | Career development | <ul style="list-style-type: none"> Increase number of training sessions attended per person by 10% from the fiscal year 2019 level | | |
| | Work-life balance | <ul style="list-style-type: none"> Reach at least 70% take-up rate of annual paid leave | | |
| | Health and safety | <ul style="list-style-type: none"> Reduce gap between health age* and actual age by 1.5 points by fiscal year 2021 (as compared with fiscal year 2018) | | |
| <ul style="list-style-type: none"> Ensure that the number of workplace injuries per 200,000 work hours (the total case incident rate) is less than 0.5 | | <ul style="list-style-type: none"> Achieved 0.24 | | |
| Management foundation | Governance | <ul style="list-style-type: none"> Improve on issues identified in evaluations of the effectiveness of the Board of Directors | Build a management foundation for increasing value |    |
| | Compliance | <ul style="list-style-type: none"> Reorganize internal hotline and establish hotline for suppliers, etc. at group companies overseas (ongoing) Achieve at least 90% recognition among employees concerning internal hotline Revise Code of Ethics, conduct basic annual training, and achieve pledge rate of at least 90% | | |
| | Environmental management | <ul style="list-style-type: none"> Reduce energy consumption by 1% from the fiscal year 2019 level (per-unit basis*) at each plant or office Maintain water consumption at the fiscal year 2012 level according to per-unit basis* set at each plant or office | | |
| | Supply chain management | <ul style="list-style-type: none"> Implement supply chain CSR assessments for 80% or more of suppliers (procurement volume basis) | | |

Value creation through business

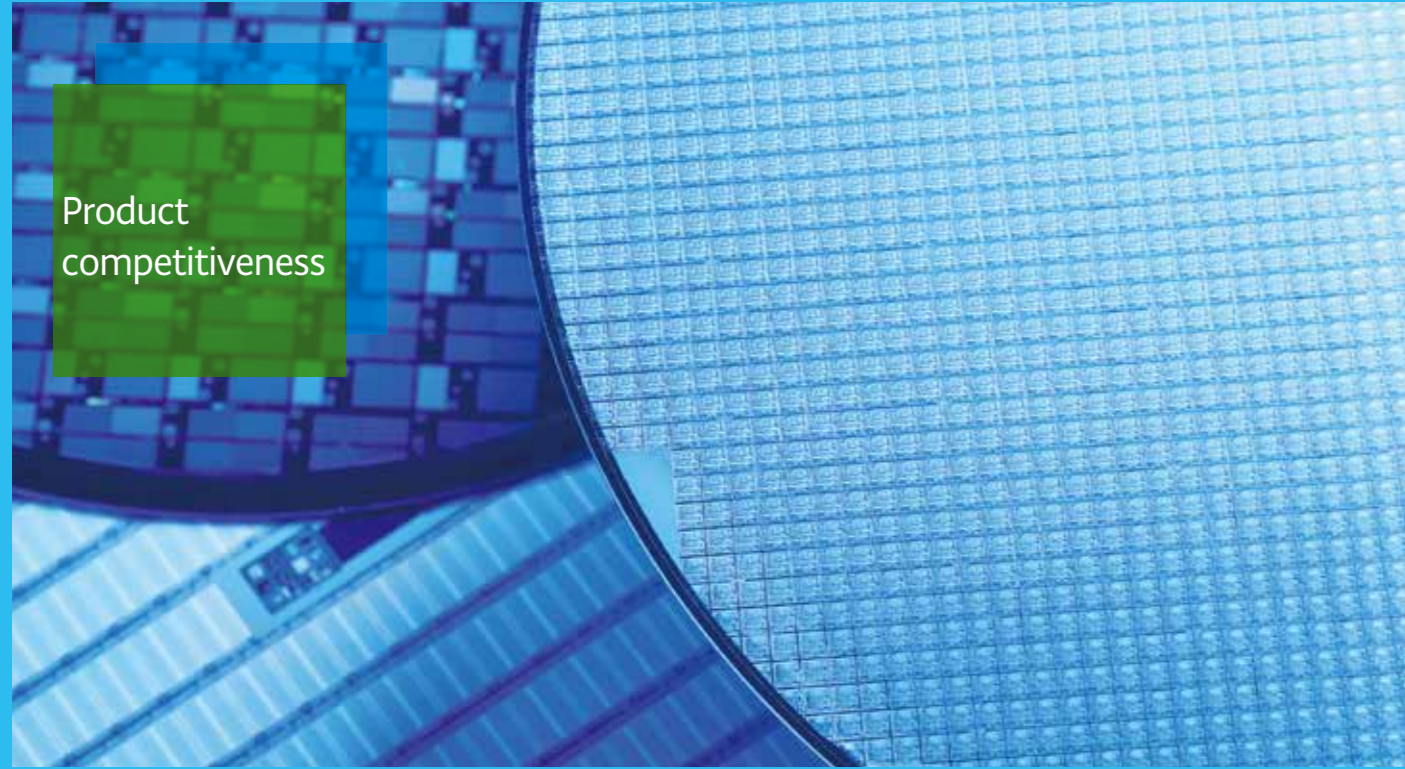
Tokyo Electron (TEL) effectively utilizes management resources to create value such as leading-edge production technologies, productivity improvement, and reduction of environmental impact in the business processes of semiconductor and FPD production equipment, and provides this value to customers. The semiconductors and FPDs produced by TEL's customers play central roles in this digital society, and are found in various products on the market, including mobile devices, audio/visual equipment, and data servers. These semiconductors and FPDs contribute toward the spread of technologies including 5G, IoT, big data, and AI, as well as the realization of a more convenient and affluent society.

Through its business operations, TEL is contributing to the resolution of social issues, development of society, and achievement of SDGs.

Value creation process through TEL business operations



Product competitiveness



Society will experience a communications revolution due to the introduction of 5G next-generation communication standard, while the coming age of IoT linking everyday objects will see the advancement of big data processing by AI, together with diversifying services which use it, and semiconductors and FPD plays a central role in these developments. It is important that Tokyo Electron (TEL) promotes leading-edge research and development to meet various demands for technological innovation, and provides equipment and services to meet expanding applications. TEL strives to preserve the global environment by recognizing environmental impact throughout the value chain, and offering products that are conscious of reducing this impact. The company will contribute to the further development of industry and society through the timely creation of high added-value and competitive next-generation products.

Medium-term goals (1)

Creating strong next-generation products

Priority themes, Main activities:



Creating technological innovation



Environmental contribution of products

R&D

R&D for the future, front-loading, collaboration with consortia, IP management

Creating technological innovation

integrating analog and digital, leveraging AI technology, responding to developments in display

Environmental contribution of products

products that contribute to a sustainable society, initiatives concerning environmental laws and regulations related to products

SDGs initiatives

Aim to build a more sustainable society by promoting further innovation through innovative technology

Contribute to the reduction of environmental impact on a global level by providing products and services that are conscious of the environment



Industry, innovation and infrastructure



Climate action

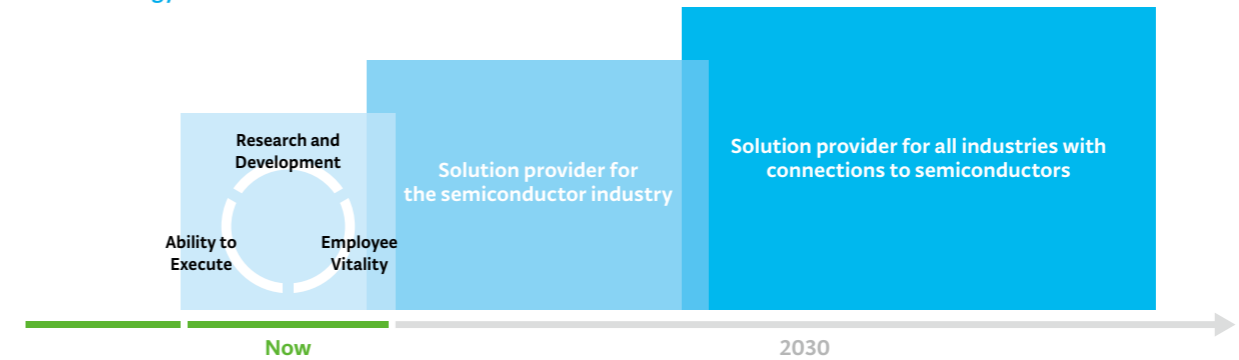


Technology for Growth

Research and development for the future

As lifestyles and business models undergo dramatic changes in the era of the Internet of Things (IoT), it is anticipated that the use of semiconductors will expand in all industries, and there will be demands for even more advanced technologies. As electronics become even familiar for people, semiconductors become a larger part of everyday life. In readiness, Tokyo Electron (TEL) formulated and released the TEL Technology Vision 2030. TEL is continuously engaged in rigorous debate regarding technology for the future and TEL's contribution, and is actively communicating the results of this within the company.

TEL Technology Vision 2030



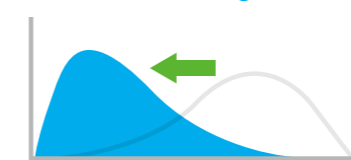
Development system

TEL attaches weight to promoting technology development and technology innovation for the next generations, and has built a system in which its Development & Production Divisions collaborate with Business Divisions to bring high-value-added products into the market in a timely fashion. In 2018, TEL established the Corporate Innovation Division, which strives to further strengthen process integration capabilities maximizing TEL's strengths in deposition and etching technologies, based on its wide lineup of semiconductor production equipment. Under this new structure, TEL has been accelerating technological innovation as well as cross-functional development.

Front-loading

TEL is focusing on front-loading, investing resources (including technology, personnel, and money) in the early processes of product development. The company shares its technology roadmap with customers who aim for next-generation and next-next-generation research and development and beyond, and is engaged in development of the various technologies required for its realization. TEL proposes its unique technologies to promote on-site collaboration for early introduction of evaluation units at customers' plants and research and development laboratories, aiming for acceleration and maximum efficiency of technology development and conversion to mass production equipment.

Front-loading



- Sharing of multi-generation technology roadmap with customers
- Promotion of early engagement
- Maximization of yield for customer devices and equipment operating rate from early stages of mass production, and also reduction of environmental impact
- Promotion of improvement in work efficiency and per person productivity, and further increase in investments into human resources and development

Advanced field solutions



- Business deployment utilizing the industry's largest number of products delivered (69,000 units)
- TELeMetrics™ remote maintenance
- Predictive maintenance using machine learning

Intellectual property management

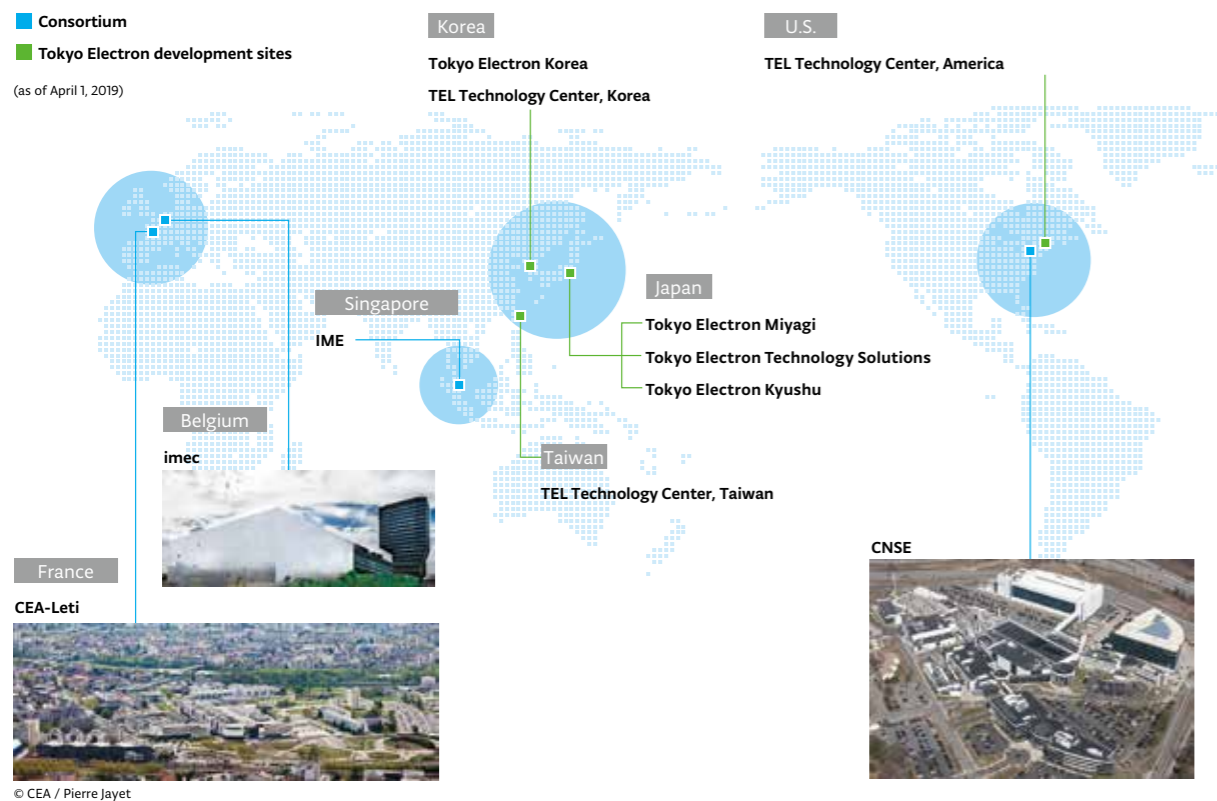
In its intellectual property-related activities, TEL's basic policy is to contribute to increased corporate revenues by supporting business activities through appropriate protection of intellectual property (IP). IP personnel assigned at R&D/manufacturing sites and headquarters assess each project from various angles including R&D and marketing perspectives, building IP portfolios aligned with technology and product strategies in an effort to boost competitiveness. In 2018, in order to uphold the company's worldwide advantage in the IP field, TEL maintained a global patent application rate of approximately 70% for the eighth consecutive year, and achieved high patent approval rates (83% in Japan and 85% in the United States). TEL is also increasing patent application in China in line with changes in market circumstances.

To increase IP awareness, TEL continuously educates its engineers, who are the foundation of TEL's R&D strategy, and in total around 4,200 engineers have become inventors. Additionally, because TEL often handles highly confidential information including technological information of its customers and collaborative partners, the company also focuses on confidential information management education.



Collaborating with consortiums

Along with enhancing its own research and development capabilities, TEL is also engaged in the development of cutting-edge technologies in collaboration with international and domestic consortiums. With bases including the United States, Belgium, and Singapore, TEL collaborates with device manufacturers worldwide and with global research institutes to promote research into next-generation semiconductor production technology. From 2018, TEL is participating in a global research hub developing next-generation AI hardware. In this consortium, TEL is mainly responsible for development that raises the added value of software, such as advanced control software, in addition to manufacturing technology for chips designed for AI computing.



* Global patent application rates: Percentage of invention applications filed in multiple countries

Creating technological innovation

Integrating analog and digital

In this era of IoT, when a multitude of devices can connect to the internet, semiconductors are required to process massive amounts of data quickly and efficiently. At the same time, progress is taking place in the development of neuromorphic devices, inspired by human neural circuits. Computers used in data centers that use conventional architecture consume tens of kilowatts of power, while the human brain uses only about 20 W. Similarly, whereas the operating frequency¹ of today's semiconductor devices is 5 GHz, the human brain is believed to run at just several tens of hertz. Neuromorphic devices utilize synaptic connections² based on analog devices to replace the processing and memory functions, which had previously been only divided between the digital logic and memory of a conventional microprocessor. The aim is to achieve a higher degree of information processing with low power consumption. Furthermore, the development of neuromorphic devices requires an approach of integrating analog to digital. In addition to conventional pursuit of circuit miniaturization, development is underway of semiconductors that mimic human neural circuits, including resistive analog neuro device,³ nonvolatile resistive random access memory⁴ and so on. Leveraging its strengths in deposition and patterning technologies, TEL has initiated research efforts into new materials needed for semiconductors that will be the core of next-generation computing, such as neuromorphic devices, quantum computers beyond that, as well as manufacturing processes for utilizing these materials.

Using AI technologies

TEL is promoting the use of AI and striving to achieve highly stable equipment operation and greater efficiency in development activities. By monitoring the operating status of semiconductor production equipment in real-time, and using AI to analyze that data, TEL aims to improve equipment operation efficiency such as maintenance of equipment performance, achieving wafer process uniformity, and avoiding unexpected downtime. TEL's specialized AI department, launched in 2017, plays a key role in the development of algorithms and other projects to use AI to analyze the vast volumes of data output from equipment. From 2018, the company has held AI workshops, aiming to share the latest technology trends and to boost internal collaboration, to achieve more efficient development activities.

Addressing advancements in display (FPD)

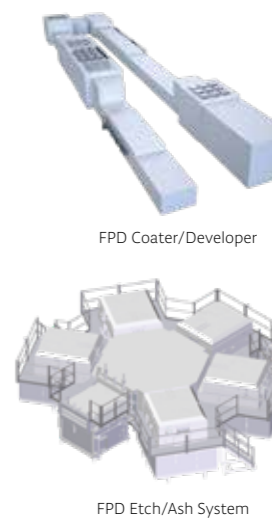
Displays used in personal computers, televisions, and mobile devices have been constantly evolving, growing in size and resolution. Furthermore, in recent years, progress has also been made in the adoption of organic EL that is self-luminous and that offers superior contrast. Such cutting-edge display production is supported by photolithography technology to create minute electronic circuits on glass substrate. TEL develops, manufactures, and sells FPD coater/developer equipment and FPD dry etch system. In 2017, TEL launched a product compatible with production of the world's largest glass substrate, the Generation 10.5 substrate (2,940 mm x 3,370 mm).

FPD coaters/developers can coat and develop a light-sensitive material known as a photoresist with extreme uniformity on production of the Generation 10.5 glass substrate. The air floating coater unit, which was developed independently by TEL and which was the world's first to be used in mass production by TEL, simultaneously realizes stable glass substrate transfer, greater productivity, and improved uniformity.

The FPD dry etch system etches various thin-film materials using a photoresist-drawn pattern as a mask. Important here is uniform processing in the surface of glass substrates, which are becoming increasingly bigger. TEL has independently developed plasma source for large substrates. By assessing and proposing processes suited to various film types and processing patterns, the company is contributing to the mass production of high-quality displays.

In the field of organic EL displays, which are now being adopted for smartphones and large-screen televisions, TEL is striving to provide new technologies for developing even higher resolution and improved productivity for organic EL displays, under the joint development of inkjet printing equipment with a partner company.

