

# Devices Sustainability at Microsoft

Fiscal Year 2018



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## Introduction

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# Message from Panos

As a team we have a mission to build devices and experiences that empower every person and organization on the planet to achieve more. We are driven to make a difference with our products both in how our customers experience and create with them and in the impact their development has on the world and the environment. An integral part of this mission is working across the org and the company to keep sustainability top of mind throughout our design and manufacturing processes.

I'm proud of our team and the impact increased sustainability has had on our products and communities. Success for our business includes creating shared value for Microsoft, our employees, and people across the globe. Thanks to your relentless passion and commitment we saw some incredible results in FY18:

- We increased from one US EPEAT Gold certification in FY17 to six in FY18. All eligible Surface devices earned the highest rating recognized by green electronics procurement managers. That's a huge accomplishment.
- We grabbed an oar and rowed with teams from across the company, using Azure solutions, our IoT platform, sensor technology, and solar power in our primary Tier 1 factory to reduce scrap metal and lower greenhouse gas emissions by an estimated 3,000,000 pounds per year.
- We partnered with Pact, a nonprofit organization that serves communities challenged by poverty and marginalization, to reduce child labor in cobalt mining.

Even with these results we still have more work to do. Looking forward, we must continue to push our sustainability efforts even further, focusing on advancing the modularity, repairability, and recyclability of our products, increasing our suppliers' energy efficiency, and committing to a holistic approach to address social and environmental issues.

I often say that great people make great products and the making of our products isn't just about the hardware and software, it's also about the impact we have on the environment and our commitment to working with our partners, suppliers, and peers to build a more sustainable future.

Together we can make a difference. Keep rowing.



**Panos Panay**  
*Chief Product Officer*



**Panos Panay**  
*Corporate Vice President, Microsoft Devices*

# Sustainability innovation and highlights – FY18

Through our direct efforts and partnerships, Microsoft Devices' world-class sustainability performance accelerated in FY18 in the areas of environmental and social responsibility, ethics, and innovation.



2018 World's Most Ethical Companies



**6-YEAR**

Consecutive decrease in occupational safety and health incident rates in Tier 1 suppliers

**TOP 5**

Leading Companies



**TOP 2**

Leading Companies

• Benchmarking for worker voice

**TOP 3**

Leading Companies

• Remedy

**TOP 5**

Leading Companies

• Purchasing practices and commitment



**100%**

New Suppliers

screened through audits using social accountability criteria



**Workers' Voice Hotline**

running in all five Tier 1 suppliers and two selected in Tier 1.5 factories with on-site orientation for 2,510 workers

**115QTY**  
Cases Resolved FY18



Engaged hardware suppliers in **Carbon Disclosure Project (CDP)**



Water usage surveys with 2/3 of Tier 1 suppliers responding



Provided water conservation classes to Tier 1 and some Tier 2 suppliers



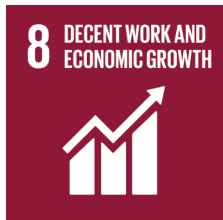
**4-YEAR**

Consecutive decrease in life water consumption in Tier 1 suppliers



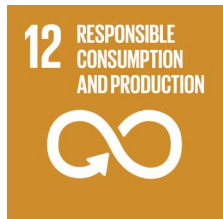
**14 MILLION**  
Energy savings potential of Windows 10 with enabling devices is equivalent to over 14 million acres of forest

**3 MILLION**  
Our factory solar panel installation and the smart building system in one of our largest supplier's facilities are projected to reduce greenhouse gas emissions (in CO2e) by approximately 3 million pounds per year



**pact**  
**Continued partnership with Pact**  
to end child labor in tin and cobalt supply chains

Delivered capability-building programs to improve factory labor management systems



**epeat GOLD**  
**Gold-rated**  
All Surface devices achieved EPEAT Gold® environmental performance ratings in the US

**35% ↓**  
**Reduction**  
in volume by weight of all plastic materials used in packaging

**Recyclable**  
Our Surface and Xbox devices are 95 to 99 percent recyclable

**SmartWay**  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
**2018 Excellence Award**  
EPA's highest recognition for leadership in freight supply chain energy and environmental performance



