A Responsible Purchaser

As the world’s largest dedicated IC foundry, TSMC actively seeks to use its influence as an industry leader in encouraging upstream and downstream suppliers to seek advancements in technology, quality, delivery, environment, human rights, safety, and health. TSMC is committed to building a world-class green semiconductor supply chain.

**100%**

100% of first-tier suppliers signed the Supplier Code of Conduct, the Guidance on Supplier Business Conduct, and the Self-Assessment Questionnaire

**100%**

100% of suppliers have requested their direct suppliers to conduct self-assessments and sign the Guidance on Supplier Business Conduct and the Self-Assessment Questionnaire

**100%**

100% of commodities purchased are DRC conflict-free
Supplier Sustainability Management

### Strategies

#### Sustainability Risk Management

All suppliers are required to comply with the Code of Ethics and Business Conduct, and to follow regulations on human rights and conflict-free minerals. TSMC continues to conduct sustainability risk assessments, and encourages major critical suppliers to join the Responsible Business Alliance (RBA).

- **Note 1** Tier 1 supplier is a supplier who trades with TSMC directly and obtains more than 2 orders of expenses in a year. A total of 1,339 suppliers met this criteria in 2018.
- **Note 2** Suppliers are required to re-sign and commit every year. Completion rate will ultimately reach 100%.
- **Note 3** According to third-party supplier investigations in 2018, 0.4% of suppliers were not aware of the TSMC Suppliers Code of Conduct, and 10.1% were not aware of the Whistleblower System.
- **Note 4** A critical supplier is a supplier who meets at least one of the following conditions: 1. accounting for 85% of purchasing expenses; 2. single purchasing source. In total, 177 suppliers met the criteria in 2018.
- **Note 5** Following TSMC’s Business Continuity Management Policy, the Company will continue to improve supply chain resiliency.
- **Note 6** Based on TSMC’s spirit of continuous operation management policy, the Company will continue to evaluate multiple channels of raw material sourcing and reduce single-source suppliers to effectively lessen the risk of supply disruptions caused by a single-source supplier.
- **Note 7** TSMC uses 100% non-conflict minerals, and will continue to use third-party verification to disclose usage.

#### Long-term Goals

- **Tier 1 suppliers** have to sign and comply with TSMC’s Code of Ethics and Business Conduct:
  - Awareness rate of Supplier Business Conduct: 98% 
  - Awareness rate of the Whistleblower System: 95% 
  - Critical suppliers perform annual self-assessments of their upstream suppliers: sign the Suppliers Code of Conduct and Self-Assessment Questionnaire of Sustainability Management: 100%
  - Completion rate: 2025

- **Constantly perform sustainability risk assessments, and encourage critical suppliers to join the RBA**
  - Require critical suppliers to accept third-party audit firms that have been approved by the RBA to conduct sustainability risk audit. The completion rate is targeted to reach 100%.
  - Target: 2025

- **Strengthen supply chain resiliency**:
  - Keep dispersing manufacturing bases and evaluating the introduction of new suppliers. Complete 64 items of the single source reduction scheme.
  - Target: 2020

- **Conduct quarterly audit on supplier’s employees**
  - Target: 100%

### 2018 Achievements

- **100% of Tier 1 suppliers have signed the Suppliers Code of Conduct, TSMC Guidance on Supplier Business Conduct, and the Self-Assessment Questionnaire of Sustainability Management**
  - Target: 100%

- **Conducted quarterly audit on supplier’s employees**
  - Target: 100%

- **A total of 33 suppliers have completed the audit**
  - Target: 30 critical suppliers

- **The achievement rate for serious violation improvement reached 90.9%**
  - Target: 80%

- **20 suppliers were invited to observe TSMC annual emergency response drills**
  - Target: 20 suppliers

- **Purchased 100% conflict-free minerals**
  - Target: 100%

- **Completed audits of 2 conflict mineral suppliers**
  - Target: 3 direct suppliers of conflict minerals

- **Surpassed**

### 2019 Targets

- **100% of Tier 1 suppliers to sign the Suppliers Code of Conduct**
- **100% of Tier 1 suppliers to sign the Self-Assessment Questionnaire of Sustainability Management**
- **100% of Tier 1 suppliers to sign the TSMC Guidance on Supplier Business Conduct and to carry out internal training**
- **Continue to audit supplier employees that work at factory sites for compliance with laws and regulations on working hours**
- **Continuous requirement for critical suppliers to accept a professional audit of sustainability risks by third-party audit firms that have been approved by the RBA**
  - The target of completion rate is to reach 100% in 2021.