Going forward, TEL will develop and deploy new technologies that contribute to the advancement and expansion of displays.



1 Operating frequency (or clock speed): The number of signals per second to adjust the pace of processing of multiple electronic circuits. Indicates the processing performance of the computer. The higher the frequency, the more power is consumed.

2 Synaptic connections: A junction formed between neurons (cells making up the nervous system of an animal) regarded as having an important role in learning and memory.

3 Resistive analog neuro device: Electronic devices capable of continuously changing resistance

4 Nonvolatile resistive random access memory: Random access memory that uses nonvolatile resistance transformers

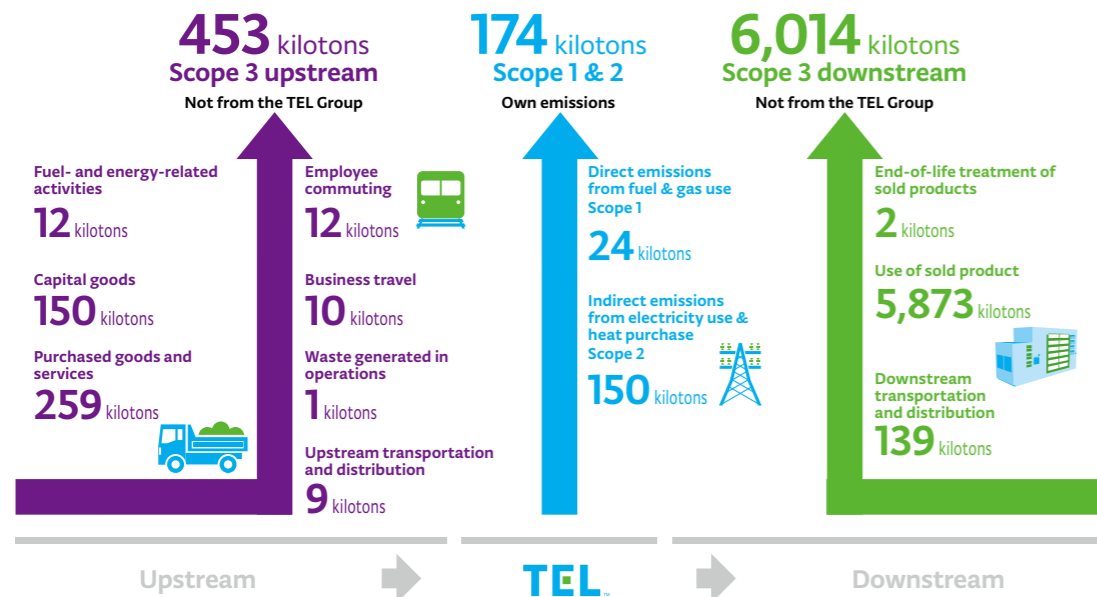
Environmental contribution of products

Environmental risks and opportunities

The various issues related to the environment have an impact on our daily lives and on the business activities of companies. Physical risks, such as rising average global temperatures, strong winds, disasters, and water shortages caused by climate change and abnormal weather, heighten the risks to businesses, such as damage to assets, increased operating costs, and impacts on the supply chain. In terms of legal risks, tougher environmental laws and regulations require action at business sites and with products. At the same time, promoting environmental initiatives leads to more opportunities to provide outstanding environmentally friendly products, reductions in operating costs, and further improvements in corporate value. Based on the requirements of ISO 14001, Tokyo Electron (TEL) identified and analyzed internal and external issues in relation to the environment, namely, its relationship with the climate, air quality, and water quality. TEL also identified the environmental needs and expectations of customers, suppliers, governments, and employees, as well as the company's compliance obligations. From this information, TEL has set the following as its risks and opportunities to address: (1) environmental management by reducing the environmental impact of its business activities, (2) compliance with applicable laws, and (3) enhancing product competitiveness with the environmental contribution of products.

CO₂ emissions across the value chain

Tokyo Electron (TEL) recognizes environmental impact throughout the value chain, and develops business activities that are conscious of reducing this impact. TEL aims to resolve environmental problems through leading technology and reliable services, in line with its environmental slogan "Technology for Eco Life."



Scope 1: Direct GHG emissions from use of fuel and gas owned or controlled by TEL

Scope 2: Indirect GHG emissions from use of electricity, steam and heat purchased by TEL

Scope 3: Emissions from corporate value chains (excluding scope 1 and 2 emissions), such as product transportation, employee business travel, and major outsourced production processes

* Scope 3 is divided into upstream activities, which include emissions associated with purchased or procured products and services, and downstream activities, which include emissions associated with sold products and services

Products that contribute to a sustainable society

Of the total CO₂ emissions from the value chain of TEL, emissions arising from product use account for 90% of its total CO₂ emissions. For this reason, TEL has made it a key corporate objective to promote environmentally friendly product design, and lower the energy consumption of its products. In fiscal year 2015, the company established a goal to reduce energy and pure water consumption by 10% by fiscal year 2019, using fiscal year 2014 consumption as the baseline. To achieve this goal, the company has worked to reduce energy use and improve overall throughput. As a result, in addition to achieving the goal for four models prior to fiscal year 2019, TEL achieved its goal for a further four models in the target fiscal year of 2019.* Specifically, the company aimed for improved efficiency in Tactras™ Vigus™, plasma etch system for 300 mm wafer processing that offers high reliability and high productivity, managing to reduce energy consumption per wafer by 12%. In addition, the company also achieved above-target energy-saving results for the EXPEDIUS™ series batch cleaning system, NS300Z scrubber system, and CELLESTA™ series surface preparation system, including improved throughput and wafer-process optimization. From fiscal year 2020, TEL has set the new medium-term goal of "30% reduction by fiscal year 2031 in comparison with fiscal year 2014 for the key models of each business unit (30% or more reduction in CO₂ emissions when compared with equipment shipped in fiscal year 2014)." With this goal, the company endeavors to address not only energy and water as done conventionally, but also use of process gas and chemical substances, to reduce product footprint, volume, and weight, and the frequency of parts maintenance, while increasing the lifespan, and shortening the launch time of equipment, in order to incorporate its contribution to CO₂ reduction.

¹ Based on TEL's specific usage conditions

Initiatives for product environmental laws and regulations

In order to comply with each country's environmental laws and regulations pertaining to products, TEL proactively collects information and takes appropriate action as required. An example of its efforts for EU REACH² regulations is that the company investigates the presence of any substances of very high concern (SVHC) in articles, and disclose information appropriately. As for efforts for GHS³ requirements, TEL provides safety data sheets (SDS⁴) when selling chemical goods. In fiscal year 2019, the company partially revised the environmental IT system introduced in fiscal year 2018 in order to continue to share information more efficiently with its supply chain. In addition, TEL has also continued to offer "web-based training for Product Environment Compliance" to all employees, providing a description of the frequently revised environmental laws and regulations and product compliance. The company also provides suppliers with information on the relevant environmental laws and regulations. TEL will continue to monitor each country's environmental laws and regulations rapidly, and strive to take appropriate action.

² EU REACH: An EU regulation pertaining to the registration, evaluation, authorisation, and restriction of chemicals

³ GHS: Globally Harmonized System of classification and labeling of chemicals

⁴ SDS: Safety Data Sheet (for chemical substances, etc.)

Biodiversity

In carrying out its business activities, the TEL Group has a not insignificant impact on biodiversity, and yet without the benefits yielded from biodiversity, the company could not sustain its activities. In recognition of this, the Group will develop a framework for promoting initiatives in an effort to conserve biodiversity.

URL <https://www.tel.com/csr/environment/office/>

Green procurement

TEL promotes green procurement, prioritizing the purchase of environmentally friendly parts, products and materials.

URL <https://www.tel.com/csr/environment/green-procurement/>

Logistics initiatives

As logistics regulations have become more stringent in recent years and the demand for a lower impact on the environment rises, TEL has been promoting modal shifts* and other activities designed to reduce the environmental burden of its logistics.

URL <https://www.tel.com/csr/environment/product/>

⁵ Modal shift: Efforts to transform the means of transportation. Refers to switching the means of transportation from truck or aircraft to ones with a lower environmental impact, such as rail or ship.

Medium- and long-term environmental goals

Medium-term goals (2030)



Long-term goal (2050)

As a leading corporation in environmental management, Tokyo Electron works actively to conserve the global environment. We strive to contribute to the development of a dream-inspiring society by proactively promoting the reduction of environmental burden of both our products and facilities, and at the same time, providing evolutionary manufacturing technologies that effectively reduce the power consumption of electronic products.

Environmental communication

TEL's environmental policy requires that, based on a shared understanding with a broad range of stakeholders, the company promotes cooperative partnerships with them, and it takes appropriate steps to live up to their expectations. In promoting initiatives for the environment, TEL will maintain close communication with all its stakeholders.

URL <https://www.tel.com/csr/environment/office/>

Responsiveness to customers

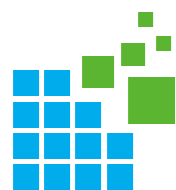


In the era of IoT, when a variety of objects can connect to the Internet, semiconductor and FPD applications are expanding, and demand for technological innovation is growing. In such circumstances, Tokyo Electron (TEL) works to accurately grasp the demands of customers and to reflect this during consideration of product planning, and uses its strength as a production equipment company with a diverse product range to propose comprehensive solutions contributing to value creation for customers. TEL is also promoting the reuse and recycling of equipment main units and parts, and also provides high added-value maintenance services, to support the stable operation of equipment of various generations that handle a diversity of applications. TEL strives to further enhance customer satisfaction, which is a key management theme it has tackled since the company's founding, aiming to be the best and sole strategic partner for customers.

Medium-term goals (2)

Become the best and sole strategic partner

Priority themes, Main activities:



Creation of value for customers, improvement of customer satisfaction



Improvement of customer satisfaction

- **Creation of value for customers**
system construction for customer value creation, process integration, initiatives for comprehensive proposals, field solution business
- **Ensuring safety for customers**
provision of information, training
- **Improvement of customer satisfaction**
customer satisfaction survey

SDGs initiatives

- Contribute to customer innovation generation and value creation through the proposal of comprehensive solutions
- Ensure a sustainable form of production and consumption throughout product life cycles by responding to diversifying needs, considering safety and the environment, and so on



Industry, innovation and infrastructure



Responsible consumption and production

SUSTAINABLE DEVELOPMENT GOALS

Solutions that create value for customers

Building systems for creating value for customers

Tokyo Electron (TEL) is building an organization to implement more effective global operations aimed at providing cutting-edge technology products and the best technology services as required by customers.

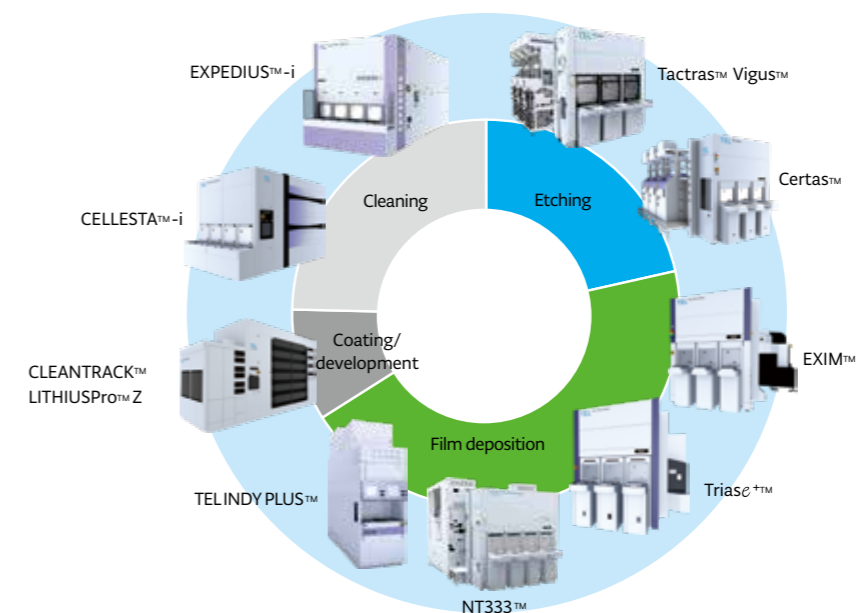
In 2018, TEL strengthened its customer responsiveness through the establishment of the Account Sales Division, which leads to new technology development based on needs for next-generation cutting-edge technology such as memory, logic, and foundry, and the Global Sales Division, which appropriately provides for new needs in fields such as electrical appliances, automobiles, medical treatment, and healthcare, which are continuously expanding with the arrival of the age of IoT and AI. Each sales division further strengthens its close collaborative relationships with each business unit and moreover with each overseas subsidiary whereby it provides solutions to customers with high-quality support and a sense of speed.

Furthermore, TEL is currently working to build globally unified systems and operations in order to further enhance the quality of sales and service activities. The Global Service Committee, a regular gathering of the service leaders of each department and each overseas subsidiary, shares information and undertakes in-house coordination, leading to improvement of TEL's ability to make proposals to meet customer needs and resolve problems, including improving the technical skills and interpersonal skills of the more than 3,000 field engineers worldwide, the localization of start-ups, improving work efficiency using the work-time management system and the concept of the Total Support Center.

Process integration

TEL leverages its broad lineup of semiconductor production processes such as thin film deposition, coating/developing, cleaning, and etch to be the first to devise and develop new integration technologies that aim for reciprocal optimization of multiple processes to propose to customers.

In response to the new growth in technological requirements for semiconductor production processes, TEL is advancing joint development with customers from an early stage, based at its Process Integration Center (PIC), established in 2017. One important issue that PIC is addressing is combination optimization of new deposition and related processing technology required for next-generation memory, AI, devices for 5G (fifth-generation mobile communication system), and devices for future quantum computing. Development activities at PIC lead to the provision of the latest technology to customers and the strengthening of partnerships, for seamless work in research, development, integration, production, and services.



Initiatives for integrated proposals

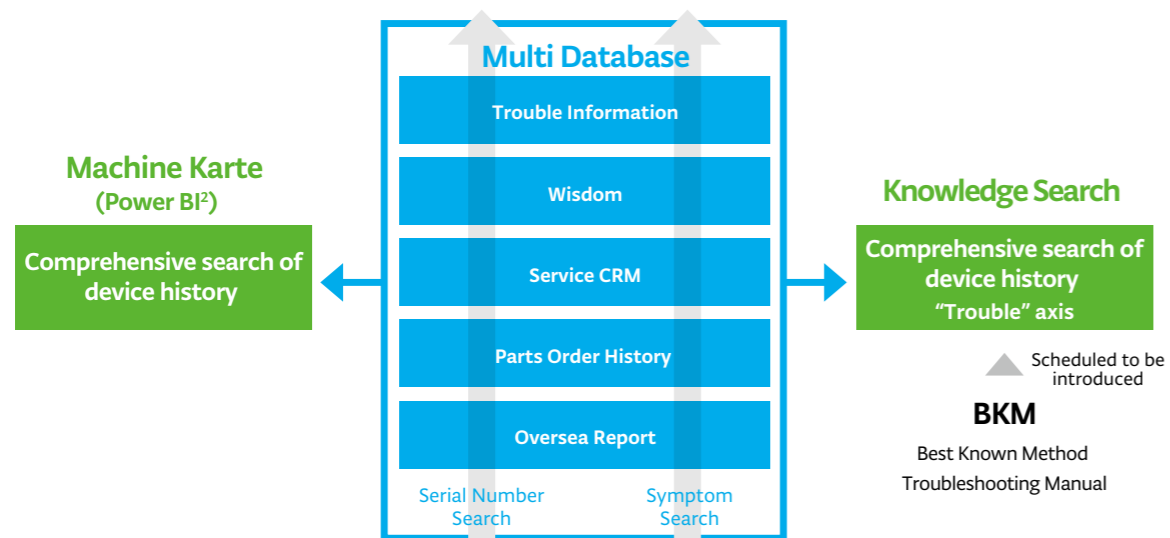
Knowledge management

TEL promotes company-wide knowledge management¹ to deliver high-quality service to its customers.

In the area of field service, the company creates a database of customers' equipment records (support and incident history) which can be accessed by global field engineers, thus providing an environment that enables TEL to quickly respond to calls from customers. Furthermore, from April 2019, TEL released a system (in Japanese, English, and Chinese) that allows engineers from around the world to search in their own natural language for information they require, from the vast amount of accumulated technical documentation. These systems have made it easier to retrieve knowledge on issues, whereby the causes of phenomena that arise can be predicted with greater accuracy. This has enabled the company to respond to customers more quickly and more efficiently.

¹ Knowledge management: Management approach to promote internal company sharing of tacit knowledge held by individuals, in order to encourage innovation and to improve overall productivity

Knowledge Management Tool



² Business Intelligence

Work optimization

TEL is striving to improve work efficiency and to enhance service quality by implementing precise work-time management covering about 3,000 field engineers active worldwide. A global timesheet is used for unified management of the types of tasks that engineers undertake, including work involved in starting up equipment and repair work, and the time is taken for them. By analyzing the work data thus accumulated through the global timesheets, the company is intent on improving the efficiency of work, the adjustment of personnel, and approaching issues, leading to the provision of value to customers.

Human resource training

TEL is engaged in skills management of field engineers and enhancement of its training structure to provide customers with a high level of service. TEL built a group-wide skills management system in accordance with standards established by SEMATECH (a U.S. consortium for the joint development of semiconductors) and provides service with the most suitable human resource placement for customers, based on an objective understanding of the skills of each engineer. TEL is working on a global basis to review and improve its training curricula and content, with the aim of providing optimal training programs that match the skills of each field engineer.

Total Support Center

TEL has built a system to provide global support for its customers based on its Total Support Center (TSC), situated in Japan, the United States, and China. At each TSC, dedicated representatives use accumulated data on information about customers' equipment and similar incidents, collaborating with field engineers and plants in an effort to promptly and appropriately respond to inquiries and troubles that arise.

Field solutions business

Semiconductors are seeing advances in miniaturization and integration, focused on demand for MPU¹ and DRAM², while demand is also increasing for general-purpose semiconductors in a wide range of fields, such as medical treatment, finance, transportation, and manufacturing. Extending the life cycle of products is another challenge, evidenced by demand for the long-term stable operation of semiconductors for automobiles and industry.