**CDP A LIST 2017 CLIMATE**  
**Pioneer acting on climate change**  
Engaged hardware suppliers in CDP Climate surveys with 75% responding, including all Tier 1 suppliers

Message from Panos Panay **Sustainability innovation and highlights** A map of our sustainability report



**Achieved or exceeded compliance**  
with global environmental laws and regulations

373 

**Environmental regulations reviewed**  
for relevance to the Microsoft Devices supply chain worldwide



**ISO 14001:2015-certified**  
environmental management system



RANKED  
**#7**

**Barron's 100 Most Sustainable Companies**

RANKED  
**#2**

**Forbes 2017 World's Top Corporate Social Responsibility Companies**

For more information on our alignment with these goals in our commitment to sustainability, see the [UN Sustainable Development Goals \(SDGs\)](#) section of this report.

# Microsoft Devices value chain sustainability

Microsoft Devices integrates sustainability into our business strategy, across our value chain. This sustainability report follows our products' life cycle and covers the period of July 1, 2017 through June 30, 2018 (FY18). Click a section below to learn more about our sustainability strategy and practices.



About us



Sustainability Approach



Design for Sustainability



Responsible Sourcing



Manufacturing



Distribution



Usage



End-of-Life Management





The Microsoft Devices organization

# 2

## The Microsoft Devices Organization

The Microsoft Devices organization



The Microsoft Devices organization

# The Microsoft Devices organization

The mission of Microsoft Devices (Devices) is to build products that create and complete magical experiences to empower every person and organization to achieve more. The division is responsible for the ideation, design, development, manufacture, sourcing, compliance, packaging, and distribution of the company’s devices, packaging, and related software products. Devices is a global business active in more than 100 countries and functionally operates within the Experiences and Devices business. Panos Panay, Microsoft Chief Product Officer, leads Devices and is the executive sponsor of Devices sustainability programs.

These sustainability programs are designed and managed by experts in industrial design, environmental sustainability, compliance, product and packaging engineering, manufacturing, sourcing, policy, legal, auditing, and communications, and our suppliers. They are supported by a group of environmental, safety, and other subject matter experts who make up the Safety, Compliance, and Sustainability (SCS) team within the Devices Customer Experience and Engineering (CXE) organization. The SCS mission is to enable Microsoft access to markets by ensuring flawless product compliance while promoting our company values through ethical sourcing, safety, and sustainability.

[GRI STANDARDS DISCLOSURE: 102-1, 102-2, 102-3, 102-4, 102-9, 102-10, 102-18, 102-46](#)



## Governance

The Regulatory and Public Policy Committee of the Microsoft Board of Directors has oversight authority over regulatory and citizenship issues, including Devices sustainability.

Total number of employees in Microsoft Devices organization	Total number of directly contracted Devices factory locations	Number of different product models shipped in FY18 (Surface devices, gaming consoles, augmented reality products, and accessories)
2,726	355	28*

\*Excluding variants and SKU bundles

# 3

## Our Sustainability Approach

[Our commitment to sustainability](#)

[The principles and frameworks we follow](#)

[Our compliance model](#)

[Our stakeholders](#)

[Materiality assessment](#)

**Our commitment to sustainability** The principles and frameworks we follow Our compliance model Our stakeholders Materiality assessment

In Devices, sustainability is key to our purpose. Our use of the word “sustainability” here is broadly intended to include environmental, social, and economic needs and aspirations, and supporting programs.

## Our commitment to sustainability

To anchor these efforts, we embed sustainability requirements directly into the roles, responsibilities, and business practices of the Devices organization and partners. We ensure our teams and suppliers meet our requirements and aspirations through active engagement. We also collaborate with non-governmental organizations (NGOs) and industry associations to address broader sustainability challenges facing the electronics and other industry sectors.

### Devices’ Environmental Principles

We protect natural resources by increasing energy efficiency, using recycled materials and supplies, and participating in recycling programs for electronic products after they have served their useful life.

#### **Conserve, reuse, and recycle.**

Where feasible, we conserve natural resources through the procurement and use of recycled and renewable materials, efficient use of energy, and participation in recycling programs for our products.