- **The target of suppliers’ participation in emergency response drill: At least invite 20 suppliers (88 suppliers as a cumulative sum) to observe and learn from TSMC annual emergency response drill**
- **Purchase 100% conflict-free minerals**
Two "Responsible Supply Chain Forum" were held in June and December for more communication.

- ESH audit score of local suppliers: 78
  - Target: over 80

Coach 17 local materials suppliers (26 as a cumulative sum)
- Target: 9 local materials suppliers

Local sourcing achievements
- 42.5% for indirect raw materials
  - Target: 45%
- 57.7% for spare parts
  - Target: 56.5%
- 48.9% for spare parts
  - Target: 67%
- 33.4% for backend equipment
  - Target: 33%

Reduce waste volume by major local waste-producing suppliers by 28% (compared to 2014)
- Target: 21.5%

Hold the "Responsible Supply Chain Forum" every year for more communication.

- ESH audit score of existing suppliers: over 80

Coach 7 local materials suppliers (33 as a cumulative sum) to improve manufacturing processes and increase yield rate

- Goals to increase local sourcing
  - 57.5% for indirect raw materials
  - 50% for spare parts
  - 36% for backend equipment

Coach 8 suppliers to take action on energy-saving. Energy-saving to be 0.5% higher than the consumption

- Reduce waste volume by major local waste-producing suppliers by 26.2%
  - Target: 21.5%

Reduce waste volume of major local waste-producing suppliers by 28% (compared to 2014)
Guiding Suppliers to Continuously Strive for Sustainability

TSMC is dedicated to driving a positive cycle in the industry and supply chain, and actively seeks collaboration with supplier partners. The Company contributes to the sustainable development of the supply chain to ensure a safe work environment, labor relations with respect and dignity, operation in line with code of ethics, and to facilitate environmental protection. TSMC has proposed two policies -- Sustainability Risk Management, and Local Supply Optimization -- and four guiding principles -- Code Compliance, Risk Assessment, Audit Participation and Consistent Improvement -- as a fulfillment of the Company’s commitment on a responsible supply chain through concrete actions. The Company leads supplier partners to continuously improve their sustainability on environmental protection, and social and economic development. The partners are required to build connections with their upstream suppliers, contractors and service providers to take initiatives on sustainability management. TSMC strives to further enhance the supply chain of the semiconductor industry, expand its overall influence, and achieve its sustainability goals.

The Four Guiding Principles of Supply Chain Management

TSMC considers sustainable supply chain development as one of the most important corporate social responsibilities. Following four guiding principles, the Company and its supplier partners continuously exchange experience, improve action plans, implement responsible supply chain management, and drive the semiconductor industry and sustainable supply chain into a positive cycle.
Supplier Risk Management Process

Risk Assessment
TSMC continues to conduct Tier 1 supplier risk assessments through four major assessment methods, including SAQ, on-site audit, serious violation assessments, and high-risk suppliers identification by TSMC’s team of experts. 100% of the high-risk suppliers had completed on-site audit in 2018. The Company uses a tracking system called Corrective Action Request (CAR) (+) to make sure that any supplier violations found through audit will be properly improved, to understand current supplier’s performance, and to completely control supply chain sustainability risks. Currently, TSMC conducts supplier risk assessments and audit in accordance to RBA regulatory standards.