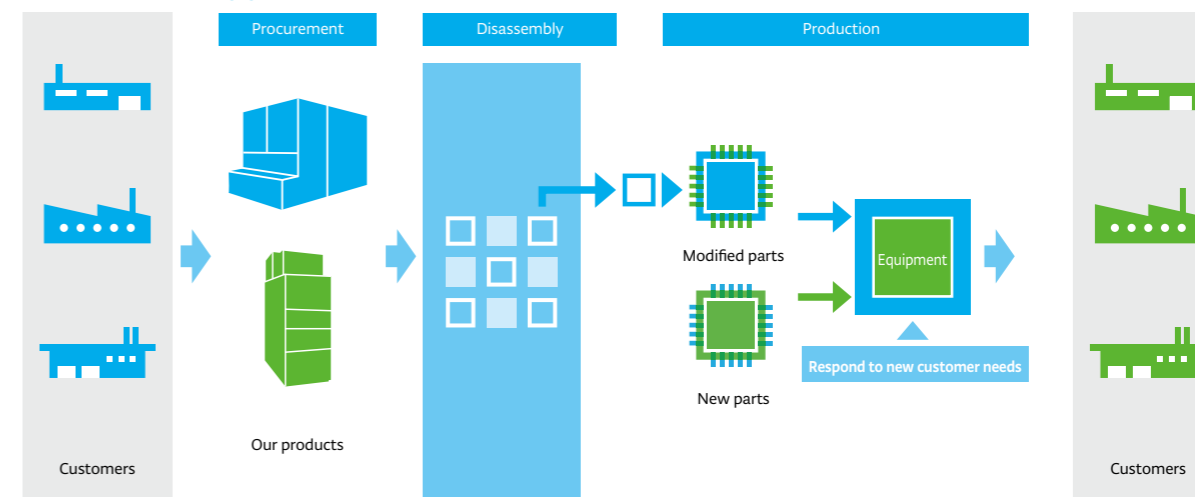
TEL leverages its strength in having delivered more than 69,000 units of equipment the most in the industry, providing used equipment and enabling the provision of remanufactured equipment restored by disassembling used TEL products into modules, modifying those parts that are still usable, and adding new parts where they are lacking.

Also, the company is working to meet the needs of customers, establishing products that accommodate renewal models centered on 200 mm wafers, providing more added value than used and remanufactured equipment, for customers who produce IoT-related products using previous-generation equipment. Renewal models replace old units and parts with new ones, maintaining compatibility with existing processes and offering performance approaching that of the latest equipment in terms of transfer speed, and other aspects. In addition to strengthening its renewal model supply system, TEL is also working on the accumulation and transfer of technology and knowledge related to previous-generation equipment. The company will contribute to customers' businesses while responding appropriately to changing semiconductor needs.

¹ MPU (Micro Processing Unit): Microprocessors or semiconductor chips that mainly provide the computing power for computers

² DRAM (Dynamic Random Access Memory): A type of semiconductor storage element for computers, etc.

Flow of remanufactured equipment



Ensuring safety for customers

Information provision

Tokyo Electron (TEL) is committed to providing relevant safety information to customers to enable the safe handling of products. All products purchased by customers come with a standard TEL Safety and Environmental Guidelines manual. This manual describes the potential risks associated with the use of our products together with the methods for averting those risks, divided into such categories as chemical, electrical, mechanical, and ergonomic. It also describes safety measures applied to products and recommended methods for product disposal. The manual has been translated into 11 languages¹ to ensure that customers around the world can accurately understand the information and use the company's products safely.

Furthermore, the company provides the TEL Safety and Environmental Guidelines together with a manual specific to each equipment, thereby adapting to the specifications of each equipment. In cases where new warnings relating to safety are issued after shipment, TEL advises respective customers individually. TEL is thus providing safety information for its various customers.

In addition, TEL pays close attention to safety when delivering its products that involve the use of hazardous chemicals or high voltage electricity. Particularly when delivering its products to a customer's new production line, the company checks its facilities, equipment, and workplace safety standards beforehand according to its internal rules to ensure a safe environment.



TEL Safety and Environmental Guidelines manual

Training

TEL provides its customers with training on equipment operation and maintenance procedures to ensure they are able to handle TEL products correctly and safely. Centered around its manufacturing sites, TEL has established training centers all over the world, with approximately 50 dedicated instructors conducting practical training courses using actual TEL equipment. So that the training the company provides is always of the highest quality, it uses its own certification system for instructors to ensure that training is delivered by personnel recognized as having the necessary skills. In addition to practical training, TEL also implements web-based education and on-site training at customer sites.

In addition, in order to speed up its response to requests from customers, TEL is promoting the development of surveys using online systems. Through its surveys, TEL collects and analyzes customer feedback on the content of its programs and its equipment, and strives to make improvements based on the survey results, in an effort to develop an enriched training environment.



¹ 11 languages: Japanese, English, German, French, Italian, Dutch, Russian, Portuguese, Korean, Traditional Chinese, and Simplified Chinese

Improvement of customer satisfaction

Customer satisfaction survey

Tokyo Electron (TEL) conducts a Customer Satisfaction survey (TEL CS Survey) every year, with the goal of making continual improvements based on customer feedback. The survey started in 2003, aimed at just a limited number of divisions. It was expanded to include all semiconductor production equipment divisions in 2014, and later the FPD production equipment division and overseas subsidiaries in 2016, and currently it is implemented company-wide as the Customer Satisfaction Survey Program (CSSP).

Under the CSSP, we conduct customers a survey of specific questions that can lead to practical improvements once a year. Results from the survey are analyzed by product, account (customer), and function (software, development, etc.), and given as feedback to customers. In an effort for improvement, the results are also shared with relevant divisions, such as sales, production, and support. Improvements are also made continuously to all aspects of the actual survey method, from the questions asked, to the analytical methods, and overall operation of the survey activities.

In the CS Survey for fiscal year 2019, responses were received from approximately 1,300 individual customers, which is 67.8% of all customers. TEL received evaluations three points* or higher on 84.4% of all questions asked.

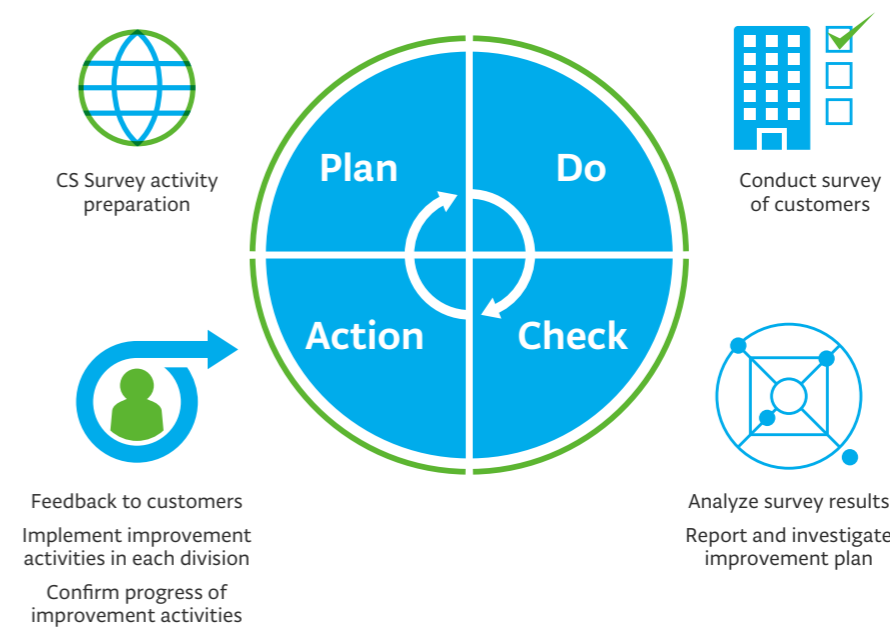
TEL will continue to aim for three points or higher on 100% of the questions asked, and the entire company will work in unity to drive improvements initiated from the customer perspective.

* On a four-point scale, three points or higher represents "Very Satisfied or Satisfied"

Improvement example

Results of the customer satisfaction survey brought to light certain issues that would not have ordinarily been identified, and the persons-in-charge and managers who are in direct contact with customers took the lead in making improvements, with the cooperation of the relevant divisions.

Continuing from last fiscal year, as a result of efforts to implement more accurate and quick responses to the demands and issues of customers, including enhancing support for software operating across multiple pieces of equipment, TEL improved the evaluation scores received from customers for all questions.





Higher productivity

In initiatives to enhance corporate value, it is important to strive to improve productivity in all business activities, and to continuously increase management efficiency. Tokyo Electron is reviewing and optimizing its business processes across the company as a whole, in development and manufacturing divisions as well as in sales and administration divisions, and the company is promoting quality management throughout the value chain. In addition, the company is developing various educational programs in an effort to enhance the awareness and capabilities of each employee regarding productivity, as well as implementing continuous quality improvement activities throughout the supply chain in collaboration with suppliers. By implementing quality-focus operations, TEL is further improving productivity, in its efforts to build strong relationships of trust with all stakeholders.

Medium-term goals (3)

Constantly pursue higher management efficiency

Medium-term goals, Priority themes:



Quality management



Enhancement of quality in the value chain

Quality management

quality policy, management system, enhancement of quality-related awareness and capabilities

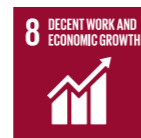
Quality improvement in the value chain

initiatives at the development and design stages, improved productivity in software development, support optimization, response when issues arise

SDGs initiatives

Promote improvement of productivity, continuously increasing management efficiency, contributing to the development of the industry and society, and contributing to continuous economic growth

Promote quality management throughout the value chain, ensuring sustainable forms of production and consumption



Decent work and economic growth



Responsible consumption and production



Quality management

Quality policy

Tokyo Electron (TEL) has a quality policy shared by all group companies which it has developed and is rolling out.

1. Quality Focus

Focusing on quality to satisfy customers, meet production schedules, and reduce required maintenance even with temporary cost increases.

2. Quality Design and Assurance

Building quality into products and assure in-process quality control, from the design and development phase throughout every process.

3. Quality and Trust

When a quality-related problem occurs, working as a team to perform thorough root cause analysis and resolve problems as quickly as possible.

4. Continual Improvement

Ensuring customer satisfaction and trust by establishing quality goals and performance indicators and by implementing continual improvement using the PDCA cycle.

5. Stakeholder Communication

Listening to stakeholder expectations, providing timely product quality information, and making adjustments as needed.

Management system

TEL is building quality assurance systems under the leadership of the Representative Director, President & CEO. To provide consistent, high-quality products, TEL has been acquiring ISO 9001 quality management system certification at various sites since 1994, and now, all of the group's manufacturing companies have successfully obtained certification.

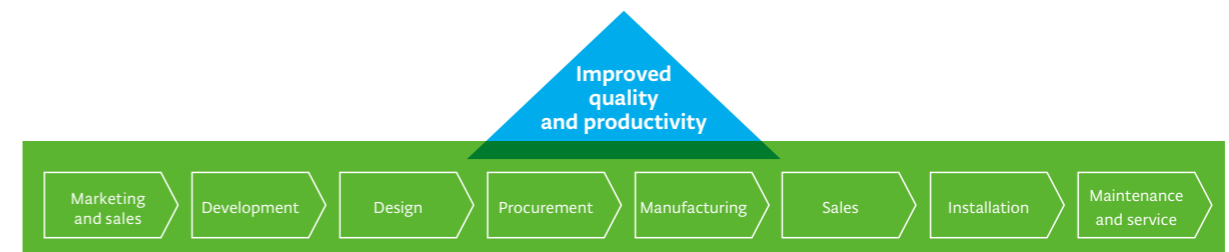
ISO 9001 certified factories and offices

| Company name | Factory/Office name | Certification date |
|-------------------------------------|---------------------------------|--------------------|
| Tokyo Electron Technology Solutions | Yamanashi Office (Fujii/Hosaka) | September 1994 |
| | Tohoku Office | December 1994 |
| Tokyo Electron Kyushu | Koshi Office | March 1997 |
| TEL Magnetic Solutions | — | November 2009 |
| Tokyo Electron Korea | Balan Factory | September 2011 |
| Tokyo Electron Miyagi | Taiwa Office | September 2012 |
| TEL FSI | — | March 2013 |
| TEL Epion | — | May 2014 |
| Tokyo Electron (Kunshan) | — | May 2018 |

Improvement of quality in the value chain

Quality management throughout the value chain

Tokyo Electron (TEL) believes that implementing continuous improvement, not only of products and services but also of all work processes, contributes to improved quality and productivity. The company strives to improve operations throughout the value chain, while strengthening collaboration within the company and externally, reflecting the needs of customers.



Raising awareness and skills

TEL believes in the importance of every employee having a high awareness and understanding of quality, and conducts various educational programs to this end. In addition to the fundamental quality education that all new employees receive, we focus on PDCA education for all employees, including those overseas. Through e-learning courses, employees learn the need for continuous improvement using the iterative four steps of the PDCA cycle. As of May 2019, 93.7% of our employees had completed the courses.

In addition, the company implements its own education program called TEL 6-Step for employees closely involved in quality control, such as developers, designers, quality managers, and service personnel, through which they acquire a problem-solving model to handle important issues. It is a partially altered version of the eight discipline (8D) problem-solving method¹, widely used in quality control, customized to replace TEL's problem-solving process. The program enables thorough investigation of the true nature of problems to determine the technical factors and root causes, cultivating skills that lead to quick resolution and prevention of similar problems arising. TEL currently uses e-learning training for delivery, and as of May 2019, approximately 5,500 employees had completed the program. In addition, the company conducts group training, focused on quality control leaders at its bases, for practical, exercise-based learning about resolution of quality issues, in an effort to enhance work improvement skills at production and development sites.

Moreover, TEL encourages employees to obtain external QC certification² through the Quality Management (QM) and Quality Control (QC) examinations and recommends their acquisition of fundamental skills, so that they can autonomously tackle quality improvement. Since fiscal year 2012, the number of certified employees has increased each year to approximately 2,200 as of March 2019.



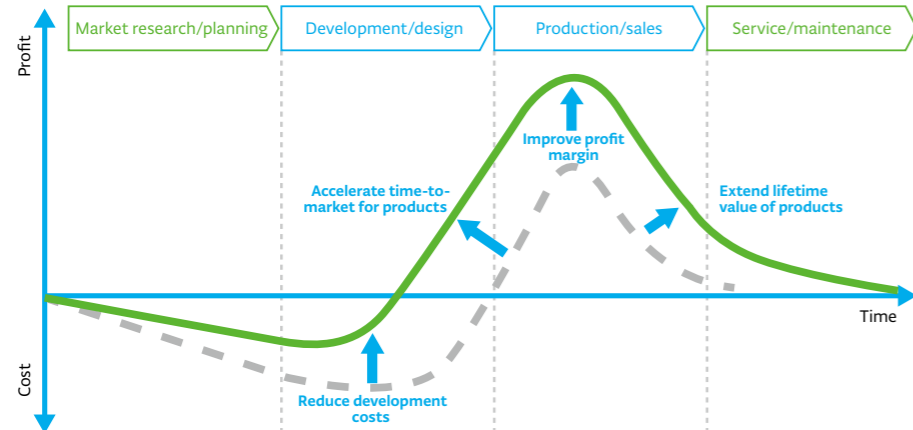
New employee training conducted in April 2019



Initiatives at the development and design stages

Promotion of front-loading and self-process assurance systems

In order to improve the quality of products, it is important to avoid contamination by defects in upstream processes, and to ensure quality in each process so that defective products are not allowed to flow into later processes. From this perspective, Tokyo Electron (TEL) is promoting front-loading and self-process assurance systems. In order to raise the degree of product quality at an early stage, TEL implements thorough risk detection and mitigation measures (FMEA³) from the initial stages of product design in an effort to suppress the occurrence or outflow of defects. The company also conducts thorough inspections in each process and verification using simulation in the self-process assurance system. Together with this promotion of front-loading and self-process assurance systems, TEL is also focusing on the deployment of Product Life-cycle Management (PLM). By deploying and promoting this concept of PLM, TEL comprehensively manages and analyzes all processes from product planning, development, design, and production through to service, in an effort to achieve early release of products on the market, work efficiency enhancement, quality improvement, and cost reduction.



1 8D problem-solving method: A method for solving problems in quality improvement through eight disciplines or processes

2 QC certification: Quality management certification operated by the Japanese Standards Association and the Union of Japanese Scientists and Engineers. The total number of people qualified nationwide exceeds 520,000 (as of September 2018).

3 FMEA (failure mode and effects analysis): Method to grasp risks in advance, prevent and mitigate

Example initiative

Through the Quality Management Committee, Tokyo Electron Technology Solutions Yamanashi Plant implements consistent quality control, from the development and design stage through to mass production, managing the progress of development, sharing quality issues, and so on.

With new development projects, the Yamanashi Plant checks thoroughly to ensure quality and reliability requirements are sufficiently fulfilled, by establishing "gates" at each stage of conceptual design, transition to release of plans, shipment of evaluation units to customers, and transition to mass production.

To ensure this initiative, session-based DRs¹ are held by persons in charge of design development, quality control, production, purchasing, sales and other related divisions, together with experts who possess technical knowledge.

When transitioning to mass production of equipment, a "mass production package," comprised of a BOM,² a QC process chart,³ a manufacturing quality instruction manual,⁴ a startup manual⁵ and so on, is prepared to ensure mass production operations are also carried out in full, and self-process assurance systems are established. Providing education to workers and managing their skills is also conducive to activities aimed at the release of high-quality equipment.

Going forward, to further develop quality improvements, ongoing improvement activities will be promoted so that, based on an original evaluation model, essential evaluation points are applied without fail in order to maximize quality at each stage of the manufacturing process, from planning (concept level) through to the parts and materials level.



Response to safety laws and regulations

TEL regularly checks the safety regulations and guidelines concerning equipment, and has established systems for responding to them. Equipment is checked by a third party inspection company before shipment to ensure that the equipment complies with international safety standard and the guidelines like SEMI S2.⁶ Also, regarding the Machinery Directive and EMC Directive,⁷ we obtain certificates of conformity from the Notified Bodies in Europe.

1 DR: Design Review

2 BOM (bill of materials): A chart of parts showing how many of each are used for each finished product

3 QC process chart: A chart recording the process flow for one product from procurement of raw materials and parts to shipment of the finished product, including management characteristics and methods

4 Manufacturing quality instruction manual: Technical information transmitted from the design team to the manufacturing team

5 Startup manual: Summary of procedures and warnings when starting up equipment

6 SEMI S2: This is a set of environmental, health, and safety guidelines for semiconductor manufacturing equipment

7 EMC Directive: This is one of the New Approach Directives that apply to the EU member states

Software development initiatives

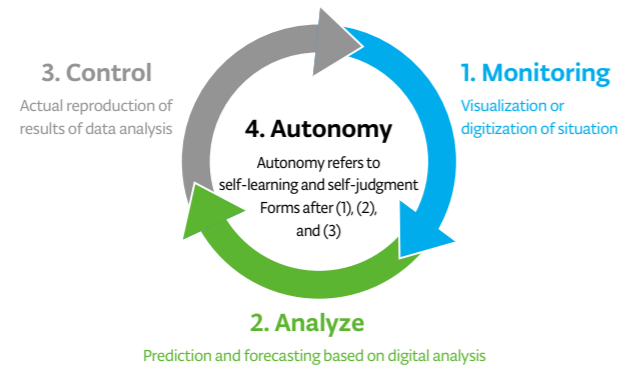
Streamlining product development

Since 1995, Tokyo Electron (TEL) has used platform software developed in-house in its semiconductor production equipment, leading to streamlined operations and improved product quality. By introducing common platform software the company is able to reduce the hours spent on developing duplicate functions for each type of equipment, to guarantee real time¹ control, and endeavors to connect this to enhancement of its response capability to new demands and technologies.