#### **Reduction and disposal of wastes.**

At our facilities, we reduce and, where possible, eliminate waste through reuse of materials, source reduction, and recycling. All waste is handled and disposed of through safe and environmentally responsible methods.

#### **Sustainable products.**

Our environmental policies and practices aim to protect, conserve, and sustain the world’s natural resources as well as our customers and the communities in which we live and operate. We use Microsoft digital technology to increase our environmental sustainability.

#### **Continually improve our performance.**

We set objectives and targets to ensure continuous improvement in our environmental performance and management systems. We value employee contributions to our initiatives. We regularly review aspects of our business activities and assess our programs, practices, and goals to evaluate our progress. We proactively manage environmental risks and opportunities to identify areas where further improvements can be made. We collaborate with our suppliers to ensure that they share the same level of commitment to the continuous improvement of their environmental performance.

#### **Responsible sourcing of raw materials.**

We are committed to the responsible sourcing of raw materials as stated in our [Responsible Sourcing of Raw Materials policy](#). By collaborating with people, industry groups, and NGOs, we strive to establish responsible practices in the harvesting and extraction of raw materials used in our products.

#### **Demonstrate responsibility to our stakeholders.**

We engage our stakeholders concerning our objectives and targets, and we periodically communicate our progress to our Board, shareholders, customers, and members of the public.

# The principles and frameworks we follow

Our principles are shaped and guided by objective recommendations, frameworks, and standards published by leading international organizations and experts.

## Microsoft sustainability principles

### [Microsoft Environmental Sustainability Commitment](#)

Microsoft focuses environmental sustainability work in the five areas where we believe we can have the greatest positive impact—carbon, energy, water, ecosystems (including food, agriculture, and biodiversity), and circular economy (including waste reduction).

### [Microsoft Global Human Rights Statement](#)

Our commitment to human rights is consistent with the United Nations (UN) Guiding Principles on Business and Human Rights (UNGPs) and guides our supplier Social and Environmental Accountability (SEA) programs.

### [Microsoft Supplier Code of Conduct](#)

Devices expects its suppliers to embrace our Standards of Business Conduct for integrity by complying with and training their employees on the Microsoft Supplier Code of Conduct.

### [Microsoft Responsible Sourcing of Raw Materials policy](#)

Developed in FY14, this policy formalizes our values and approach to responsible upstream sourcing at the far reaches of our supply chain.

## UN Sustainable Development Goals (SDGs)

Our commitment to sustainability is in line with current global aspirations and initiatives. The 2016 Sustainable Development Goals (SDGs)—accepted by the UN General Assembly (193 nations)—call for several bold breakthroughs by the year 2030 across 17 goals aimed at improving people’s quality of life, protecting the environment, and fostering equitable growth. To implement the 2030 agenda for sustainable development, a robust follow-up and review mechanism was developed and submitted for adoption by the [United Nations Statistical Commission at its 48th session](#) in March 2017.

Our industry is essential toward enabling achievement of the SDGs. As digital solutions are indispensable to achieve all 17 SDGs and more than half of the 232 SDG indicators, Devices has an important role in ensuring we deliver solutions that enable this transformation sustainably.

We embed sustainability and accountability throughout our value chain as an essential means to helping achieve the SDGs.

## Digital solutions can:

### Improve people’s quality of life

Digital solutions provide better access to education for 450 million people.

### Foster equitable growth

Digital solutions could generate over \$11 trillion in economic benefits per year by 2030.

### Protect the environment

Digital solutions can enable a 20 percent reduction of global CO<sub>2</sub>e emissions by 2030.

(GeSI, 2017)

# SUSTAINABLE DEVELOPMENT GOALS







## Our FY18 contribution toward achieving the UN Sustainability Goals

This table highlights some of our contributions in FY18 to the SDGs and the ways that we are creating shared value. By focusing on value creation, we can grow the business and innovate while solving environmental and social problems. Our supply chain partnerships also benefit Microsoft, our suppliers, and those who work for them.