Overview of Suppliers Code Compliance and Management in 2018

- 1,229 Tier 1 suppliers attended supplier ethics training
- 113 high-risk suppliers received on-site audit
- 1,229 Tier 1 suppliers signed the Supplier Code of Conduct

TSMC’s New Supplier Risk Assessment

- TSMC confirms the partnership with new suppliers
- New suppliers sign the TSMC Supplier Code of Conduct
- TSMC conducts risk assessment and periodic audit
- New suppliers commit to becoming sustainable

2018 Risk Assessment Results

<table>
<thead>
<tr>
<th>Suppliers Assessed</th>
<th>Assessment Methods</th>
<th>Assessment Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,229 Tier 1 Suppliers</td>
<td>SAQ + on-site audit + serious violation assessments + TSMC team of experts’ identification of high-risk suppliers</td>
<td>113 high-risk suppliers</td>
</tr>
</tbody>
</table>

Note: In 2018, TSMC sent SAQ to its Tier 1 suppliers with a response rate of 100%.
Audit Participation
Since 2018, TSMC's internal audit team has conducted 74 on-site supplier audits and required suppliers to be audited by RBA-certified third-party audit firms in order to examine their sustainability risks. There were 33 suppliers audited in the same year. The requirement of having an 80% improvement rate on serious violations was also achieved in 2018. The Company estimates that all critical suppliers will complete this audit in 2021 to enhance their comprehensive performance.

2018 Supplier Audit Results

<table>
<thead>
<tr>
<th>Supplier Audited</th>
<th>Audit Methods</th>
<th>Audit Score</th>
<th>Audit Results</th>
</tr>
</thead>
</table>
| **74** TSMC Audit Team | On-site audit and evaluation: 74 in total | **78** | - Serious violations: None  
- Other violations: Occupational safety and health (OSH), Fire safety  
- Follow-up actions: Put forward an action plan on OSH implementation to actively assist suppliers with enhancing their occupational health performance |
| **33** Third-party Audit | Audit on sustainability risks was conducted by RBA-certified third-party audit firms | | - Serious violations: Improvement rate was 90.9%  
- Other violations: There was a problem of supplier's employee working-hours management, including employees 'working for 7 consecutive days'  
- Follow-up actions: The 33 audited suppliers all improved their employee working-hours management, making sure that no more issues of 'working for 7 consecutive days' |

Use Influence of Supply Chain Sustainability
TSMC always strives for perfection through continuous improvement. The TSMC Supplier Code of Conduct focuses on five major areas, including Labor, Health and Safety, Environmental Protection, Business Ethics Standards, and Code of Conduct Management. TSMC thus formulated two main strategies in 2018 that are Sustainability Risks Management and Local Supply Optimization. By implementing these two strategies, the Company continues to develop sustainability within three important aspects, including environmental, social, and economic aspects. TSMC is driven to enhance the performance of supply chain management, and to use its sustainable influence for a responsible supply chain.
Published an updated version of the Supplier Code of Conduct
- 100% of the Tier 1 suppliers signed the Supplier Code of Conduct
- 100% of the Tier 1 suppliers signed the SQA
- 100% of the Tier 1 suppliers signed the Supplier Code of Practice and implemented internal trainings
- 100% of the high-risk suppliers were audited by TSMC or third-party audit firms and continued improvements
- Required critical suppliers to conduct annual self-assessments of their upstream suppliers

Provide coaching services to local raw material suppliers in order to improve their manufacturing processes and increase their yield rate: 9 suppliers (an accumulated total of 38 suppliers)
- Targeted increase rate of local sourcing:
  - Indirect raw materials: 57.5%
  - Local spare parts: 50%
  - Local backend equipment: 38%

100% of critical suppliers will be audited by RBA-certified third-party audit firms

Critical suppliers in all three aspects will disclose and report their upstream suppliers’ current performance on responsible sustainability
- The waste output of major local waste-producing suppliers will be reduced by 24% compared to 2014
- The number of suppliers that will take part in environmental safety and health (ESH) training program will accumulate to a total of 200 compared to 2016
- Provide counseling services to the factories of 30 suppliers to implement energy-saving programs. The cumulative amount of energy saved will have to be 3% higher than the energy used in 2018
## Sustainability Risk Management

TSMC looks forward to cooperating with suppliers on sustainable growth in order to create a workplace where labor dignity is respected, and enterprises uphold ethical values. In 2018, TSMC found that there was still room to improve in terms of supplier's employee working-hours management, OSH, and their emergency response performance.