In addition, TEL is also adopting concepts such as object-oriented for the more efficient software development, while also promoting development and introduction of new platform software for development of next-generation equipment.

Realization of smart equipment

With the rapid progress of innovation in manufacturing utilizing IoT and AI, TEL is working on designing the form of future semiconductor production equipment required in the smart fabs² which customers aim to realize, and to develop the various software and systems that will be required there. The specialized development units responsible for advanced data utilization and system development cooperate with each business unit and production site in the pursuit of smart equipment that offers simple operation, presentation of the causes and resolutions of troubles, and autonomous operation through prediction of results.



Initiatives with suppliers

Developing strong partnerships with suppliers is essential to improve product quality. In efforts to maintain and improve quality, since 2000, TEL has conducted its unique Supplier Total Quality Assessments (STQA) to enable its suppliers to properly understand the level of quality that the company expects from suppliers. Before starting business with new suppliers, an STQA is conducted via self-assessment to evaluate their product quality, costs, and information security. The assessment also includes CSR issues, including human rights, ethics, safety, and the environment. If any risks to quality are found, TEL representatives visit the supplier on-site to explain the problems, TEL's expectations for the level of quality required. After the supplier understands the issues, TEL asks that they plan and make improvement measures, and provides continuous support until all of the improvements have been completed. The company conducts on-site audits once every three years at suppliers who manufacture important components and at suppliers where quality issues have been found.

In recent years, TEL has been particularly focused on process improvement activities using statistical methods (SPC⁴). Equipment that TEL provides to its customers must always be controlled to avoid variations, to ensure accurate process repeatability, and to realize high productivity. To achieve this, TEL works to ensure understanding of the importance of, and agreement to, these activities by suppliers which handle specific important parts, and works on SPC together with suppliers, in order to reduce variations in the quality of parts, in an effort to maintain and improve processes to produce good products.

Example initiative

At all of its production sites, TEL collaborates with suppliers to implement initiatives to reduce the occurrence of defective goods. Company employees visit the production sites of suppliers to learn about their production environment in order to discuss and implement effective improvement proposals. In addition, Tokyo Electron Technology Solutions Yamanashi Plant works closely with business partners to share data on parts and unit manufacturing, and to promote quality management through statistical process control (SPC), and is thereby delivering results in defect rate reduction.

1 Real-time: The property of time limitation until the completion of work

2 Object-oriented: A software engineering theory

3 Smart fab: A fab which realizes production innovation through analysis and utilization of data from all of the equipment, facilities, and human work within the fab

4 SPC (statistical process control): Refers to using statistical methods to analyze manufacturing processes, take measures for establishing and maintaining stable processes, and improve process capability. In many cases, statistical methods indicate techniques with a focus on control charts.

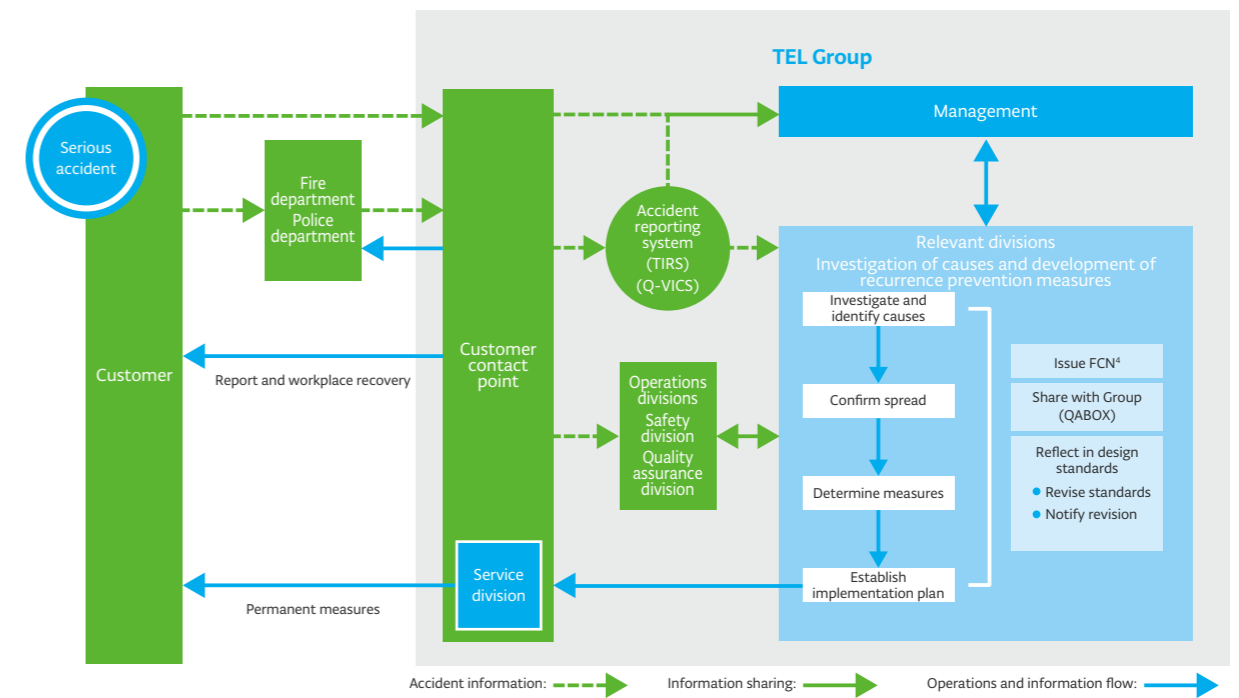
Response to quality problems

In addition to compliance with ISO and EN¹ safety standards, TEL establishes design rules applicable to its own equipment to achieve the highest level of safety possible. In addition to developing systems to manufacture safe products, the company fulfill its mission as an equipment manufacturer by establishing systems for responding to design- or manufacturing-related issues or accidents arising from operation-related problems.

If an accident occurs, TEL uses its TIRS² accident reporting system to report and share information with all levels of management, from safety and quality personnel in each division to senior management. We immediately conduct an accident investigation to identify the cause and plan preventive measures.

In addition, TEL uses a proprietary system called QA-BOX³ to share accident information within TEL Group. The results of accident investigations are quickly implemented on the problem equipment, as well as on equipment operated by other customers, and, for example, reflected in design standards in operation. As well as sharing problems and countermeasures through QA-BOX, it is also used to prevent recurrence of accidents. Accident-related data accumulated in QA-BOX is used for the cumulative analysis of trends to visualize the types of equipment which frequently experience problems and the types of problems that they experience, whereby we can implement countermeasures that have an immediate impact, leading to a reduction in the number of accidents attributable to equipment.

Response to serious workplace accidents



1 EN (European Norm): Uniform standard for the European Union complementing parts of technical standards not stated in European Commission directives ("New Approach" directives)

2 TIRS: TEL Incident Report System

3 QA-BOX: TEL Group internal information sharing and horizontal deployment tool

4 FCN (Field Change Notice): Refers to general recall notice

People and workplaces

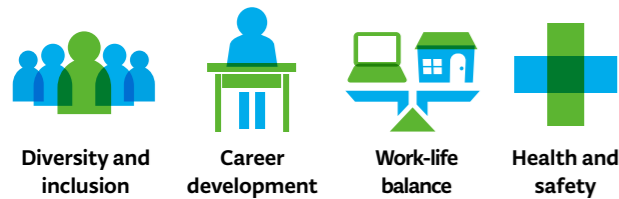


Recently, it has become important for companies to develop operations that are sustainable from the perspectives of people and workplaces, meeting the new demands of society, responding to new demands of society, such as the decline in the working population and diversification of workstyles, employing people with diverse values, and so on. By promoting work-life balance, as well as diversity and inclusion, Tokyo Electron shows respect for various work styles, as well as the individuality and values of each of its human resources, treasuring the new value introduced when individuals exercise their capabilities. In addition, the company is strengthening operation of a global human resource system, evaluation system, and its human resource development program, promoting health and safety, among other measures, in an effort to nurture employees who feel their work is rewarding, and who are proud of the company.

Medium-term goals (4)

Maximize dreams and drive

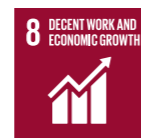
Priority themes, Main activities



- Diversity and inclusion**
 - Career development**
 - Work-life balance**
 - Health and safety**
- Human resource management**
Human resource management system
 - Diversity and inclusion**
System and initiatives, Conference for Women Engineers
 - Career development**
 - Human resource development initiatives**
 - Work-life balance**
Basic skill enhancement initiatives, global human resource system, promotion of paid leave-taking, childcare and nursing systems
 - Health and safety**
Support systems for health, self-care platform, safety initiatives, accident reporting system

SDGs initiatives

- By globally promoting a highly transparent human resource system, together with fair appointment and remuneration, strive to facilitate rewarding, human-focused employment (decent work)
- Proactively develop work-life balance, diversity and inclusion, and pursue equality among people and in the workplace



Decent work and economic growth



Reduced inequalities

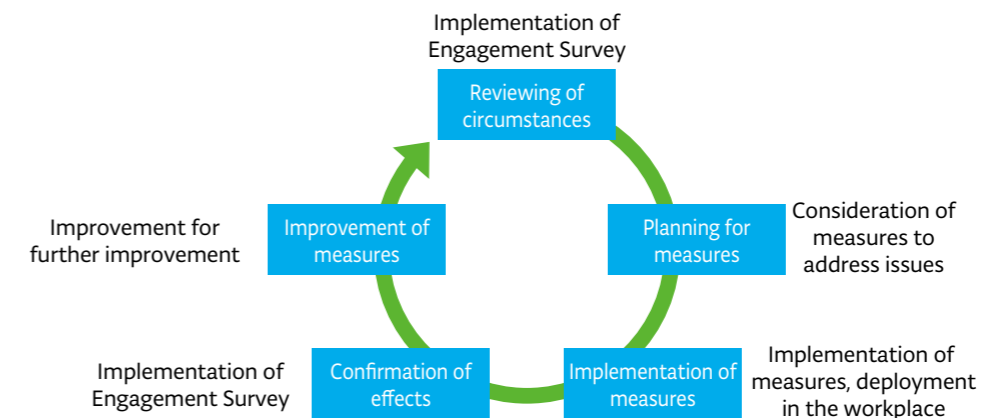


Human resource management

Human resource management system

Tokyo Electron (TEL) regularly conducts a global engagement survey which aims to enhance employee work satisfaction and motivation, achieving growth for both the company and its employees. Questions on issues such as pride in the company and work, and awareness and evaluation of the work environment help TEL to grasp the current situation. The company uses a continuous improvement cycle based on the characteristics of each region and workplace, whereby it aims to improve the workplace environment.

In fiscal year 2019, TEL established a new evaluation system to support the global human resources system introduced the previous year. The company also focused on the four topics of diversity and inclusion, career development, work-life balance, and health and safety, to promote the creation of a workplace environment where employees can work more happily.



Diversity and inclusion

Systems and initiatives

Overseas sales account for over 80% of total sales for Tokyo Electron (TEL), positioning the company in circumstances requiring extremely fast technological innovation. In order for TEL to generate innovation and continue to grow, it is essential for the company to be one where personnel with diverse individuality and strengths can play an active role while exercising their capabilities. TEL is actively promoting the creation of an environment where the diversity of talent leads to greater competitiveness, by developing a workplace where anyone, irrespective of gender, nationality, age, background, disability, or stage of life, can work while feeling at ease, tackle challenges with strong motivation, and be able to grow.

In fiscal year 2019, TEL launched a Diversity Promotion Team. It conducted an employee awareness survey, focusing on female employees, managers, regarding one element of diversity: gender diversity, achieving a response rate of approximately 80%. The company has built a foundation that promotes diversity, through lively debate, with a greater workplace perspective, on what kind of workplace to create, on work styles, and on what is needed to support development of abilities, to ensure that employees from various backgrounds, including those with time constraints, can continue to work at TEL. In fiscal year 2020, the company will launch a dedicated taskforce to promote diversity and inclusion, which it will develop with a core human resource strategy of promoting an environment where diverse talent from around the world can play an active role and produce results irrespective of gender, nationality, or disability, while minimizing the impact of the stage of their lives.

Furthermore, TEL is putting effort into harassment prevention education and awareness activities in order to realize a workplace where diverse employees can play an active role with greater mutual understanding. In fiscal year 2019, legal advisors conducted live seminars to raise awareness of the issue of power harassment in particular, attended by roughly 90% of the company's approximately 1,100 executives and managers. TEL is working to establish an environment where employees with disabilities can work with peace of mind, and is driving efforts to hire such people. In fiscal year 2019, people with disabilities accounted for 2.04% of employees in Japan operations overall.

Conference for Women Engineers

Since Fiscal Year 2018, TEL has held a Conference for Women Engineers, linking Akasaka headquarters with offices throughout Japan via a video conferencing system, to support networking among women engineers, and to provide opportunities for learning and awareness. At the third conference, held in February 2019, an external speaker was invited to talk about careers for women, and other lectures were given by young women engineers and women in management. On this occasion, around 100 employees, including men, participated. Feedback included comments that the opinions from external parties help the participants to broaden their horizons, and that they were able to exchange information and build communication with other engineers, indicating that they recognized the impact of the event. In the future, the company plans to expand the scope of such events beyond engineers.

Career development

Human resource development system

Tokyo Electron (TEL) has established TEL UNIVERSITY as an in-house educational establishment for the entire company to help employees to develop their careers and realize their personal goals independently. The curriculum of TEL UNIVERSITY includes courses that provide world-class knowledge and skills, with training programs adapted to different levels and goals.

Corporate education system (TEL UNIVERSITY)

| | Management | Executives | Leaders | Mid-level employees | Junior employees New employees |
|----------------------|------------|--|---------|---------------------|-----------------------------------|
| Level-based programs | | Introductory programs (new graduates, mid-career recruits) | | | |
| | | OJT ¹ programs (new graduates, mid-career recruits) | | | |
| | | Manager programs | | Mid-level employees | Junior employee programs |
| | | Leader programs | | | |
| Goal-based programs | | Compulsory WBT ² | | | |
| | | Business skills | | | |
| | | Global communication | | | |
| | | Life support | | | |
| | | Technical programs (seminars & workshops) | | | |



Management education costs

¥49M

- 1 OJT: On the Job Training
- 2 WBT: Web-Based Training

Human resource development initiatives

Leader programs

TEL conducts succession programs to identify and systematically nurture staff who will advance into management and realize medium- to long-term improvement of corporate value. In fiscal year 2019, TEL conducted training for selected next-generation management candidates and dispatched them to external training, supporting them to gain a broader perspective and to build networks outside the company. TEL is also developing practical programs that meet the expectations and development needs of each person.

Manager programs

The role of managers is important for enabling value creation by each individual. In fiscal year 2019, the company conducted group training for newly appointed managers, incorporating third-party assessment and other elements in order to nurture the practical skills and mindset required for managers, including the development of subordinates, self-reflection, and personnel evaluation.

Step-up activities

TEL implements step-up activities for about six months from the summer of each employees' second year in the company, to encourage autonomy among junior employees. Junior employees set their own themes and targets in the workplace while planning activities, which they advance, that provide opportunities to develop learning and awareness of growth. This is done with the involvement of their superiors and colleagues.

Life support

TEL provides employees with various programs so that they can make full use of their abilities and feel peace of mind while in the company. Within Japan, TEL conducts a life design seminar every year for employees aged 51 or over in order to provide important information for retirement, including how to spend their years until retirement as well as financial planning beyond retirement. In an effort to support staff development, the company also conducts seminars for other age groups on topics relevant to many employees, including nursing of family members and psychological self-care.

Work-life balance

Initiatives to improve basic skills

Tokyo Electron (TEL) has set its vision to be "A truly global company generating high added value and profits in the semiconductor and flat panel display industries through innovative technologies and groundbreaking proactive solutions that integrate diverse technologies." To realize this, each employee must be able to strike a balance between their work and private life, so that synergy is created between employees and the company to enable each to grow.

Based on its global human resources system, TEL is promoting the creation of an environment to enable employees to both improve their basic skills and grow while striking a balance between their work and private life. TEL works to enhance and offer an education program whereby employees can learn business skills adapted to their individual level, aims, and schedule. TEL provides a skill map whereby employees can grasp the business skills expected of them, a skills development guide that summarizes the importance of learning and techniques for learning, and a course guide that outlines details of lectures offered in order to support each individual in proactive study.

Global human resources system

The global human resources system, introduced in 2017, considers the role each individual is expected to play and their career, to encourage proactive contribution to improving the corporate value of TEL. In order to achieve this, the system clarifies individual roles and responsibilities, and allows absolute evaluation of the level of achievement by individuals against goals set, to facilitate more acceptable remuneration.

By evaluating the autonomous challenges of employees, TEL is able to make their treatment more transparent, as the company strives to nurture an organizational culture with dreams and vitality where individuals who proactively accept challenges without fear of failure can flourish.

Encouraging leave-taking

In order to enable employees to continue working while taking sufficient leave, TEL strives to correct long work hours and aims to enhance the leave system, and promote leave-taking.

In fiscal year 2019, TEL set a target of 70% annual leave-taking, promoting management to improve leave-taking rates through initiatives such as five days planned leave every six months, regular monitoring of annual leave-taking status, and encouraging awareness of planned leave-taking, resulting in leave-taking rates of 67.2% in Japan and 80.9% overseas during fiscal year 2019.

In addition, TEL has introduced a unique refreshment leave system. It aims to provide refreshments for employees and to thereby boost their motivation to work. The system grants special (paid) leave from two weeks to one month of service to employees who have worked for more than 10 years. In fiscal year 2019, 605 employees in Japan took refreshment leave, and 473 overseas.



Take-up rate of annual paid leave (global)

72.5%

Childcare and nursing systems

In order to allow each employee dealing with childcare and nursing to adopt a flexible approach to work according to their individual lifestyle and stage in life, TEL has established a support system, in addition to that which is legally defined. In Japan in particular, we are working to enhance work styles for employees.