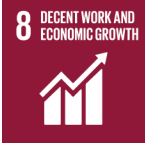
## Sustainable Development Goals

SDG	Our FY18 contribution toward achieving UN Sustainable Development Goals and Creating Shared Value	SDG Targets and Business Indicator Themes
	<p><b>Shared Values:</b></p> <ul style="list-style-type: none"> <li>Ensured suppliers cover workers' social insurance and contractual and legal requirements for payment of compensation.</li> <li>Required Tier 1 suppliers to provide workers with career development and related opportunities</li> </ul>	<p><b>SDG Target 1.2</b> By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.</p>
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Phased out Microsoft restricted chemicals (n-hexane, Benzene, TCE,) in five Tier 1 assembling suppliers and will extend the phase-out to all Tier 2 suppliers.</li> <li>Reviewed composition of chemicals used by another 100 suppliers in FY18 for a total of 200 suppliers for the last two fiscal years to assure no use of Microsoft restricted chemicals per Microsoft specifications.</li> <li>Implemented proactive policies to reduce and minimize hazardous substances in manufacturing operations, products, and packaging.</li> <li>Required proper sanitation and healthful living and canteen conditions for workers.</li> <li>Ensured Tier 1 factories have appropriate on-site medical services.</li> <li>Trained and required factories and contracted suppliers to implement effective occupational safety and health (OSH) programs.</li> </ul> <p><b>Additional support of the SDGs:</b></p> <ul style="list-style-type: none"> <li>Supported responsible health and safety practices in the global extractives industry.</li> </ul>	<p><b>SDG Target 3.9</b> By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.</p>

SDG	Our FY18 contribution toward achieving UN Sustainable Development Goals and Creating Shared Value	SDG Targets and Business Indicator Themes
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Increased access to digital education through implementation of factory worker YouthSpark Computer Training.</li> <li>Trained suppliers on how to implement and promote a safe factory culture and manage chemical risks.</li> <li>Supported factory career development and training programs.</li> <li>Required computer access in Tier 1 factories, including wireless infrastructure.</li> <li>Required library/literature access at factories.</li> </ul>	<p><b>SDG Target 4.3</b> By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.</p> <p><b>SDG Target 4.4</b> By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.</p> <p><b>SDG Target 4.7</b> By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.</p>
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Required factories to implement nondiscrimination policies.</li> <li>Maintained an independent Grievance Hotline to provide workers with a forum to ask questions and report issues in our directly contracted Tier 1 and Tier 1.5 factories.</li> </ul> <p><b>Additional support of the SDGs:</b></p> <ul style="list-style-type: none"> <li>Audited factories to ensure adherence to fair payment of wages requirement and enforced corrective action when applicable.</li> <li>Provided training through Tier 1 suppliers to workers regarding women's health.</li> </ul>	<p><b>SDG Target 5.1</b> End all forms of discrimination against all women and girls everywhere.</p> <p><b>Business Indicator Theme: Workplace violence and harassment</b></p> <p><b>SDG Target 5.2</b> Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.</p>



SDG	Our FY18 contribution toward achieving UN Sustainable Development Goals and Creating Shared Value	SDG Targets and Business Indicator Themes
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>• Ensured appropriate testing and availability of safe drinking water at factories.</li> <li>• Increased water-use efficiency of factories and Tier 1 suppliers and implemented water balancing.</li> <li>• Provided Water Saving program support to suppliers to achieve local standard on water consumption.</li> </ul> <p><b>Additional support of the SDGs:</b></p> <ul style="list-style-type: none"> <li>• Supported heightened environmental standards related to water usage for the extractives industry, including process improvements.</li> <li>• Protected water-use ecosystems through wastewater treatment, spill prevention, and chemical management of storing, handling, and disposal.</li> </ul>	<p><b>Business Indicator Theme: Water-related ecosystems and biodiversity</b>                      SDG Target 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.</p> <p><b>Business Indicator Theme: Water quality</b>                      SDG Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.</p> <p><b>Business Indicator Theme: Water efficiency</b>                      SDG Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.</p> <p><b>Business Indicator Theme: Water recycling and reuse</b>                      SDG Target 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.</p> <p><b>Business Indicator Theme: Sustainable water withdrawals</b>                      SDG Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.</p>
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>• Converted all Microsoft Puerto Rico (MOPR) data center lighting to LED.</li> <li>• Deployed a “smart building” system at a major Microsoft supplier using Azure and IoT technologies that help the supplier more efficiently manage the energy used for heating, ventilation, and air conditioning.</li> </ul>	<p><b>Business Indicator Theme: Energy efficiency</b>                      SDG Target 7.3 By 2030, double the global rate of improvement in energy efficiency.</p>