Moreover, customers have higher expectations on conflict mineral management than the existing industry regulations. Therefore, TSMC has been focusing on improving supply chain resiliency and labor rights since 2018, working together with suppliers to establish a good foundation for a long-lasting business.

<table>
<thead>
<tr>
<th>Problems / Challenges</th>
<th>Tactics / Actions</th>
<th>Number of Suppliers</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve supply chain resilience</td>
<td>TSMC’s supply chain is located in a seismic zone; bad emergency response will lead to a higher risk of supply disruptions caused by natural disasters</td>
<td>Continue to mitigate the situation of single sourcing in procurement</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Contractors and their operational subcontractors at TSMC factory sites do not implement proper workplace safety rules</td>
<td>Invite suppliers to observe and learn from TSMC's annual emergency response drills</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Contractors do not pay their subcontractors on time</td>
<td>Require suppliers to be audited by RBA-certified third-party audit firms</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Suppliers do not sign the Code of Ethics and the Supplier Code of Conduct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Whether suppliers comply with regulation on sourcing conflict-free mineral raw materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The issue of consecutively working for 7 days</td>
<td>Quarterly audit on suppliers’ employee working-hours management at TSMC factory sites to check if there is any issue of employees working consecutively for 7 days</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Contractors do not pay their subcontractors on time</td>
<td>Strengthen contractor workplace safety management, especially for on-site operational subcontractors and further downstream subcontractors. Establish clear penalties, and fines for violations of workplace safety rules</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Suppliers do not sign the Code of Ethics and the Supplier Code of Conduct</td>
<td>Require contractors and subcontractors at all levels to sign the statement of Contract Labor Payment Implementation Measures provided by TSMC</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Whether suppliers comply with regulation on sourcing conflict-free mineral raw materials</td>
<td>Require Tier 1 suppliers to sign and comply with the Code of Ethics and the Supplier Code of Conduct</td>
<td>1,229</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue to conduct due diligence in order to ensure 100% conflict-free mineral sourcing</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Require material suppliers to source conflict-free minerals for products containing cobalt and actively disclose the list of cobalt smelters</td>
<td>8</td>
</tr>
</tbody>
</table>

**Note 1:** In 2018, TSMC found there were employees of TSMC’s suppliers that had been consecutively working for 7 days at TSMC factory sites. Therefore, TSMC reinforced the importance of employee working-hours management and required its suppliers to improve the situation within a given timeframe.

**Note 2:** Added violation penalties to the order form in 2018.
Local Supply Chain Optimization

TSMC considers the optimization of local supply chain as a key sourcing strategy. The Company strengthens supplier emergency response performance by providing diverse coaching services to continue improving manufacturing process and quality, and to ensure sustainable development. TSMC works together with its suppliers to effectively deal with environmental issues and lower processing costs so the issue of rising costs due to climate change and resource depletion can be avoided. TSMC also requires suppliers to take eco-friendly measures that promote supply chain energy-saving and waste reduction according to the Supplier Code of Conduct. By doing so, resources can be recycled and applied to different industries to create economic synergy and ensure positive developments in supply chain.