In addition to allowing extension of the childcare leave period until the child reaches three years of age at the longest, TEL also expanded measures to reduce working hours for childcare to employees raising children until their graduation from elementary school. We have also established leave to care for a sick or injured child and childcare support leave. As a result, in Japan, we have achieved a return to work rate of 93.5%, and 41% of female TEL employees are working mothers. Furthermore, in addition to allowing paid nursing care leave up to the fifth day, we are also improving the nursing care system to make it possible to take nursing care leave three times per person requiring care and to allow nursing care leave of a total of one year.



New work styles

TEL is continuing to seek new work styles for employees. In addition to introducing a flextime system, we are testing a teleworking system that enables employees to utilize time more effectively by eliminating commuting time at Tokyo Electron Headquarters.

Health and productivity management promotion

So that employees can realize a fulfilling life's work, and at the same time, contribute to the advancement of TEL's business by harnessing their full capacity, it is important that every employee can maintain their health and dynamism while at work. By putting systems in place, we strive to build an environment where employees can work with peace of mind.

In acknowledgment of these initiatives, TEL was recognized as a White 500 company under the 2019 Certified Health & Productivity Management Outstanding Organizations Recognition Program.¹ Taking advantage of this opportunity, we will continue to promote global initiatives with each Group company to drive efforts to improve the health and productivity of its employees.



¹ Certified Health & Productivity Management Outstanding Organizations Recognition Program: The program publicly recognizes particularly outstanding organizations that are practicing health-oriented business management, based on initiatives attuned to local health-related challenges and on health-promotion initiatives led by the Nippon Kenko Kaigi.

Health and safety

Support systems for health

TEL has built systems that are mindful of employee health. Besides conducting various medical checkups in accordance with the law, TEL also offers face-to-face consultations by designated occupational health physicians for employees who work long hours. We have also set up health help desks supported by occupational health physicians so that employees and their families can seek advice if they have any health issues to discuss. TEL also offers counseling services supported by external industrial counselors if requested by an employee. Regular "line-care"² seminars are also held, targeted at line managers.

In fiscal year 2019, in order to strengthen its support structure, we held liaison meetings with the designated occupational health physicians at each company to share information on current issues faced by the Group. In the future, we will continue to steadily carry out initiatives to resolve these issues.

Wellness declaration

Based on the wellness declaration announced in 2012, we have promoted the improvement of employees' exercise habits based on a program of Eat-Rest-Walk-Talk. In regards to the "Eat" aspect, the renovated company cafeteria at Fuchu regional office offers healthy food choices. In addition, nine of our plants and offices in Japan offer activities to support daily health development, such as body composition measurement sessions.



Company cafeteria at Fuchu Technology Center incorporating SDGs colors

² Line-care: A workplace measure for mental health, in which managers and supervisors take a lead role in responding to requests by workers for advice, with an aim of improving the workplace environment

Stress checks

Within Japan, TEL has implemented comprehensive measures for mental health. Using a questionnaire recommended by the Ministry of Health, Labour and Welfare, employees complete a stress check once a year, and if determined to be under high stress, they are put in contact with an occupational health physician or public health nurse for in-depth face-to-face support as stipulated under law. In addition, the company also implements thorough mental support for employees whereby those who wish to may meet for discussion with an occupational health physician or public health nurse in the form of a health consultation. The company also undertakes organizational analysis to deal with organizations which have a comparatively heavy burden.

During fiscal year 2019, the stress check was taken by 92.2% of employees in Japan.



Self-care platform

We have introduced the Pep Up personal healthcare platform, enabling employees to check the results of their medical checkups quickly, and to understand their daily health management data, such as weight, blood pressure, and body fat ratio, as well as their health age.¹ Using this platform, we hold walking events, and distribute activity trackers to help employees in managing their diet and exercise.

Safety management framework

Based on a culture of "Safety First," TEL carries out ongoing activities for safety promotion. In its effort to raise the overall level of safety and occupational health, TEL uses a management system based on OHSMS² to manage safety and occupational health and follows the PDCA cycle, to reduce the potential risk of work-related accidents. Moreover, by sharing information of any issues with the EHS council and the manufacturing company presidents' council, the company promotes safety management as a company-wide initiative.

Activities for safety

At each factory and office, monthly safety and health committee meetings are held to discuss measures for any workplace safety or employee health issues and to conduct safety inspections. TEL has also set up a system for autonomous problem-solving at manufacturing sites, with safety inspections by representatives from appropriate departments at least once per month.

Before starting work at TEL manufacturing sites, the details of the job and the risks are shared with all workers involved, and they each increase their awareness in an effort to prevent accidents. In addition, effort is also being directed to safety managers giving advice on how to manage hazards, as well as to make workers stop work and take corrective action in the event of an unforeseen incident while on the job.

In addition, TEL is implementing two education programs globally for the establishment of safe work environments. TEL's program on basic safety targets all employees and is provided as introductory training for new hires as well as refresher training every third year of employment. In total, more than 50,000 employees have completed this program. Our other program, advanced safety, targets employees working in cleanrooms and on production lines. Participants are required to complete the course every year. Some portions of rules pertaining to safety are based on Japanese law, therefore when employees are transferred overseas, they undertake training regarding any differences in a language that they understand, with the aim of standardizing the company's education.

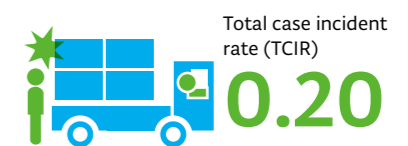
To eliminate accidents, TEL also provides risk assessment training and web-based training at offices and factories in Japan and overseas. Finally, we also provide safety information to suppliers as part of support for initiatives to prevent accidents.

As a result of having maintained a high priority on creating safe work environments, TCIR³ has been maintained at or below the company's target of 0.5, with 0.19 in fiscal year 2019.

Accident reporting system

If a safety-related accident occurs, the information is shared with related parties and persons in charge through the accident reporting system, creating a system which resolves issues and leads to the proposal of measures to prevent reoccurrence.

In Fiscal Year 2020, the company commenced operation of TEL Incident Report System (TIRS), a newly developed accident reporting system, to further improve the accuracy of report content.



¹ Health age: An indicator showing risk of lifestyle diseases, calculated based on the results of an employee's medical checkup. The difference in years with the employee's actual age is displayed, helping them understand their equivalent age in terms of their health conditions.

² Occupational Health and Safety Management System (OHSMS): A management system to improve the overall level of safety and occupational health

³ Total Case Incident Rate (TCIR): The number of workplace accidents per 200,000 work hours



Management foundation

In recent years, the role played by companies has become more important for establishing a sustainable society. Furthermore, in the area of investment, ESG investment, which emphasizes corporate environmental, social, and governance initiatives, is becoming mainstream. In these circumstances, companies are required to steadily develop highly effective governance, to build a solid management foundation that forms the basis of business activities, to contribute to solving environmental and social issues, and to creating new value. Tokyo Electron is working to further improve its governance system, including a review of the Board of Directors, and to ensure compliance throughout the Group, recognizing that corporate governance is essential to sustainable growth. In regards to the environment, the company is conscious of exacerbation of climate change and abnormal weather, and has established a new medium- to long-term environmental vision, and is proactively working to reduce the environmental impact of business activities. In addition, the company is promoting activities in compliance with global standards to achieve sustainable operations not only within the company, but throughout the supply chain. TEL endeavors to build a strong and sound management foundation and aims to further enhance its corporate value.

Medium-term goals (5)

Building a management foundation for increasing value

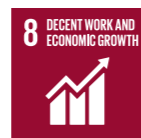
Priority themes, Main activities



- **Corporate governance**
Supervision and evaluation of strategic decision-making, profit sharing policy, design and results of director compensation system, process of effectiveness evaluation of Board of Directors, management issues
- **Risk management** ■ **Compliance** ■ **Respect for human rights**
- **Supply chain management** Procurement initiatives
- **Environmental management**
Global warming prevention/energy-saving initiatives, renewable energy initiatives, water consumption reduction initiatives, waste reduction initiatives, chemical substance management, promotion of green procurement
- **TEL FOR GOOD** Social contribution activities

SDGs initiatives

- Steadily developing highly effective governance and establishing a solid management base in order to contribute to the development of society in order to improve corporate value
- Promoting compliance as an important business strategy, and developing operations in consideration of the environment and human rights, in order to contribute to the creation of a sustainable, fair, and equal society



Decent work and economic growth



Climate action



Peace, justice and strong institutions

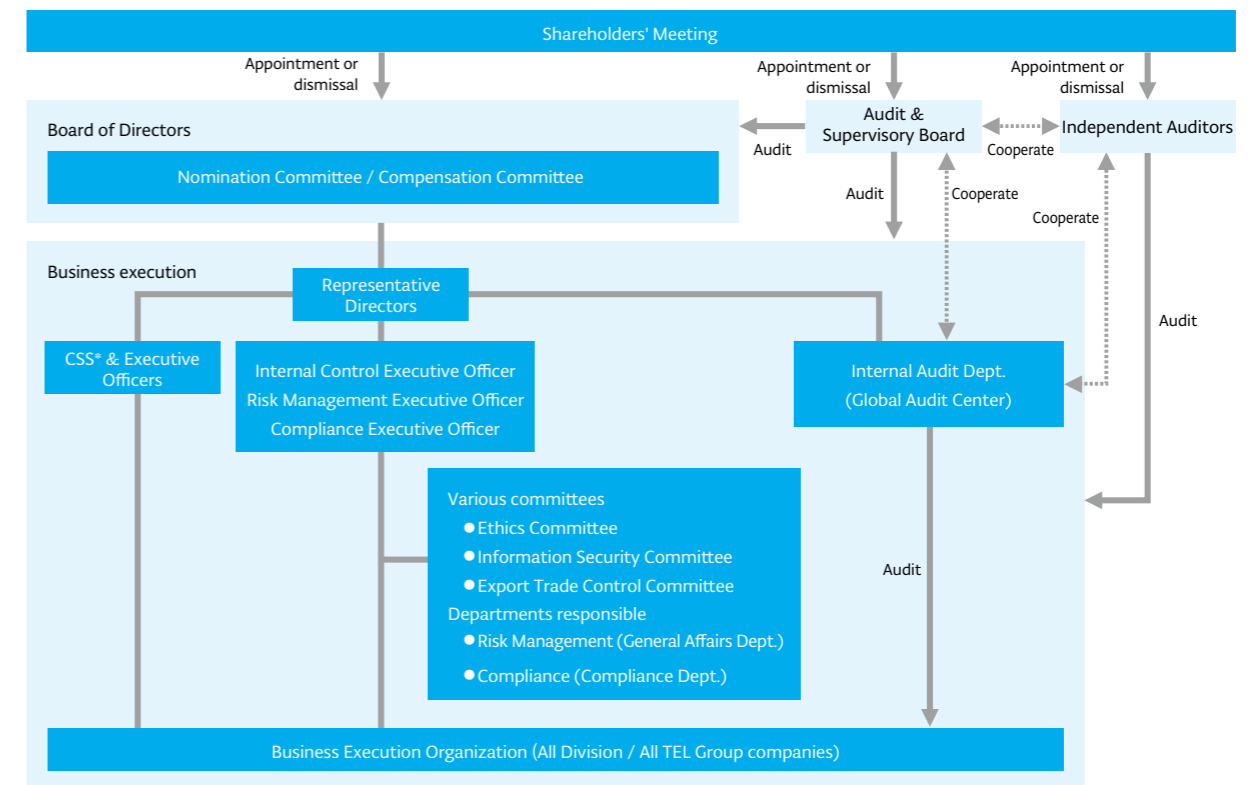


Corporate governance

Sustainability of a Board of Directors appropriate for resolution of management issues

Based on an effective governance structure that supports improving corporate value over the medium- to long-term, in order for the Board of Directors to fulfill its roles and responsibilities, Tokyo Electron (TEL) is committed to both assembling talented people with a good balance of knowledge, experience, and skills and ensuring diversity, as well as working to nurture the next generation of management personnel. In addition, by operating a Board of Directors capable of properly overseeing and evaluating (monitoring) the strategic decision making of the management team responsible for business execution, TEL is putting effort into maintaining the sustainability of a Board of Directors appropriate for resolving management issues.

Diagram of the corporate governance framework, internal control system, and risk management framework



* CSS: Corporate Senior Staff

Corporate governance framework

TEL adopts the Audit & Supervisory Board System, consisting of a Board of Directors and an Audit & Supervisory Board.

Currently, among the 16 members who attend the Board of Directors meeting, which includes Audit & Supervisory Board members, there are six outside directors and statutory auditors, including three independent outside directors, and three outside Audit & Supervisory Board members. Independent outside directors and outside Audit & Supervisory Board members express frank opinions from an independent standpoint so that discussions by directors coming from within the company do not tend toward homogeneity. This guides discussion within the Board of Directors in an appropriate direction so that the company can be competitive and succeed globally. TEL believes the lively exchange of opinions arising from proactive comments by independent outside directors and Audit & Supervisory Board members is the foundation supporting optimal decisions at TEL's Board of Directors meetings. The Board of Directors works to achieve sustainable growth and to increase corporate value over the medium- to long-term based on its fiduciary responsibility to shareholders. Furthermore, it strives to achieve an appropriate sense of productive tension and constructive debate through the presence of executive directors, who possess diverse experience, knowledge, and achievements, and outside directors, who maintain objectivity.

The Audit & Supervisory Board provides a structure that enables its board members to obtain sufficient information necessary for audits by collecting information through on-site surveys conducted by full-time Audit & Supervisory Board members, and by ensuring appropriate coordination with the Internal Audit Department and Independent Auditors.

Established to ensure fair, effective, and transparent management, the Nomination Committee and the Compensation Committee support growth-oriented governance for TEL by making proposals to the Board of Directors regarding the election of candidates for the management team and regarding compensation.

Skills and diversity of the president and management team

In the selection of executive directors, the Nomination Committee emphasizes people with outstanding execution capabilities backed by experience, knowledge, and achievements as a manager. They must also possess high sensitivity to all risks and the ability to accurately analyze and judge them. Furthermore, they are required to be able to directly express their honest opinions in meetings. At the same time, in order to ensure constructive discussion incorporating diverse backgrounds and expertise, personnel with an in-depth knowledge of all departments are proposed to the Board of Directors as director candidates, taking into consideration the balance between Sales and Service, Manufacturing, R&D, and Corporate Administration.

In addition, based on the TEL Succession Plan, we endeavor to nurture successor candidates, in particular from among executive officers, who will be responsible for the next generation of executive management. Furthermore, through the execution of daily duties, the CEO and Representative Director assesses successor candidates from various perspectives, including capability, character, quality, and discernment, and provides constant support for them by arranging opportunities such as job rotation and training.

Skills and diversity of outside directors

With regards to independent outside directors or outside Audit & Supervisory Board members, they are required to express frank opinions from an independent standpoint whereby they can guide discussion within the Board of Directors in an appropriate direction so that the company can be competitive and succeed globally. In making these selections, TEL aims to assemble talented people with a balance of knowledge of global business, broad insight into related industries, an extensive network of personal contacts, objectivity from the social, capital market, and other perspectives, knowledge of finance and accounting, broad legal knowledge. In addition to requirements under the Company Act, TEL has established separately specified Independence Requirements to avoid conflicts of interest with general shareholders, and to ensure the independence of outside directors and outside Audit & Supervisory Board members.

Supervision and evaluation of strategic decision-making

The TEL Board of Directors convenes approximately nine times per year by ensuring sufficient time for debate. The Board of Directors meeting annual schedule is set in an effort to provide sufficient time for debate and to increase the attendance by all directors, including outside directors. In addition, prior explanations are provided to outside directors and outside Audit & Supervisory Board members in a timely manner from the administrative office. TEL strives to provide sufficient information to and dialog among independent outside directors and Audit & Supervisory Board members, and, for example, in regards to matters of particular importance, TEL establishes a venue for dialog with TEL executive management in advance.

Policies for allocation of earnings

TEL's basic approach is for appropriate allocation of company earnings to all stakeholders.

TEL's basic policy of allocation to shareholders is to link dividend payments to business performance on an ongoing basis for a payout ratio of around 50% based on net income attributable to owners of the parent company.

TEL effectively uses internal capital reserves to raise corporate value through earnings growth by concentrating investment in high-growth areas and provide returns directly to shareholders by linking dividend payments to business performance and earnings. Furthermore, the company flexibly implements share buybacks as part of shareholder returns.

Dividend payout ratio: 50%

Annual DPS of not less than 150 yen

Review dividend policy if the company does not generate net income for two consecutive fiscal years.

Planning and outcomes of the director compensation system

Compensation Committee

In order to secure transparency and fairness in management and appropriateness of compensation, the company has established the Compensation Committee, which is composed of three or more directors (excluding representative directors), including an independent outside director. The Compensation Committee obtains advice from external experts, and analyzes and compares compensation levels and other details with high-tech companies inside and outside Japan. Based on this analysis, it makes proposals to the Board of Directors regarding the compensation policy for directors and executive officers, the most appropriate, globally competitive compensation system for the TEL Group, as well as individual compensation amounts for the Representative Directors.

Annual performance-linked compensation

In regards to Corporate Director compensation, TEL uses a profit-sharing style method of calculating compensation that determines the level of annual performance-linked compensation linked to the actual net income attributable to owners of the parent company. In addition, from fiscal year 2019, TEL has decided to have the Compensation Committee assess the individual performance of Representative Directors and to reflect this in the individual annual performance-linked compensation amount.

Medium-term performance-linked compensation

TEL has introduced a medium-term performance-linked compensation system in order to link Corporate Director compensation amounts to medium-term corporate value improvements. The payout rate varies between 0% and 150% according to performance goal achievement levels for the three-year period covered, relative to a base amount calculated based on the position and responsibilities of each Corporate Director. The consolidated operating margin and consolidated ROE are used as performance indicators.

Process for evaluating the effectiveness of the Board of Directors and management issues

TEL discusses and evaluates the effectiveness of the Board of Directors every year in accordance with the TEL Corporate Governance Guidelines. This fiscal year, TEL again conducted a questionnaire of all directors and Audit & Supervisory Board members regarding the effectiveness of the Board of Directors, the Nomination Committee, and the Compensation Committee. In addition to the results of this questionnaire, exchange of opinion and deliberation was held, mainly among outside directors and outside Audit & Supervisory Board members, which was shared with the whole Board of Directors in order to evaluate the effectiveness of the Board of Directors. For this questionnaire, in its effort to obtain highly objective supervisory insight and evaluation, the company seeks perspective and input from external consultants, and analyzes the results. Issues which became apparent as a result of analysis and evaluation are debated in depth by the Board of Directors, and efforts are taken to make improvements as appropriate. Based upon this, TEL believes that the Board of Directors, including the Nomination Committee and Compensation Committee, is functioning effectively and fulfilling its role as stipulated in the TEL Corporate Governance Guidelines "Establishing management strategy and vision," "Making major operational decisions based on strategic direction," and "Engaging in constructive, open-minded debate."