SDG	Our FY18 contribution toward achieving UN Sustainable Development Goals and Creating Shared Value	SDG Targets and Business Indicator Themes
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Implemented training for factory and supplier workers for career progression and to promote digital learning and access to Microsoft technology classes.</li> <li>Require suppliers to follow Microsoft's Workers Communities Guidelines to promote decent working and living conditions for workers in the factories.</li> <li>In FY18, 100% of new suppliers were screened using social criteria.</li> </ul> <p><b>Additional support of the SDGs:</b></p> <ul style="list-style-type: none"> <li>Provided internal awareness trainings on Preventing Modern Slavery and Human Trafficking in the Supply Chain.</li> </ul>	<p><b>Business Indicator Theme: Labor practices in the supply chain</b>  SDG Target 8.8 Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.</p> <p><b>Business Indicator Theme: Elimination of forced or compulsory labor</b>  SDG Target 8.7 Take immediate and effective measures to eradicate forced labor, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labor, including recruitment and use of child soldiers, and by 2025 end child labor in all its forms.</p> <p><b>Business Indicator Theme: Freedom of association and collective bargaining</b>  SDG Target 8.8 Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.</p> <p><b>Business Indicator Theme: Occupational Health and Safety</b>  SDG Target 8.8 Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.</p> <p><b>Business Indicator Theme: Water efficiency</b>  SDG Target 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.</p> <p><b>Business Indicator Theme: Energy efficiency</b>  SDG Target 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.</p> <p><b>Business Indicator Theme: Materials efficiency</b>  SDG Target 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.</p>

SDG	Our FY18 contribution toward achieving UN Sustainable Development Goals and Creating Shared Value	SDG Targets and Business Indicator Themes
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Utilized the Microsoft Audit Management System through Azure and employed smarter analytics and dashboards through Power BI.</li> <li>Tracked and analyzed factory and supplier chemical usage through a cloud-based solution using Microsoft platforms.</li> <li>Piloted use of sensor technology, in-situ renewable energy and Azure Solutions to increase factory energy efficiency and reduce waste.</li> </ul>	<p><b>SDG Target 9.4</b> By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.</p>
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Empowered legal right of factory worker inclusion in factory governance through an organized workforce and requirement that supplier factories implement processes to establish management/worker dialogs.</li> <li>Ensured contracted factories pay legally required wages according to applicable laws.</li> <li>Ensured factories meet social insurance requirements.</li> </ul>	<p><b>SDG Target 10.3</b> Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.</p> <p><b>SDG Target 10.4</b> Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.</p>
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Proactively reduced materials used for products and packaging.</li> <li>Designed products for longevity, recyclability, and product stewardship.</li> <li>Our mobile Surface and Xbox devices are 95 to 99 percent recyclable.</li> <li>For new programs in FY18, reduced the weight of primary packaging by 20 percent and decreased packaging-related greenhouse gas (GHG) emissions by 29 percent. Incorporated recycled and sustainable content into devices and packaging and implemented recycling during production and at end of life.</li> <li>Qualified all eligible devices for EPEAT environmental performance rating program.</li> <li>Reduced waste from operations.</li> <li>Completed mapping of key raw materials that travel through a complex and global upstream supply chain to identify and prioritize areas of risk.</li> <li>Certified the manufacturing and supply chain business to ISO 14001:2015 and required all contracted suppliers to establish and implement effective Environmental Management Systems.</li> <li>Implemented environmentally sound management of chemicals and all wastes through use of Microsoft platform partner software suite.</li> <li>Recycled Microsoft consumer devices and directly used devices responsibly through voluntary and mandatory programs.</li> <li>Performed and published eco profiles of major product lines.</li> </ul>	<p><b>SDG Target 12.4</b> By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.</p> <p><b>SDG Target 12.5</b> By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.</p> <p><b>SDG Target 12.6</b> Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.</p>