<table>
<thead>
<tr>
<th>Problems / Challenges</th>
<th>Tactics / Actions</th>
<th>Number of Suppliers</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenges of metrology technology improvement in advanced manufacturing process, quality improvement, and capacity expansion</td>
<td>Organized the 2018 Materials of Advanced Manufacturing Process Forum&lt;sup&gt;Note 1&lt;/sup&gt;</td>
<td>29</td>
<td>Invited 29 materials suppliers for advanced manufacturing process to participate in the forum</td>
</tr>
<tr>
<td></td>
<td>Provided coaching services to assist suppliers in gaining three important capabilities: capacity building, advanced metrology technology improvement, and manufacturing quality</td>
<td>17</td>
<td>Completed quality improvements for 50 materials used in advanced manufacturing process. 20 suppliers fulfilled the requirements of 10nm mass production and 100% of them completed capacity building</td>
</tr>
<tr>
<td></td>
<td>There is still a wide gap for some small-sized local suppliers’ performance to meet TSMC’s requirements on OSH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continued to provide on-site coaching services to suppliers via third-party consultants in order to improve suppliers’ occupational health performance.&lt;sup&gt;Note 2&lt;/sup&gt;</td>
<td>74</td>
<td>A total of 31 suppliers participated in the Supply Chain Occupational Health Promotion Program</td>
</tr>
<tr>
<td></td>
<td>Added labor rights and business-related ethical issues in the original agenda of the Supply Chain ESH Forum and renamed it to the Responsible Supply Chain Forum</td>
<td>31</td>
<td>The average supplier’s ESH score increased from 77 in 2017 to 78 in 2018 out of a full score of 100</td>
</tr>
<tr>
<td></td>
<td>Provided on-site coaching services to suppliers and gave suggestions on ESH. Moreover, TSMC required suppliers to take action to improve their ESH performance</td>
<td>–</td>
<td>Organized two Responsible Supply Chain Forum events, with over 310 supplier representatives in attendance. Established the 1st Supply Chain ESH Award. TSMC gave the Outstanding ESH Performance Award to LCY Chemical Corp, and gave Continuous Improvement in ESH Award to Ares Green Technology Corporation.</td>
</tr>
<tr>
<td></td>
<td>Reduce environmental impacts and resource depletion caused by local production</td>
<td>10</td>
<td>Created booklets of ESH guidelines for suppliers</td>
</tr>
<tr>
<td></td>
<td>Required the top 10 suppliers that produce the most business waste per unit (+) to continue to reduce their waste and update their progress every year</td>
<td>–</td>
<td>Held ESH educational training programs and experience sharing sessions</td>
</tr>
</tbody>
</table>

Note 1  Organized the 2018 Materials of Advanced Manufacturing Process Forum in March 2018. The theme was ‘Future and Challenges of Green Manufacturing’.

Note 2  A year later in 2018, TSMC cooperated for the second time with the Occupational Safety and Health Administration, Ministry of Labor, and Dr. Lin Yuwen from Fu Jen Catholic University to invite 31 suppliers, such as ones providing pump maintenance service and maintaining filter materials used in washing towers, to participate in the Supply Chain Occupational Health Promotion Program. By reviewing documents and conducting on-site audit in the factories, the team gave suggestions to suppliers on work environment improvement, hardware construction, labor health promotion, etc.
Conflict-free Mineral Sourcing

TSMC supports the proposition of the Responsible Mineral Sourcing put forward by the RBA and Global e-Sustainability Initiative (GeSI). The Company also requires its suppliers to source conflict-free raw materials according to the Responsible Minerals Assurance Process (RMAP). TSMC requires the suppliers, whose products contain tantalum, tin, gold and tungsten, to follow the conflict-free minerals sourcing policy, and sign a statement of conflict-free mineral sourcing. In 2018, the Company even disclosed the details of smelters that provide cobalt for TSMC’s product manufacturing.

The Updated TSMC Due Diligence Results CMRT V.5.11

- Tier 1 Suppliers: 31
- Smelters: 259
- Conflict-free Mineral Sourcing: 100%

Note: The information above included the direct suppliers of TSMC’s facilities in Taiwan (wafer fabs, testing and assembly plants), WaferTech, TSMC (China), TSMC (Nanjing), and VisEra.
Case Study

Special Program to Improve the Working-Hours Management and Work Environment of Supplier’s Tank Truck Drivers at TSMC Facilities

TSMC found that the supplier’s tank truck drivers often work overtime due to the nature of their work, and there was no proper rest area for them. TSMC greatly values labor rights, and the Company has launched a special program to improve the truck operational process. By doing so, working-hours of truck drivers have been reduced. TSMC has also provided a user-friendly rest area for drivers. These substantial improvements have increased the speed of truck operational processes, and have also ensured uninterrupted raw materials supply without any delivery issues caused by driving while fatigued, creating a win-win situation for both TSMC and its suppliers.