Management issues identified through the process of evaluating effectiveness are discussed at Board of Directors meetings by Corporate Directors and Audit & Supervisory Board members with a diversity of opinions and experience. Aside from Board of Directors meetings, separate off-site meetings are also held as an opportunity for focused discussion away from individual matters for resolution.



Off-site meetings are held at outside facilities.

Risk management

Approach to risk management

Reflecting changes in society and the business environment, the risks facing businesses are growing increasingly complex and diverse. TEL considers understanding and appropriately addressing the risks that it may face in its businesses, as well as their impacts, to be a crucial factor to sustainable corporate growth.

Risk management system

In order to promote more effective risk management, TEL carries out enterprise risk management through a body established within the General Affairs Department at its headquarters. This body supervises risk management, analyzing a wide range of risks arising in business activities (such as compliance risk, human resource and labor risk, and business continuity risks) to identify key risks. It then monitors the management of these risks by the respective departments responsible and supports their risk management activities. The status of these activities is regularly reported to the Board of Directors and the Audit & Supervisory Board.

Auditing by the internal audit department

The Global Audit Center serves as the internal audit department for the entire Group and implements audits based on the audit plan. Based on the results of these audits, the Center then gives instructions for making improvements as needed, follows up on progress toward these improvements and provides support. The Group's internal control over financial reporting in fiscal 2019 was evaluated as effective by the independent auditors.

Risk Management Initiatives

Each year, we set priority management targets and strive to steadily reduce risk. In fiscal 2019, we reinforced measures in the following areas.

Compliance

We appointed people responsible for compliance at key overseas bases and established a system whereby they report the progress of compliance-related activities to the Group headquarters each month. In addition, compliance risk audits are conducted through systematic visits to overseas subsidiaries.

Business Continuity Plans (BCPs)

TEL is improving its plans based on lessons from past disasters and is surveying the earthquake risks at its overseas locations. We are also working, on an ongoing basis, to establish alternate production structures within our network and to develop multiple sources of important parts.

Mental health, long work hours, and harassment

TEL carries out mental health-related measures based on employee stress checks and multiple seminars aimed at helping managers look after their employees. In addition, we have introduced a mechanism to monitor excessive work hours that lead to health risks. TEL also holds harassment prevention seminars led by lawyers.

Management of confidential information

The Human Resources Department and the Intellectual Property Department cooperate to strengthen measures to prevent leaks of confidential information, particularly targeting employees who leave the company to ensure the proper return and destruction of confidential information.

Compliance

Approach to compliance

Stakeholder trust is essential to business activities. In order to maintain this trust, it is essential to ensure compliance and enhance corporate ethics continuously. The Fundamental Policies concerning Internal Controls within the Tokyo Electron (TEL) Group and TEL's Code of Ethics (Code of Ethics) stipulate that all TEL Group executives and employees must comply with laws and regulations and act with high ethical standards and a strong awareness of compliance.

Compliance systems and initiatives

Compliance system

TEL has built a structure to implement its compliance program globally. Under the head of the Legal, Compliance Division, compliance representatives have been newly appointed at major overseas bases to create a system for direct reporting through the chain of command to the Legal, Compliance Division. The company has restructured its compliance system. Specifically, compliance-related issues are immediately reported by the head of the Legal, Compliance Division to the CEO, Board of Directors, and the Audit & Supervisory Board so that they can be addressed quickly and effectively.

Corporate ethics

TEL has established the Code of Ethics as a standard of conduct by which employees and executives should abide. To ensure awareness of this code, we distribute it in the form of booklets in Japanese and four other languages to all employees. TEL revises its Code of Ethics as needed, in response to changes to external and internal conditions. In addition, an Ethics Committee has been established to support and supervise the activities of Group companies in Japan and overseas aimed at more effectively promoting and raising awareness of compliance and corporate ethics. Furthermore, directors, officers, and senior executives sign an oath to uphold the Code of Ethics and comply with corruption-related laws every year.

Compliance regulations

Based on its Code of Ethics, each Group company in Japan and abroad has established its own compliance regulations to ensure that every individual taking part in the business activities of the Group clearly understands the pertinent laws, regulations and internal company rules, and consistently apply these in all of their activities.

Compliance education

TEL conducts online education and face-to-face training on topics including corporate ethics and the basics of compliance, export compliance, insider trading prevention, the Act for Subcontracting, and the prevention of harassment. Depending on the topic, this education is implemented for specific levels or across the board. We also implement ongoing testing to check the degree of understanding among employees. From fiscal year 2020, we will deploy a more comprehensive, systematic education program, advancing multilingual support in an effort to foster compliance awareness and reinforce behavior-oriented awareness-building activities among all Group employees.



Percentage of employees who have received web-based training

99.2%

Internal reporting system

As a means for employees to provide information outside the chain of command about behavior that may be in violation of laws or corporate ethics, we have established a hotline (organized around the tenets of confidentiality, anonymity, and prohibition of retribution) to receive internal reports. In addition, we established an external contact point for employees and another contact point specifically for suppliers and third parties. Each overseas location has its own internal reporting hotline, and we are building a unified internal reporting system for all overseas bases.

As a result of these initiatives, in fiscal year 2019, there were no reports or cases of noncompliance with laws, regulations, or the Code of Ethics that could have had a material impact on the TEL Group's business or local communities.

Respect for human rights

TEL's stance on human rights

Conscious of its corporate social responsibility, Tokyo Electron (TEL) recognizes that it is important to conduct itself with a strong sense of integrity. Based on this recognition, TEL has firmly upheld human rights since its founding as reflected in the spirit of its Corporate Philosophy and Management Policies. For TEL, respecting human rights means a significant undertaking, not only to fulfill its responsibility for eliminating adverse impacts on people caused through business activities, but to respect those people who support the company's business activities, and contribute to the realization of a sustainable dream-inspiring society. TEL incorporates the concept of respect into every aspect of its business activities, and strives to nurture a dynamic corporate culture where each person can realize his or her full potential.

Commitment

In fiscal year 2018, TEL published its Human Rights Policy, summarizing the company's approach to human rights in business. TEL has specified the human rights it believes are particularly important in business activities as Freedom; Equality & Non-Discrimination; Freely Chosen Employment; Product Safety & Workplace Health and Safety; Freedom of Association; and Appropriate Working Hours & Breaks/Holidays/Vacations. In preparing the Human Rights Policy, the company referred to the United Nations' Guiding Principles on Business and Human Rights in addition to the International Bill of Human Rights and the ILO Declaration on Fundamental Principles and Rights at Work which are referred to therein. Additionally, in order to understand the demands of the times and human rights issues in the industry, the company also refers to the Ten Principles of the UN Global Compact and the Responsible Business Alliance (RBA*) Code of Conduct.

Awareness and education

TEL is implementing on-site efforts to communicate principles relating to human rights not only within the company, but also with its suppliers. In fiscal year 2019, TEL also implemented a human rights e-learning program targeting all TEL executives and employees.



Impact assessment and remediation (Human rights due diligence)

TEL is currently identifying and evaluating risks and impacts relating to human rights and, based on the results, is promoting corrective action aimed at eliminating those risks. Within the company, it utilizes self-assessment questionnaire (SAQ) based on the RBA Code of Conduct and, for suppliers conducts a CSR survey in order to evaluate human rights risks throughout the value chain. It analyzes and evaluates the results of these surveys conducted once per year, and implements corrective action as required. By continuing the impact assessment and remediation process in the future, the company will eliminate medium- to long-term human rights risks, leading to the creation of opportunities.

Grievance mechanism

TEL has constructed a framework for impact assessment and remediation, and is striving to establish an effective business-level grievance mechanism. To date, the company has established hotlines in Japan and overseas for employees and suppliers, and it continues to develop initiatives for grievance mechanism in-house and in the supply chain.



* Responsible Business Alliance (RBA): The RBA establishes a set of standards for supply chains in the electronics industry for a safe labor environment, to ensure that workers are treated with respect and dignity, and that companies take responsibility for environmental impact in the manufacturing process.

Supply chain management

Supply chain principles and system

Procurement principles and system

The high-value manufacturing that Tokyo Electron (TEL) strives for is based on the functions of all materials and components that make up the products and the pursuit of high quality. TEL values communications with suppliers and seek to grow manufacturing on a global scale with its suppliers based on ongoing trusting relationships.

TEL engages in procurement activities in line with a procurement policy which the company formulated based on the laws, regulations, and social norms of each country as well as the RBA code of conduct, and which it has disseminated internally and to its suppliers. Under the leadership of the TEL Representative Director, President & CEO as the top of the procurement system, issues identified during procurement activities are shared with the manufacturing company presidents' council and the purchasing department manager council for consideration of specific improvements.

Procurement initiatives

CSR procurement

With an aim of keeping track of its suppliers' engagement in CSR activities, TEL has conducted a CSR Survey since fiscal year 2014. The survey is in accordance with the RBA code of conduct. TEL analyzes the responses and provides feedback to suppliers in an effort to build on improvements. In fiscal year 2019, the company made extensive revisions to the survey content based on auditing standards stipulated by the RBA and implemented the survey targeting materials suppliers,¹ from which the company procures parts and raw materials for products.

According to the survey results, no suppliers were engaged in any of the practices given particular emphasis in the RBA code of conduct, namely child labor, forced labor, bonded labor, inhumane treatment, false reports, falsification of records, or bribery. Neither were any suppliers of a sufficient size² to be considered high risk in terms of compliance.

Furthermore, from fiscal year 2019, the company has begun surveying staffing and logistics suppliers, focusing on major logistics/customs clearance operators.

Supply chain CSR process



Responsible procurement of minerals (conflict minerals)

TEL regards taking action against conflict minerals (3TG)³ obtained through illegal exploitation, including sources with human rights violations or poor working conditions, an important part of corporate social responsibility. The company's resolute goal is to eliminate the use of raw materials made from these conflict minerals as well as any parts or components containing them.

In fiscal year 2019, TEL conducted its fifth annual survey on countries of origin and smelters of potential conflict minerals, using the reporting template (CMRT)⁴ developed by the RMI.⁵ As a result, TEL identified 253 RMAP⁶ conformant smelters, providing the company confidence that 3TG sourced from these smelters were conflict-free. None of the materials procured were found to contain conflict-affected 3TG.

Procurement BCP

As part of its Business continuity plans (BCP), TEL collaborates with suppliers for disaster preparation. The company maintains a database of suppliers' production sites so that if a crisis arises, it can promptly identify impacted suppliers and quickly collaborate in recovery efforts. During fiscal year 2019, about 18,000 supplier sites were registered, and post-disaster impact surveys were conducted seven times.

In addition, for key suppliers accounting for more than 80% of the TEL's procurement spend, it conducts a BCP survey, analyzes their responses, and gives the results to suppliers as feedback to promote further improvement. In the fiscal year 2019 survey, improvements in overall rating level were observed at 19% of suppliers and improvements in the overall raw score were seen at 42%.

¹ Suppliers accounting for more than 80% of TEL's procurement spend
² 500 employees or more

³ 3TG: Tantalum, tin, tungsten, and gold

⁴ Responsible Minerals Initiative (RMI): An organization that inspects 3TG smelters to certify they do not have conflict minerals

⁵ CMRT: Conflict Minerals Reporting Template

⁶ Responsible Minerals Assurance Process (RMAP): A program promoted and led by the RMI for auditing smelters/refiners that do not use conflict minerals

Environmental management

Environmental management system

To continuously improve its environmental activities, TEL has operated an environmental management system based on ISO 14001 since 1997, primarily at its manufacturing subsidiaries. In March 2017, TEL acquired multi-site ISO 14001 certification for its factories and offices in Japan that had previously acquired certification separately. Coinciding with the multi-site certification, the company has developed a standardized Group format for environmental impact assessments, the identification of useful environmental aspects, environmental management programs, and internal audit checklists. During fiscal year 2019, TEL established approximately 100 environmental goals for different levels across the entire company and carried out these improvement activities. Progress of activities and compliance with laws and regulations are confirmed through internal audits and third-party audits. The issues identified through these activities are reviewed by the EHS Council, reported to the Manufacturing Company Presidents' Council, and used in promoting environmental activities across the entire TEL Group. Under such a management system, fiscal year 2019 was again free from environmental incidents, accidents, violations, and associated legal proceedings.

ISO 9001 certified factories and offices

| Company name | Factory/Office name | Certification date |
|-------------------------------------|--|--------------------|
| Tokyo Electron | EHS Promotion Center (Fuchu Technology Center) | May 1998 |
| Tokyo Electron Technology Solutions | Yamanashi Office (Fujii/Hosaka) Tohoku Office | |
| Tokyo Electron Kyushu | Koshi/Ozu Office | |
| Tokyo Electron Miyagi | Taiwa Office | |
| Tokyo Electron (Kunshan) | — | March 2013 |
| TEL FSI | — | March 2013 |
| Tokyo Electron Korea | Balan Factory | July 2014 |
| TEL Epion | — | May 2018 |

Initiatives to prevent global warming and save energy

Each TEL plant and office has an established goal of reducing energy consumption by at least 1% year-over-year. Initiatives to achieve this goal include energy-saving cleanroom operation, appropriate temperature settings for office cooling and heating, the introduction of highly energy-efficient equipment, and the adoption of renewable energies.

As a result of these initiatives, in fiscal year 2018, TEL reduced energy consumption per unit sales at its plants and offices by 5% year-over-year. However, an increase in its volume of production and an increase in energy consumption associated with product development and evaluation resulted in power consumption of 306 GWh in fiscal year 2018, up 8% year-over-year; and energy-derived CO₂ emissions* of 159 kilotons, up 5% year-over-year. Based on the correlation between business operations and energy use, TEL changed to an appropriate metric at plants and offices in Japan, and standardized it across the company. Specifically, the company adopted a metric calculated using a complex weighting of data from each area on the number of evaluation units used in development, the number of units produced, total floor area and staff-hours. Of all 11 of its plants and offices, both those overseas plus those in Japan that had set goals based on this method, goals were achieved at five of them.

■ Example initiative 1

When Tokyo Electron Kyushu produces pure water, it was heating the water first, using a gas boiler, because the water temperature was too low. Then, after the pure water had been used, it was disposed of while the temperature was still high. Using heat exchange between the two types of water enabled the elimination of the addition of heat before preparation of pure water, whereby it was possible to reduce the volume of boiler gas use by 70% or more.

■ Example initiative 2

Tokyo Electron Miyagi is reusing waste oil from the staff cafeteria to produce biofuel, equivalent to approximately 500 kg/month in terms of CO₂. In the future, they plan to use the biofuel produced in company cars.

Renewable energy initiatives

TEL promotes the use of renewable energies. At the Tokyo Electron Miyagi (Taiwa) and Tokyo Electron Technology Solutions (Yamanashi), renewable energy generated from solar panels is used to power the factories, and monitors displaying their energy profile have been set up at the entrances to the factories. At its Tokyo Electron Kyushu (Koshi), generated energy is sold, helping to prevent global warming. In fiscal year 2019, TEL generated a total of 4,392 MWh of renewable energy in Japan. In addition, Tokyo Electron U.S. Holdings has continued to purchase green power, 3,834 MWh in fiscal year 2019.

* In calculating CO₂ emissions, the emission factor for TEL's electricity consumption in Japan in fiscal year 2019 was substituted by adjusted emission factors for the electrical power providers concerned. The emission factor for TEL's overseas electricity consumption was substituted by estimated factors calculated by the Federation of Electric Power Companies of Japan based on values published by the International Energy Agency (IEA)

Initiatives to reduce water consumption

With the growing importance of water resource preservation in global environmental initiatives, TEL Group has established a goal of keeping water consumption at the same level or below that of the baseline year (fiscal year 2012 for factories and offices in Japan and a fiscal year of their choosing for each overseas operation). TEL's ongoing efforts to achieve these goals include reusing pure water from its manufacturing operations, installing water-saving devices, watering lawns with rainwater, and implementing the intermittent operation of cafeteria faucets.

During fiscal year 2019, an increase in its volume of production and an increase in water consumption associated with product development and evaluation resulted in water consumption of 1,240,000 m³, up 8% year-over-year. Moreover, TEL achieves 12 of the 14 goals at its sites worldwide. It also discharged an estimated 905,000 m³ of wastewater.

■ Example initiative

In construction of the new development building completed at Tokyo Electron Miyagi in October 2018 (Development Building No. 2), facilities were installed to reuse water which is conventionally disposed of as sewage after processing to remove harmful substances. These water reuse facilities are also able to reuse wastewater from the existing development building. As a result, they expect to reuse approximately 15,000 m³ of water annually.

Initiatives to reduce waste

In an effort to curb the amount of waste generated and to recycle it wherever possible, TEL Group promotes initiatives for reducing waste. In addition to participating in the electronic manifest system¹ to ensure proper waste management, TEL is also engaged in maintaining an appropriate amount of parts inventory and in reusing cushioning material. The company is also achieving lower waste processing costs, by promoting waste sorting activities and by modifying and increasing the capacity of space used for storing waste so as to reduce the frequency that it is collected. In fiscal year 2019, the company conducted checks of waste disposal operators in Japan using a unified on-site checklist and shared the results. In fiscal year 2019, TEL generated 116 tons of incinerated and landfill waste in Japan. As a result of its waste-reduction initiatives, the recycling rate² at sites in Japan in fiscal year 2019 was 99.2%, achieving its goal of maintaining a recycling rate of 97% or higher for the 13th consecutive year since fiscal year 2007. The company has also maintained a high level of recycling at its overseas factories and offices of 90.0%.

■ Example initiative 1

Tokyo Electron Taiwan revised its method of disposing sludge, which had been processed as landfill, to recycle it as material for cement, thereby increasing the base's recycling rate to 99%. Furthermore, the revision allowed them to significantly reduce the processing cost.

■ Example initiative 2

As one aspect of reducing waste, the company is also proactively working to reduce the amount of copier paper used. Some factories and offices are switching from using paper to tablets for viewing and checking procedures and plans used at manufacturing sites. As a result of this initiative, the company not only reduced the amount of paper used, it also expects to reduce the environmental burden and cost of toner, shredder, and paper disposal.