SDG	Our FY18 contribution toward achieving UN Sustainable Development Goals and Creating Shared Value	SDG Targets and Business Indicator Themes
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Ensured that all products meet or exceed voluntary energy efficiency standards, including ENERGY STAR.</li> <li>Minimized device energy consumption through enabling the capabilities of the Windows platform.</li> <li>Minimized use of materials and reported GHG emissions and required Tier 1 suppliers to do the same pursuant to the Carbon Disclosure Project (CDP).</li> <li>Banned use of and required substitution for Ozone Depleting Chemicals and assessed hydrofluorocarbon (HFC) usage to prepare for minimizing related emissions and consumption.</li> <li>Conducted third-party energy efficiency audits at Microsoft strategic supplier facilities, resulting in over 100 energy-saving actions.</li> </ul>	<p>SDG Target 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.</p> <p>SDG Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.</p>
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Requested CDP water reporting for 95 percent of top spend suppliers.</li> <li>Evaluated factory drain lines and monitored for and required corrective actions to ensure proper wastewater treatment and reuse of graywater to eliminate pollution of waterways by contract suppliers.</li> <li>Built capabilities of contract suppliers to implement protective pipeline/storage tank design and chemical spill prevention, control, and disposal methods to prevent drainage of hazardous substances into storm drains.</li> </ul>	<p>SDG Target 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.</p> <p>SDG Target 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.</p>
	<p><b>Additional support of the SDGs:</b></p> <ul style="list-style-type: none"> <li>Banned the use of any packaging materials originating from old growth forests.</li> <li>Used recycled paperboard materials and/or virgin paper from sustainable forests.</li> <li>Banned the landfilling of used electronics by our recycling suppliers.</li> </ul>	<p>SDG Target 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.</p>
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>Implemented anticorruption measures through contracted supplier management and monitoring.</li> <li>Empowered legal right of factory worker inclusion in factory governance through an organized workforce and requirement that supplier factories implement processes to establish management/worker dialogs.</li> </ul> <p><b>Additional support of the SDGs:</b></p> <ul style="list-style-type: none"> <li>Continued Supplier Anti-Trafficking measures in the <a href="#">Microsoft Supplier Code of Conduct</a>, auditing, supplier programs and management systems, and increased supplier reporting transparency on these issues.</li> </ul>	<p>SDG Target 16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children.</p> <p>SDG Target 16.5 Substantially reduce corruption and bribery in all their forms.</p> <p>SDG Target 16.6 Develop effective, accountable and transparent institutions at all levels.</p> <p>SDG Target 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels.</p>

SDG	Our FY18 contribution toward achieving UN Sustainable Development Goals and Creating Shared Value	SDG Targets and Business Indicator Themes
	<p><b>Shared Value:</b></p> <ul style="list-style-type: none"> <li>• Promoted sustainability best practice sharing and collaboration with suppliers, the electronics sector, cross-industry groups, and NGOs.</li> <li>• Initiated additional software donations of Microsoft products to enhance NGO capability, capacity, and efficacy.</li> </ul> <p><b>Additional support of the SDGs:</b></p> <ul style="list-style-type: none"> <li>• Partnered with Windows and Devices Group stakeholders to support digital technology enablement for reaching the Sustainable Development Goals.</li> <li>• Continued to grow our partnership with Pact to address child labor in the Democratic Republic of the Congo (DRC). The program has reduced child labor by 97 percent and has received international recognition.</li> <li>• Enabled Fairmined certification for artisanal and small-scale miners with Alliance for Responsible Mining (ARM).</li> </ul>	<p><b>SDG Target 17.7</b> Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.</p> <p><b>SDG Target 17.14</b> Enhance policy coherence for sustainable development.</p> <p><b>SDG Target 17.15</b> Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development.</p> <p><b>SDG Target 17.16</b> Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.</p> <p><b>SDG Target 17.17</b> Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.</p>

## UN Global Compact

Microsoft endorsed the UN Global Compact (UNGC) in 2006. The UNGC is a voluntary initiative that seeks to advance universal principles on human rights, labor, environment, and anticorruption through the active engagement of the corporate community, in cooperation with civil society and representatives of organized labor. A decade later, Microsoft remains firmly committed to the 10 principles underlying the UNGC. Each year, we communicate the progress we've made in meeting the UNGC principles.

