Semiconductors & Semiconductor Equipment

Driving forces
The application of advanced semiconductors has progressed beyond traditional computing products to include the internet of things, artificial intelligence, automotive applications, 5G and high-performance computing. Cybersecurity is a strategic priority that is increasing in importance, since security should be included by design during chip R&D. The rate at which the number of transistors on a chip doubles (i.e. Moore’s Law) is slowing as integrated circuits become smaller. The semiconductor industry must therefore investigate new architectures, materials and packaging to go beyond current scaling and performance constraints, while also addressing the demand for more energy-efficient products. To sustain a rapid pace of innovation, the industry will need to increase R&D investment that, in turn, will necessitate attracting and retaining a skilled workforce and developing talent. The industry must continue to improve its ultra-pure water usage, pollution prevention and energy and waste management. It must also develop substitutes for hazardous materials and reduce the sourcing of conflict minerals.

Highlighted criteria & dimension weights
Environmental Dimension: 34%
- Climate Strategy
- Environmental Policy & Management Systems
- Operational Eco-Efficiency
- Product Stewardship

Social Dimension: 23%
- Human Capital Development
- Talent Attraction & Retention

Governance & Economic Dimension: 43%
- Innovation Management
- Product Quality and Recall Management
- Supply Chain Management

Industry Awards 2022

<table>
<thead>
<tr>
<th>S&amp;P Global Gold Class</th>
<th>S&amp;P Global ESG Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASE Technology Holding Co., Ltd.</td>
<td>Taiwan</td>
</tr>
<tr>
<td>United Microelectronics Corporation</td>
<td>Taiwan</td>
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<tr>
<td>S&amp;P Global Bronze Class</td>
<td></td>
</tr>
<tr>
<td>Taiwan Semiconductor Manufacturing Company Limited</td>
<td>Taiwan</td>
</tr>
<tr>
<td>Nanya Technology Corporation*</td>
<td>Taiwan</td>
</tr>
</tbody>
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Sustainability Yearbook Members

- Infineon Technologies AG, Germany 83
- Vanguard International
- Semiconductor Corporation, Taiwan 82
- WIN Semiconductors Corp., Taiwan 82
- STMicroelectronics N.V., Switzerland 81
- ASML Holding N.V., Netherlands 80
- SK hynix, Inc., Rep. of Korea 79
- Tokyo Electron Limited, Japan 79
- NVIDIA Corporation, United States 74
- Intel Corporation, United States 67

* S&P Global Industry Mover

Industry Statistics

- Number of companies assessed: 186
- Market capitalization of assessed companies (in USD billion): 4,428.4
- Number of companies in Yearbook: 13
- Market capitalization of companies in Yearbook (in USD billion): 1,994.6