Management of chemical substances

TEL uses chemical substances in its product development and manufacturing phases. The use and release of chemical substances subject to the Japanese PRTR³ law are constantly monitored and managed. Whenever TEL introduces a new chemical substance or change the way an existing substance is used, the company checks for environmental, health, and safety risks beforehand. It disposes of substances properly after use, either through expert waste disposal contractors or by using in-house processing equipment. In response to the Act on Rational Use and Proper Management of Fluorocarbons, TEL conducts simple, regular inspections based on the law in an effort to monitor the amount of fluorocarbons used and recovered. During fiscal year 2019, no TEL factories or offices exceeded the level of fluorocarbon leakage that requires reporting.



Recycling rate
99.2%

¹ Electronic manifest system: A system for electronically tracking the flow of industrial waste instead of using paper-based manifests (i.e. paper forms for tracking industrial waste). The system uses a communications network of data processing centers, businesses that generate waste, and waste collection/disposal companies.

² Recycling rate: (Recycled amount/Amount of waste generated) x 100

³ Pollutant Release and Transfer Register (PRTR): A framework for tracking, tabulating, and disclosing quantitative data on chemical substances that may be hazardous to human health and the ecosystem, including the amounts used and discharged into the environment and the amounts transferred (as part of waste) off the original business's premises

Social contribution activities

Approach to social contribution

The social contribution activities of Tokyo Electron (TEL) aim to contribute to the development of local communities and the resolution of social issues through various initiatives while deepening relationships of trust with all stakeholders. With Innovation and Technology, Education, Environment, and Community Involvement as its four focus areas, TEL conducts activities according to the United Nations SDGs.

4 focus areas and relevant SDGs

| | | | |
|---|---|---|---|
|  <p>Innovation and Technology</p> |  <p>Education</p> |  <p>Environment</p> |  <p>Community involvement</p> |
|   |   |   |   |
|  | | | |

TEL FOR GOOD.

TEL FOR GOOD is the new brand name that represents TEL's social contribution activities. From fiscal year 2019, we are using it as a collective term for social contribution events and various programs, donations and volunteer activities sponsored by our company around the world.



Special Topics

Support for areas affected by torrential rain in western Japan in July 2018 and the Hokkaido Eastern Iburi Earthquake

The number of victims resulting from torrential rain that occurred in western Japan in July 2018 was the largest recorded of all torrential rain disasters for the Heisei era (1989-2019).

In addition, the Hokkaido Eastern Iburi Earthquake that occurred in September of the same year, caused a large amount of damage, and much time is being spent in recovery efforts.


Tokyo Electron (TEL) sincerely hopes that the areas affected can realize a quick recovery, and made relief donations to this end.



Initiatives around the world

Japan Science Intercollegiate


Science Intercollegiate is an event for university and technical college students to present findings of their own research. TEL has been a featured sponsor since the first competition. In providing an opportunity to present their research, the event aims to motivate students to undertake research and to foster richly creative scientists and engineers. The 8th Science Intercollegiate was held at Rikkyo University on March 2-3, 2019, bringing the total number of students presenting their research to more than 1,800 since the event's inception.



America SEMI High Tech U

As an official Certified Partner of SEMI High Tech U, Tokyo Electron America (TEA) participates by dispatching instructors to this three-day program that teaches STEM* skills to high school students who seek to pursue high-tech careers. TEA believes that linking STEM to real-world applications at SEMI High Tech U makes learning more enjoyable for students and contributes to their growth.

*STEM: General name for the educational category of Science, Technology, Engineering, and Mathematics



Europe Corporate partnership activities with educational institutions

Tokyo Electron Europe has participated in corporate partnership activities with educational institutions for six consecutive years since 2015. Through to April 2019, TEL has provided opportunities for 360 teenagers to participate in the program, learning about science and the semiconductor industry while having fun. It was a comprehensive program, where TEL's periodic table was distributed to participants, and finally, a graduation ceremony was held.




China TEL Fudan Scholarship

Tokyo Electron established the TEL Fudan Scholarship Program at the School of Microelectronics at Fudan University in order to nurture human resources and to raise technical standards within China. In 2018, the first award ceremony was held at the school. Six students were presented with scholarships and honorary certificates, and shared their research and accomplishments. Tokyo Electron Shanghai has further expanded research projects with Fudan University, and building on their friendly relations, is working to nurture even more talented graduates.




Japan Afforestation activities for groundwater recharge

Approximately 80% of Kumamoto Prefecture's water supply resources are underground. For Kumamoto City in particular, because 100% of the waterworks are supplied by groundwater, preservation of groundwater is an important activity for securing future water resources. Since 2006, Tokyo Electron Kyushu has been working on broadleaf afforestation suited to groundwater recharge in Nishihara Village, in the outer rim of southern Mount Aso. Up to March 2019, 2,800 employees and family members have planted a total of 4.2 ha with 13,800 trees.



Taiwan Beach cleanup for preserving a beautiful coastline

In June 2017, Tokyo Electron Taiwan held a charity event to coincide with its beach cleanup in Hsinchu City, pledging to make a donation proportionate to the number of participants and the volume of waste collected. On the day of the event, many ordinary residents who happened to be at the beach joined with the more than 150 employees and volunteers, collecting over 300 kg of waste. This resulted in a donation of TWD 450,000, which was given to the National Nantou Special School.



Japan Earthquake memorial event

Since 2013, Miyagi Prefecture and Kahoku Shimpo Publishing Co. have held the 3.11 Earthquake Memorial Event to encourage the prefecture's citizens to move on with positivity without letting the memory of the 2011 Great East Japan Earthquake fade. Endorsing the objective of the event, Tokyo Electron Miyagi has been sponsoring it since 2016. The event featured a cheering performance by the Miyagi Recovery Cheering Squad in collaboration with local children, and a concert by a local singer.



Japan Food Bank Yamanashi, an authorized non-profit organization

Since 2015, as part of its "Community Involvement" activities, Tokyo Electron Technology Solutions Yamanashi Regional Office has been participating in the activities of Food Bank Yamanashi, an authorized non-profit organization that delivers food items to families with children in need of assistance. During summer and winter school holidays, the office donates food items from the employees, with a matching gift of an equivalent amount of money from the company. This endeavor is ongoing.



Performance summary: Social

Composition of employees

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|----------------------------------|--------|--------|--------|--------|--------|
| Number of employees | 10,531 | 10,306 | 10,920 | 11,696 | 12,469 |
| Regular employees (Region/Group) | | | | | |
| Japan | 6,853 | 6,737 | 6,967 | 7,268 | 7,526 |
| Rest of Asia | 1,386 | 1,543 | 1,850 | 2,218 | 2,832 |
| Europe and Middle East | 670 | 440 | 448 | 492 | 513 |
| North America | 1,622 | 1,586 | 1,655 | 1,718 | 1,598 |

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|-----------------------|--------|--------|--------|--------|--------|
| Number of employees | 7,166 | 7,060 | 7,288 | 7,516 | 7,797 |
| Regular employees | 6,853 | 6,737 | 6,967 | 7,268 | 7,526 |
| Men | 5,982 | 5,874 | 6,079 | 6,292 | 6,479 |
| Women | 871 | 863 | 888 | 976 | 1,047 |
| Non-regular employees | 313 | 323 | 321 | 248 | 271 |
| Men | 183 | 201 | 209 | 181 | 220 |
| Women | 130 | 122 | 112 | 67 | 51 |

Recruitment/employment (Japan)

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|---|--------|--------|--------|--------|--------|
| Number hired | 73 | 25 | 72 | 167 | 199 |
| Under 30 yrs old | 73 | 24 | 72 | 163 | 198 |
| Men | 65 | 20 | 70 | 131 | 166 |
| Women | 8 | 4 | 2 | 32 | 32 |
| 30-49 yrs old | 0 | 1 | 0 | 4 | 1 |
| Men | 0 | 1 | 0 | 4 | 1 |
| Women | 0 | 0 | 0 | 0 | 0 |
| Over 50 yrs old | 0 | 0 | 0 | 0 | 0 |
| Men | 0 | 0 | 0 | 0 | 0 |
| Women | 0 | 0 | 0 | 0 | 0 |
| Percentage of women | 11.0 | 16.0 | 2.8 | 19.2 | 16.1 |
| Number hired | 62 | 66 | 279 | 262 | 240 |
| Under 30 yrs old | 11 | 17 | 102 | 102 | 86 |
| Men | 3 | 13 | 85 | 85 | 68 |
| Women | 8 | 4 | 17 | 17 | 18 |
| 30-49 yrs old | 45 | 47 | 170 | 156 | 145 |
| Men | 29 | 31 | 155 | 135 | 119 |
| Women | 16 | 16 | 15 | 21 | 26 |
| Over 50 yrs old | 6 | 2 | 7 | 4 | 9 |
| Men | 4 | 2 | 6 | 3 | 5 |
| Women | 2 | 0 | 1 | 1 | 4 |
| Percentage of women | 41.9 | 30.3 | 11.8 | 14.9 | 20.0 |
| Percentage hired (TEL) | 2.00 | 1.96 | 2.13 | 2.22 | 2.18 |
| Percentage hired (Group) | 1.94 | 1.98 | 1.98 | 1.91 | 2.04 |
| Number of people | 32 | 39 | 42 | 20* | 22* |
| Percentage | 1.3 | 1.5 | 1.6 | 1.8* | 2* |
| Number of users | 74 | 101 | 125 | 156 | 201 |
| Men | 74 | 98 | 123 | 155 | 196 |
| Women | 0 | 3 | 2 | 1 | 5 |
| Number of users | 69 | 49 | 34 | 31 | 30 |
| Men | 59 | 43 | 30 | 30 | 28 |
| Women | 10 | 6 | 4 | 1 | 2 |
| Percentage of regular employees who received regular performance and career evaluations | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

* Grade resetting through global human resources system

Employee retention (Japan)

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|---|----------------|----------------|----------------|----------------|----------------|
| Retention after three years of joining TEL* | 94.2 | 93.6 | 92.9 | 93.4 | 93.0 |
| Men | 95.0 | 94.1 | 94.1 | 94.3 | 93.5 |
| Women | 90.3 | 90.2 | 85.2 | 87.1 | 88.0 |
| Average service years | 16 yrs. 4 mos. | 17 yrs. 0 mos. | 17 yrs. 1 mos. | 17 yrs. 1 mos. | 17 yrs. 2 mos. |
| Men | 16 yrs. 6 mos. | 17 yrs. 2 mos. | 17 yrs. 4 mos. | 17 yrs. 4 mos. | 17 yrs. 5 mos. |
| Women | 15 yrs. 3 mos. | 16 yrs. 0 mos. | 15 yrs. 5 mos. | 15 yrs. 7 mos. | 15 yrs. 8 mos. |
| Employee turnover | 198 | 131 | 102 | 103 | 108 |
| Men | 164 | 94 | 82 | 82 | 88 |
| Women | 34 | 37 | 20 | 21 | 20 |
| Turnover percentage | 2.7 | 1.8 | 1.4 | 1.4 | 1.4 |

* Average in recent five years

Work-life balance (Japan)

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|-----------|-----------|-----------|-----------|------------|
| Annual paid leave | | | | | |
| Take-up rate | 61.8 | 62.6 | 64.1 | 64.3 | 67.2 |
| Number of those who took leave | 1,285 | 1,045 | 586 | 639 | 605 |
| Refreshment leave | | | | | |
| Men | 1,091 | 926 | 499 | 556 | 507 |
| Women | 194 | 119 | 87 | 83 | 98 |
| Paternity leave | | | | | |
| Number of those who took leave | 192 | 172 | 179 | 180 | 155 |
| Number of those who took leave | 52 | 42 | 44 | 41 | 56 |
| Men | 3 | 2 | 2 | 4 | 8 |
| Women (percentage who took leave) | 49 (94.5) | 40 (93.3) | 42 (95.7) | 37 (93.2) | 48 (100.0) |
| Childcare leave | | | | | |
| Number of those who returned to work after leave | 46 | 46 | 44 | 44 | 43 |
| Men | 2 | 1 | 2 | 6 | 6 |
| Women | 44 | 45 | 42 | 38 | 37 |
| Percentage reinstated | 88.5 | 85.2 | 93.6 | 93.6 | 93.5 |
| Retention rate | 94.3 | 91.3 | 95.7 | 90.0 | 88.9 |
| Shorter working hour system | | | | | |
| Number of those who used | 183 | 188 | 170 | 176 | 153 |
| Men | 11 | 13 | 23 | 24 | 8 |
| Women | 172 | 175 | 147 | 152 | 145 |
| Leave to care for a sick/injured child | | | | | |
| Number of those who used | 460 | 453 | 464 | 455 | 517 |
| Men | 246 | 245 | 263 | 281 | 334 |
| Women | 214 | 208 | 201 | 174 | 183 |
| Childcare support leave | | | | | |
| Number of those who took leave | 96 | 103 | 106 | 120 | 129 |
| Men | 24 | 15 | 16 | 19 | 26 |
| Women | 72 | 88 | 90 | 101 | 103 |
| Extended nursing care leave | | | | | |
| Number of those who took leave | 2 | 0 | 2 | 3 | 5 |
| Men | 0 | 0 | 1 | 2 | 2 |
| Women | 2 | 0 | 1 | 1 | 3 |
| Short nursing care leave | | | | | |
| Number of those who took leave | 20 | 31 | 50 | 47 | 63 |
| Men | 11 | 10 | 31 | 25 | 38 |
| Women | 9 | 21 | 19 | 22 | 25 |
| Shorter working hour system for nursing care | | | | | |
| Number of those who used | 1 | 0 | 0 | 0 | 2 |
| Men | 1 | 0 | 0 | 0 | 0 |
| Women | 0 | 0 | 0 | 0 | 2 |

Safety

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|--------|--------|--------|--------|--------|
| Percentage of employees who received training on basic safety | 100 | 100 | 100 | 100 | 100 |
| Percentage of employees who received training on advanced safety | 100 | 100 | 100 | 100 | 100 |
| Lost time incident rate (LTIR) | 0.53 | 0.42 | 0.46 | 0.77 | 0.40 |
| Number of workplace injuries per 200,000 work hours (TCIR) | 0.24 | 0.21 | 0.28 | 0.38 | 0.20 |

Performance summary: Social

Products/Innovation

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|--------------------|--------------|--------------|--------------|--------------|
| Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services | 0 | 0 | 0 | 0 | 0 |
| Number of active issued patents | 16,421 | 16,300 | 16,023 | 16,767 | 17,473 |
| Japan | 5,288 | 5,172 | 4,984 | 5,091 | 5,304 |
| North America | 4,326 | 4,361 | 4,224 | 4,321 | 4,415 |
| Europe | 354 | 241 | 199 | 185 | 179 |
| Korea | 2,847 | 2,784 | 2,672 | 2,864 | 3,076 |
| Taiwan | 1,983 | 2,131 | 2,387 | 2,675 | 2,817 |
| China | 1,623 | 1,611 | 1,557 | 1,631 | 1,682 |
| Active issued patents (country) | | | | | |
| Global patent application rate | CY2013* 69.5 | CY2014* 68.0 | CY2015* 70.0 | CY2016* 76.1 | CY2017* 81.2 |
| Patent application success rate | Japan 74.0 | 78.0 | 66.5 | 71.5 | 82.9 |
| | North America 62.8 | 71.2 | 72.3 | 78.0 | 85.1 |

* Calendar year when patents were filed/granted

Customers

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|--------|--------|--------|--------|--------|
| Percentage of customers who said they were satisfied in the customer satisfaction survey | 80.5 | 81.1 | 82.6 | 81.2 | 85.3 |

Governance

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|---|--------|--------|----------|----------|----------|
| Total number of critical incidents notified to Board of Directors | — | — | 1 | 0 | 0 |
| Total number of incidents subject to legal action on the basis of anti-competitive conduct, anti-trust activity, or monopolistic practices where the governance body's involvement was revealed | 0 | 0 | 0 | 0 | 0 |
| Number of executive officers who received training on anti-corruption* | — | — | 12 | 13 | 0 |
| Total number (percentage) of directors who provided instructions on the body's policies and procedures in relation to anti-corruption* | — | — | 11 (100) | 12 (100) | 12 (100) |
| Total number (percentage) of directors who received training on anti-corruption* | — | — | 9 (81.8) | 9 (75.0) | 0 (0.0) |
| Payment to industry groups, etc. (thousand yen) | — | — | — | 16,616 | 17,374 |
| Payment to politically affiliated organizations (yen) | — | — | — | 0 | 0 |
| Average tenure of directors | — | — | — | 8.04 | 7.36 |
| Average rate of attendance for board meetings | — | — | — | 99.46 | 98.24 |

* Scope: Japan

Compliance

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|--------|--------|--------|--------|--------|
| Percentage of employees who have received web-based training on business ethics and compliance* | 99.7 | 98.4 | 98.0 | 99.4 | 99.2 |
| Percentage of employees who have consented to the information security agreement | 100 | 99.9 | 99.9 | 99.9 | 100.0 |
| Significant fines and non-monetary sanctions for noncompliance with laws and regulations in the social and economic area | 0 | 0 | 0 | 0 | 0 |

* Scope: Japan

Procurement

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|--------|--------|--------|--------|--|
| Percentage of new important suppliers screened using social criteria | — | 100 | 100 | 100 | 100 |
| Rate of improvement after supply chain CSR assessment (including green procurement survey from fiscal year 2016) | 25.3 | 33.8 | 16.9 | 20.7 | Unable to compare with previous fiscal year due to comprehensive revisions, including the survey |
| Rate of improvement after supply chain BCP assessment | 41.2 | 26.5 | 32.3 | 21.2 | 19.4 |
| Number of identified RMAP conformant smelters | 117 | 204 | 237 | 249 | 253 |

Social contribution

| | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|--------|--------|--------|--------|--------|
| Spending on social contribution (million yen) | 184 | 277 | 242 | 238 | 281 |
| Charity donations (providing donations/relief supplies to charity organizations) | 2 | 14 | 17 | 13 | 11 |
| Cash donations breakdown | | | | | |
| Community investment (charitable expenses for long-term cause for community) | 47 | 52 | 43 | 49 | 55 |
| Commercial initiatives (charitable expenses with anticipated effects on business growth) | 51 | 34 | 40 | 38 | 34 |

Performance summary: Environment

The scope for calculating environmental data is the Tokyo Electron Group (34 consolidated subsidiaries).

Within Japan: Tokyo Electron Ltd. and six consolidated subsidiaries (including Tokyo Electron Technology Solutions Ltd., Tokyo Electron Kyushu Ltd., Tokyo Electron Miyagi Ltd., and Tokyo Electron FE Ltd.)