## Global Reporting Initiative (GRI)

Microsoft also follows the Global Reporting Initiative's Sustainability Reporting Standards for empowering sustainable strategies. The GRI

Standards provide a set of internationally recognized indicators covering social, economic, and environmental impacts. This standardized reporting framework originated from a collaboration of experts representing stakeholders from business, labor, investors, NGOs, accountancy, academia, and other groups.

We have mapped our FY18 Devices programs and activities to the GRI Standards for transparency and credibility across our wide range of stakeholder groups. We determined relevance by analyzing the material aspects of our Safety, Compliance, and Sustainability organization's operations. While we have included references to the majority of the GRI Standards in our FY18 report, we plan to increase our disclosures in FY19 to a larger set of GRI Standards (using either the GRI Core or Comprehensive

option). For detailed GRI Standards referenced, see the [GRI Standards Index](#) section of this report.<sup>1</sup>

## Integrating SDGs, Global Compact principles, and GRI in our reporting

You may wonder how Devices harmonizes these commitments in our reporting. The linkages between the GRI Standards and Sector Disclosures, and the relevant SDG indicators, were analyzed and published by GRI, the UNGC, and the World Business Council for Sustainable Development (WBCSD).<sup>2</sup> We have used this guidance to map our FY18 contributions to the SDGs and our FY18 GRI Standards disclosures throughout this report using SDG icons and GRI disclosure references.

<sup>1</sup>This material references the following Standards and the specific content indicated in the GRI Standards Index section of this report: GRI 102: General Disclosures 2016; GRI 103: Management Approach 2016; GRI 301: Materials 2016; GRI 302: Energy 2016; GRI 303: Water and Effluents 2016; GRI 305: Emissions 2016; GRI 306: Effluents and Waste 2016; GRI 307: Environmental Compliance 2016; GRI 308: Supplier Environmental Assessment 2016; GRI 403: Occupational Health and Safety 2016; GRI 407: Freedom of Association and Collective Bargaining 2016; GRI 408: Child Labor 2016; GRI 409: Forced or Compulsory Labor 2016; GRI 412: Human Rights Assessment 2016; GRI 414: Supplier Social Assessment 2016; GRI 416: Customer Health and Safety 2016; GRI 417: Marketing and Labeling 2016.

<sup>2</sup>SDG Compass: Linking the SDGs and GRI. [www.globalreporting.org/resourcelibrary/SDG\\_GRI\\_G4\\_Linkage.pdf](http://www.globalreporting.org/resourcelibrary/SDG_GRI_G4_Linkage.pdf)

Example:



**GRI STANDARDS DISCLOSURE: 308-1, 408-1**

# Our compliance model

Our compliance model ensures that Devices has an end-to-end system for managing and integrating the myriad of cross-jurisdictional legal requirements and voluntary measures related to Devices Sustainability into our business operations. Our compliance operating model for sustainability follows the ISO management systems approach, including ISO's requirement for continual improvement.

## Requirements

Managing the regulatory complexity presented by a global and multichannel supply chain requires a proactive approach. Experts assess emerging global trends, proposed regulations, policies, and stakeholder expectations in the areas of energy, labor rights, environmental compliance, health, product safety, and other requirements. To stay abreast of these developments, we use a variety of information sources:

- Subscriptions to regulatory tracking services
- Trainings and conferences
- Technical laboratories
- Trade and technical journals and newsletters
- Stakeholder consultations
- Meetings with peer professionals within government and industry
- Expert consultants
- Agency resources

As our device portfolio expands, a growing range of regulations apply. Using tools, such as the [Compliance to Product \(C2P\) database](#), SCS monitors emerging worldwide environmental and other regulations and ensures the continued market access and compliance of Microsoft devices and packaging.

## Specifications

Detailed written specifications and procedures help us embed sustainability requirements into routine business processes and are key to our ongoing assessment of products and for establishing clear roles for suppliers and internal stakeholders. Our specifications and operating controls are easily accessed on the SCS SharePoint site and revision controlled via a product life-cycle management tool. Specifications that are to be shared outside of Microsoft are published on Microsoft.com for easy access by our stakeholders.