TSMC jointly worked with its suppliers to actively adopt the following five approaches, achieving good results in 2018. Through adding cleaning devices and an automatic sampling system, interference during incoming quality control (IQC) decreased. TSMC and its suppliers also used a scheduling and locating system to supervise and control tank truck loading times via computer. Furthermore, the Company provided workers with a proper rest area. As a result, the number of overtime cases decreased from 60 in May to less than 8 in December.

The Number of Instances Tank Truck Loading Time Exceeded 8 Hrs in 2018

<table>
<thead>
<tr>
<th>Unit: number of times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>%</td>
</tr>
</tbody>
</table>

Add Automatic Cleaning Devices

Establish an Automatic Sampling System

Use a Scheduling System

Use a Locating System

Provide a Rest Area

Special Programs to Improve the Work Environment
Case Study

Continue to Upgrade Local Supply Chains

TSMC’s main production site is located in Taiwan. Its procurement can be divided into six categories: equipment, spare parts, raw materials, facility services, IT, and goods. The Company's headquarters is responsible for all the procurements. To build a sustainable supply chain, TSMC considers the sustainability improvement of the local semiconductor industry as an important issue, and has put lots of efforts on the continuous upgrade of local supply chain. Therefore, the Company has set up a local procurement goal and has been driving it for many years.

Supply chain localization improves supply flexibility, shortens the product development cycle, reduces unnecessary costs, lowers carbon emissions for the whole supply chain, and thus ensures the quality and effect of customer services.

TSMC has established a local procurement goal and has been driving it for many years. TSMC (China)\(^{Note 2}\), WaferTech in the United States, and other subsidiaries have their own independent procurement organization as an extension of TSMC's global supply chain. They also actively promote supply chain localization to help local suppliers enhance their capabilities and ensure a win-win situation for all.

The Upgrade Directions for Local Supply Chains

Provide active coaching services to assist suppliers of key equipment, spare parts, and raw materials in improving their technology and product quality in order to increase local sourcing.

Continue to maintain or increase the proportion of local sourcing through a smoothly running supply chain.

Taiwan

- **Spare Parts**: 65%, 66%, 49%, 50%
- **Raw Materials**: 44%, 44%, 42%, 36%
- **Indirect Raw Materials**: 33%, 33%, 33%, 36%

<table>
<thead>
<tr>
<th>Year</th>
<th>Spare Parts</th>
<th>Raw Materials</th>
<th>Indirect Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>65</td>
<td>44</td>
<td>33</td>
</tr>
<tr>
<td>2017</td>
<td>66</td>
<td>44</td>
<td>33</td>
</tr>
<tr>
<td>2018</td>
<td>49</td>
<td>42</td>
<td>33</td>
</tr>
<tr>
<td>2019</td>
<td>50</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

United States

- **Spare Parts**: 78%, 73%, 56%, 34%
- **Tools**: 92%, 77%, 68%, 34%
- **Direct Raw Materials**: 94%, 80%, 68%, 80%

<table>
<thead>
<tr>
<th>Year</th>
<th>Spare Parts</th>
<th>Tools</th>
<th>Direct Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>78</td>
<td>92</td>
<td>94</td>
</tr>
<tr>
<td>2017</td>
<td>73</td>
<td>77</td>
<td>80</td>
</tr>
<tr>
<td>2018</td>
<td>56</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>2019</td>
<td>34</td>
<td>34</td>
<td>80</td>
</tr>
</tbody>
</table>

China

- **Spare Parts**: 32%, 33%, 37%, 37%
- **Tools**: 33%, 37%
- **Indirect Raw Materials**: 37%

<table>
<thead>
<tr>
<th>Year</th>
<th>Spare Parts</th>
<th>Tools</th>
<th>Indirect Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>32</td>
<td>33</td>
<td>37</td>
</tr>
<tr>
<td>2017</td>
<td>33</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>2018</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>2019</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
</tbody>
</table>

**Note 1**: Procurement localization refers to suppliers which manufacture and process products locally.

**Note 2**: 100% of the equipment and direct raw materials of TSMC (China) are imported from abroad.

**Note 3**: As the production capacity of silicon wafers in Taiwan failed to meet TSMC requirements, the target of local sourcing has been adjusted from "local sourcing of raw materials" to "local sourcing of indirect raw materials" in 2018.
Case Study

2018 Local Supplier Coaching Results

Provide coaching services to local spare parts processing and manufacturing companies in order to assist them in developing high-end spare parts made by advanced manufacturing processes.