Overseas: 27 consolidated subsidiaries (including Tokyo Electron America, Inc., Tokyo Electron Europe Ltd., Tokyo Electron Korea Ltd., Tokyo Electron Taiwan Ltd., Tokyo Electron (Shanghai) Ltd., and Tokyo Electron Singapore Pte. Ltd.)

Greenhouse gas consumption/emissions

☑ denotes data with third-party assurance.

| | Scope | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|---|---|--------|--------|--------|--------|--------|
| CO ₂ from energy consumption | Emissions metric (sales) (t-CO ₂ /billion yen) | 2.61 | 2.22 | 1.77 | 1.34 | 1.24 |
| | Emissions (kt-CO ₂) | 160 | 148 | 141 | 152 | 159 |
| | Japan | 126 | 115 | 110 | 119 | 127 |
| | Overseas | 35 | 33 | 31 | 33 | 32 |
| | Scope 1 ¹ emissions (kt-CO ₂) | 10 | 8 | 8 | 9 | 9 |
| CO ₂ by scope | Japan, energy-derived | 7 | 6 | 6 | 7 | 7 |
| | Overseas, energy-derived | 3 | 2 | 2 | 2 | 2 |
| | Scope 2 ² emissions (kt-CO ₂) | 151 | 140 | 133 | 143 | 150 |
| | Japan | 119 | 109 | 104 | 112 | 120 |
| | Overseas | 31 | 30 | 29 | 31 | 30 |
| Non-energy-derived greenhouse gas | Scope 3 ³ emissions (kt-CO ₂) | 3,566 | 3,491 | 4,028 | 5,855 | 6,467 |
| | Emissions (kt-CO ₂ e) (Japan) | 22 | 33 | 28 | 26 | 47 |
| | HFCs | 2 | 1 | 3 | 3 | 3 |
| | PFCs | 6 | 8 | 8 | 11 | 18 |
| | SF ₆ | 14 | 17 | 9 | 4 | 11 |
| Other | 0.01 | 6 | 8 | 8 | 15 | |
| Scope 1 ⁴ emissions (kt-CO ₂ e) | 10 | 12 | 9 | 8 | 15 | |

1 Scope 1: Direct GHG emissions from use of fuel and gas owned or controlled by TEL.

Calculation method: Emissions = Σ (fuel consumed × CO₂ emission factor)

Emission factor based on Japan's Act on Promotion of Global Warming Countermeasures

2 Scope 2: Indirect GHG emissions from use of electricity purchased by TEL.

Calculation method: Emissions = Σ (purchased electricity × CO₂ emission factor)

Adjusted emission factors for the electrical power providers concerned based on Japan's Act on Promotion of Global Warming Countermeasures were used as the emission factor for Japan

Estimated factors calculated by The Federation of Electric Power Companies of Japan based on values published by the International Energy Agency (IEA) were used as the emission factor for overseas electricity consumption

3 Scope 3: Emissions from corporate value chains (excluding scope 1 and 2 emissions), such as product transportation, employee business travel, and major outsourced production processes.

The entire scope is divided into 15 categories, of which calculations were made for categories 1, 2, 3, 4, 5, 6, 7, 9, 11, and 12. Calculations for categories 8, 10, 13, 14, and 15 were not made as they are either not included in TEL's activities, or have already been included in other categories.

4 Scope 1: Non-energy-derived CO₂ and greenhouse gases other than CO₂.

Calculation method: Emissions = Σ (consumption × emission per unit consumption - amount recovered/properly treated)

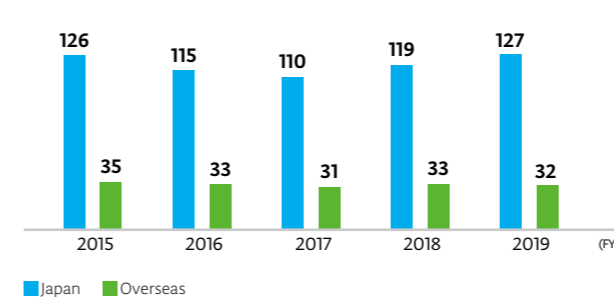
Resource consumption

☑ denotes data with third-party assurance.

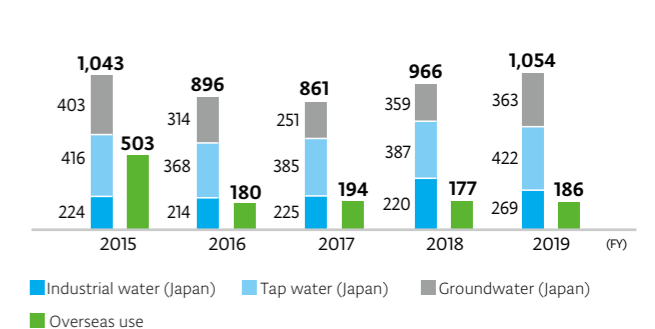
| | Scope | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--------------|--|--------|--------|--------|--------|--------|
| Water | Consumption (thousand m ³) | 1,546 | 1,076 | 1,055 | 1,143 | 1,240 |
| | Japan* | 1,043 | 896 | 861 | 966 | 1,054 |
| | Groundwater | 403 | 314 | 251 | 359 | 363 |
| | Tap water | 416 | 368 | 385 | 387 | 422 |
| | Industrial water | 224 | 214 | 225 | 220 | 269 |
| Overseas | 503 | 180 | 194 | 177 | 186 | |
| Copier paper | Use (t) (Japan) | 162 | 128 | 157 | 194 | 165 |

* With regard to water consumption in Japan, past figures have been revised based on the actual situation.

CO₂ emissions from energy consumption (kt-CO₂)



Water consumption (thousand m³)



Performance summary: Environment

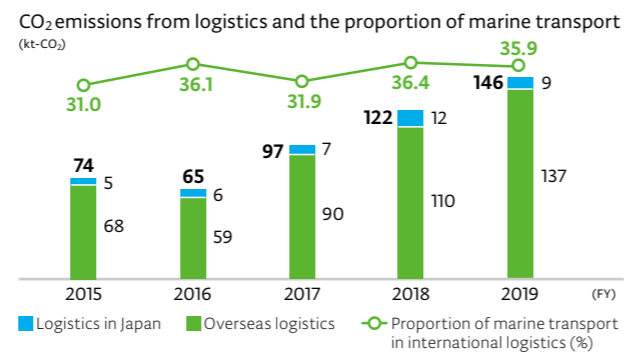
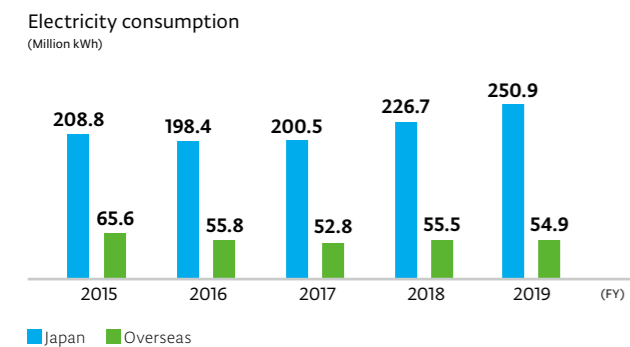
Energy consumption/generation

| Scope | | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|----------------------------|--|---------|---------|---------|---------|---------|
| Energy | Consumption metric (energy consumption/sales) (kL/billion yen) | 1.2 | 1.02 | 0.84 | 0.66 | 0.63 |
| | Consumption (crude oil equivalent) (kL) | 73,421 | 67,499 | 67,457 | 75,033 | 80,918 |
| | Japan | 54,973 | 52,002 | 52,676 | 59,613 | 65,757 |
| | Overseas | 18,448 | 15,497 | 14,781 | 15,420 | 15,161 |
| Electricity | Consumption (MWh) | 274,368 | 254,201 | 253,300 | 282,274 | 305,795 |
| | Japan | 208,753 | 198,404 | 200,547 | 226,747 | 250,911 |
| | Overseas | 65,615 | 55,797 | 52,753 | 55,527 | 54,884 |
| Gas | Consumption (crude oil equivalent) (kL) | 3,501 | 2,748 | 2,877 | 3,083 | 2,991 |
| | Japan | 1,929 | 1,602 | 1,666 | 1,947 | 1,948 |
| | Overseas | 1,572 | 1,146 | 1,211 | 1,136 | 1,043 |
| Fuel | Consumption (crude oil equivalent) (kL) | 871 | 706 | 797 | 875 | 915 |
| | Japan | 870 | 706 | 796 | 874 | 915 |
| | Overseas | 1 | 0 | 1 | 1 | 0 |
| Green power | Purchase (MWh) | 2,405 | 3,833 | 3,334 | 3,458 | 3,834 |
| | Japan | 0 | 0 | 0 | 0 | 0 |
| | Overseas | 2,405 | 3,833 | 3,334 | 3,458 | 3,834 |
| PV power generation system | Power generation (MWh) | 4,559 | 4,486 | 4,436 | 4,414 | 4,392 |
| | Japan | 4,536 | 4,486 | 4,436 | 4,414 | 4,392 |
| | Overseas | 23 | 0 | 0 | 0 | 0 |
| Power sales | Power sales (MWh)* | 1,337 | 1,331 | 1,346 | 1,386 | 1,382 |
| | Japan | 1,337 | 1,331 | 1,346 | 1,386 | 1,382 |
| | Overseas | 0 | 0 | 0 | 0 | 0 |

* Heating, cooling and steam not sold

Environmental impact of logistics

| Scope | | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|--|---------------------------------|--------|--------|--------|--------|--------|
| CO ₂ | Emissions (kt-CO ₂) | 74 | 65 | 97 | 122 | 146 |
| | Japan | 5 | 6 | 7 | 12 | 9 |
| | Overseas | 68 | 59 | 90 | 110 | 137 |
| Proportion of marine transport (international) | | 31.0 | 36.1 | 31.9 | 36.4 | 35.9 |



Amount of waste generated

| Scope | | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|---------------------------------------|---|--------|--------|--------|--------|--------|
| Waste | Amount generated (t) | 10,064 | 8,384 | 12,318 | 14,435 | 14,960 |
| | Japan | 8,858 | 7,721 | 11,393 | 13,694 | 14,208 |
| | Overseas | 1,206 | 663 | 925 | 741 | 752 |
| Specially controlled industrial waste | Amount generated (t) (Japan) | 2,842 | 2,125 | 3,683 | 4,904 | 6,619 |
| | Recycled amount (t) | 9,828 | 8,182 | 12,128 | 14,211 | 14,770 |
| Recycling | Japan | 8,764 | 7,599 | 11,281 | 13,561 | 14,092 |
| | Overseas | 1,064 | 583 | 847 | 650 | 678 |
| Incinerated and landfill waste | Amount of waste (t) | 236 | 202 | 190 | 224 | 190 |
| | Japan | 94 | 122 | 112 | 133 | 116 |
| | Overseas | 142 | 80 | 78 | 91 | 74 |
| Water discharges | Water discharge volume (thousand m ³) | — | 904 | 874 | 905 | 1,006 |
| | Japan | — | 750 | 709 | 759 | 850 |
| | Overseas | — | 154 | 165 | 146 | 156 |

Chemical substances consumption/emissions (Japan)

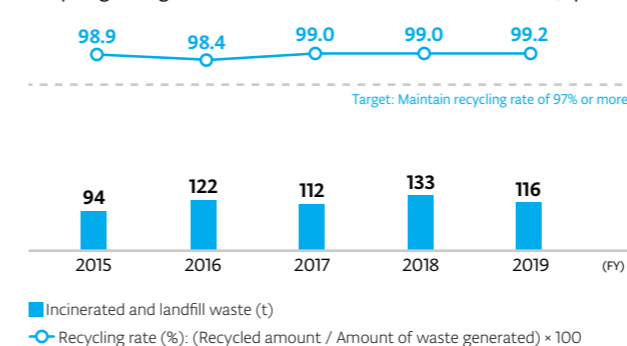
| Scope | | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|---|---|--------|--------|--------|--------|--------|
| PRTR Class I designated chemical substances | Volume handled (t) | 48 | 35 | 64 | 100 | 101 |
| | Ferric chloride | 38 | 21 | 33 | 82 | 84 |
| | Hydrogen fluoride and its water-soluble salts | 7 | 9 | 25 | 12 | 11 |
| | Methylnaphthalene | 2 | 4 | 5 | 5 | 5 |
| | Other | 1 | 1 | 1 | 1 | 1 |
| | Amount transported (waste amount) (t) | 46 | 31 | 59 | 95 | 96 |
| NOx | Emissions (t) | 2 | 4 | 5 | 5 | 5 |
| | Consumption (t) | 2 | 4 | 5 | 5 | 5 |
| SOx | Emissions (t) | 12 | 7.5 | 7.9 | 11.5 | 9.6 |
| | Emissions (t) | 2.7 | 2.2 | 2.5 | 2.7 | 2.8 |

Other

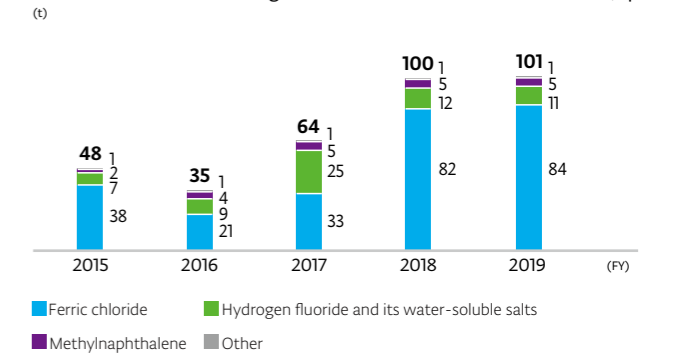
| Scope | | FY2015 | FY2016 | FY2017 | FY2018 | FY2019 |
|------------------------------------|--|--------|--------|--------|--------|--------|
| ISO 14001 | Number of certified offices | 8 | 7 | 8 | 9 | 9 |
| | Japan | 4 | 4 | 5 | 5 | 5 |
| | Overseas | 4 | 3 | 3 | 4 | 4 |
| Biodiversity | Number of ecosystem tours* | 13 | 15 | 18 | 22 | 17 |
| | Number of ecosystem tour participants* | 69 | 281 | 396 | 718 | 595 |
| Environmental laws and regulations | Number of breaches of environmental laws and regulations | 0 | 0 | 0 | 0 | 0 |
| | Amount of fines on legal breaches | 0 | 0 | 0 | 0 | 0 |
| Total product shipment (t)* | | 13,596 | 17,342 | 20,445 | 34,110 | 32,715 |


* Scope: Japan

Recycling rate/generation of incinerated and landfill waste in Japan



Volume of PRTR Class I designated chemical substances handled in Japan (t)





デロイト トーマツ
(TRANSLATION)

Independent Practitioner's Assurance Report

Mr. Toshiki Kawai,
Representative Director, President & CEO,
Tokyo Electron Ltd.

June 21, 2019

Masahiko Sugiyama
Representative Director
Deloitte Tohmatsu Sustainability Co., Ltd.
3-2-3, Marunouchi, Chiyoda-ku, Tokyo

We have undertaken a limited assurance engagement of the CO₂ Emissions from Energy Consumption in Japan and the Water Consumption in Japan indicated with ✓ for the year ended March 31, 2019 (the "Quantitative Environmental Information") included in the "TOKYO ELECTRON SUSTAINABILITY REPORT 2019" (the "Report") of Tokyo Electron Ltd. (the "Company").

The Company's Responsibility
The Company is responsible for the preparation of the Quantitative Environmental Information in accordance with the calculation and reporting standard adopted by the Company (indicated with the Quantitative Environmental Information included in the Report). CO₂ quantification is subject to inherent uncertainty for reasons such as incomplete scientific knowledge used to determine emissions factors and numerical data.

Our Independence and Quality Control
We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. We apply International Standard on Quality Control 1, *Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements*, and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our Responsibility
Our responsibility is to express a limited assurance conclusion on the Quantitative Environmental Information based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements ("ISAE") 3000, *Assurance Engagements Other than Audits or Reviews of Historical Financial Information*, issued by the International Auditing and Assurance Standards Board ("IAASB"), ISAE 3410, *Assurance Engagements on Greenhouse Gas Statements*, issued by the IAASB and the *Practical Guideline for the Assurance of Sustainability Information*, issued by the Japanese Association of Assurance Organizations for Sustainability Information. The procedures we performed were based on our professional judgment and included inquiries, observation of processes performed, inspection of documents, analytical procedures, evaluating the appropriateness of quantification methods and reporting policies, and agreeing or reconciling with underlying records. These procedures also included the following:

- Evaluating whether the Company's methods for estimates are appropriate and had been consistently applied. However, our procedures did not include testing the data on which the estimates are based or reperforming the estimates.
- Undertaking site visits to assess the completeness of the data, data collection methods, source data and relevant assumptions applicable to the sites.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement.

Limited Assurance Conclusion
Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Quantitative Environmental Information is not prepared, in all material respects, in accordance with the calculation and reporting standard adopted by the Company.

The above represents a translation, for convenience only, of the original Independent Practitioner's Assurance report issued in the Japanese language.

Member of
Deloitte Touche Tohmatsu Limited

Corporate profile

Corporate profile

| | | |
|---|--|------------------------------|
| <p>Company name: Tokyo Electron Limited</p> <p>Address: Akasaka Biz Tower 3-1 Akasaka 5-chome, Minato-ku, Tokyo 107-6325, Japan</p> <p>Established: November 11, 1963</p> <p>Representative: Toshiki Kawai Representative Director, President & CEO</p> | <p>Main business: Semiconductor production equipment business, flat panel display (FPD) production equipment business</p> <p>Capital: 54,961 million yen</p> <p>Number of employees: 13,021 (consolidated) 1,559 (non-consolidated)</p> <p>Number of locations: Japan: 7 companies at 27 locations Outside Japan: 27 companies at 50 locations in 16 countries and regions Worldwide total: 34 companies at 77 locations in 17 countries and regions</p> | <p>(as of April 1, 2019)</p> |
|---|--|------------------------------|

Financial data

Earnings Release

[URL](http://www.tel.com/ir/library/report/) <http://www.tel.com/ir/library/report/>

Securities Report

[URL](https://www.tel.co.jp/ir/library/fs/) <https://www.tel.co.jp/ir/library/fs/>

Tokyo Electron's logo



Our logo was created as a symbol for Tokyo Electron's next stage of growth, based on our corporate philosophy and vision.

This simple design represents our reliability and the engaging presence we bring to a competitive industry. The green square at the center of the logo signifies the core of innovation supporting development in industry; the translucent blue expresses Tokyo Electron's leading-edge advanced technology.

We contribute to the development of a dream-inspiring society through our leading-edge advanced technology and reliable service and support.