- **Problems**
  - The import rate of some high-end spare parts made by advanced manufacturing process is quite high, and domestic suppliers lack certain critical processing technologies.

- **Improvement Methods**
  - Form a professional team to provide coaching services to local companies. Define products needed to be developed, and provide technical support in order to assist suppliers in completing the verification and to create a win-win situation.

- **Achievements**
  - Has developed 307 projects and completed 31 verifications.

<table>
<thead>
<tr>
<th>Category / Number of Suppliers</th>
<th>Problems</th>
<th>Improvement Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare parts maintenance / 2</td>
<td>The import rate of some high-end spare parts made by advanced manufacturing process is quite high, and domestic suppliers lack certain critical processing technologies.</td>
<td>Form a professional team to provide coaching services to local companies. Define products needed to be developed, and provide technical support in order to assist suppliers in completing the verification and to create a win-win situation.</td>
</tr>
<tr>
<td>Spare parts coating / 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spare parts machining / 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Capacity Building**
  - Chemicals / 1
  - Photoreisits / 1

- **Problems**
  - Capacity fails to meet the requirements of advanced manufacturing processing.

- **Improvement Methods**
  - Production line expansion

- **Achievements**
  - Capacity has increased by 4 times.

<table>
<thead>
<tr>
<th>Category / Number of Suppliers</th>
<th>Problems</th>
<th>Improvement Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals / 1</td>
<td>Capacity fails to meet the requirements of advanced manufacturing processing.</td>
<td>Production line expansion.</td>
</tr>
<tr>
<td>Photoreisits / 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Improving Advanced Metrology Technology**
  - Chemicals / 3

- **Problems**
  - Metrology technology fails to meet the requirements of advanced manufacturing processing.

- **Improvement Methods**
  - Add analytical instruments and optimize manufacturing processing

<table>
<thead>
<tr>
<th>Category / Number of Suppliers</th>
<th>Problems</th>
<th>Improvement Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals / 3</td>
<td>Metrology technology fails to meet the requirements of advanced manufacturing processing.</td>
<td>Add analytical instruments and optimize manufacturing processing.</td>
</tr>
<tr>
<td>Photoreisits / 2</td>
<td>Product impurity is too high.</td>
<td>Improve the nature of the production line</td>
</tr>
<tr>
<td>Gases / 3</td>
<td>Product features damage the production line</td>
<td></td>
</tr>
</tbody>
</table>

- **Product Quality Improvement**
  - Chemicals / 4
  - Photoreisits / 3
  - Gases / 3

- **Problems**
  - Bad transportation quality

- **Improvement Methods**
  - Manufacturing processing standardization

<table>
<thead>
<tr>
<th>Category / Number of Suppliers</th>
<th>Problems</th>
<th>Improvement Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals / 4</td>
<td>Bad transportation quality.</td>
<td>Manufacturing processing standardization.</td>
</tr>
<tr>
<td>Photoreisits / 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gases / 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **ESH Performance Improvement**
  - Gases / 1

- **Problems**
  - A proper ESH procedure has not yet been established.
  - Inadequate safety protection from hazardous gases.

- **Improvement Methods**
  - Invite professionals to establish an ESH policy and provide training programs.
  - Examine and improve gas safety protection systems.
  - Communicate with senior supervisors to gain their full support.

<table>
<thead>
<tr>
<th>Category / Number of Suppliers</th>
<th>Problems</th>
<th>Improvement Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gases / 1</td>
<td>A proper ESH procedure has not yet been established.</td>
<td>Invite professionals to establish an ESH policy and provide training programs.</td>
</tr>
<tr>
<td>Chemicals / 1</td>
<td>ESH supervisor holds a concurrent post.</td>
<td>Hire a professional fire engineering company to improve the fire protection system and to conduct daily maintenance.</td>
</tr>
</tbody>
</table>

- **Achievements**
  - ESH score has improved by 21%.
  - ESH score has improved by 22%.