## Documentation

Product engineers, Strategic Sourcing, Certifications, Product Safety, and Environmental Compliance collect and maintain comprehensive supplier, product testing, and certification documentation. Microsoft collects full material declarations and test reports from its supply base to ensure every part used in a Microsoft product complies with Microsoft materials restrictions and current regulations before the product is shipped to customers. To ensure ongoing compliance throughout the product lifecycle, we conduct annual validation testing on a range of devices.



## Assurance and monitoring

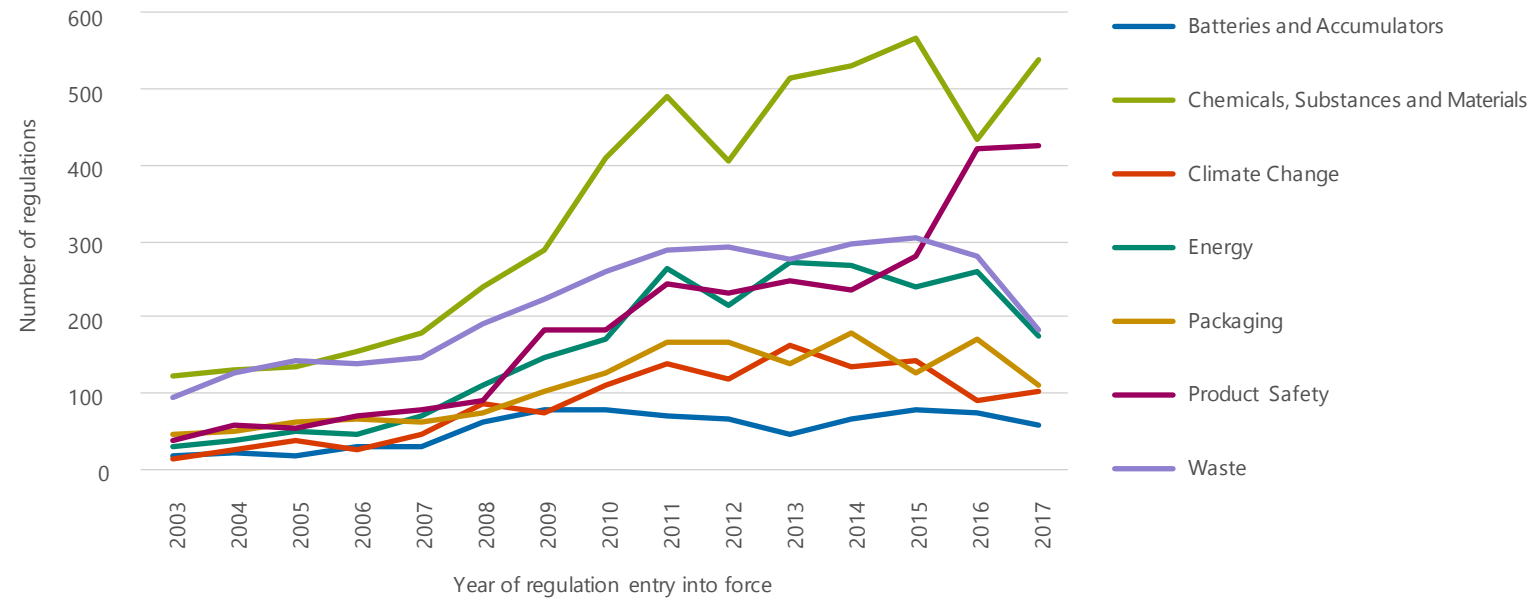
Our sustainability assurance and monitoring system includes auditing and certifying the quality of our management systems to the ISO 9001, 14001, and 17025 standards. In addition, Devices implements a comprehensive SEA auditing program for which no ISO standard exists. This program collects and analyzes data from our suppliers and performs on-site audits to assess their performance based on our specifications. Assurance and monitoring include product testing for safety and restricted substances.



GRI STANDARDS DISCLOSURE: 307-1, 416-2, 417-1


## Staying ahead of product regulations in FY18

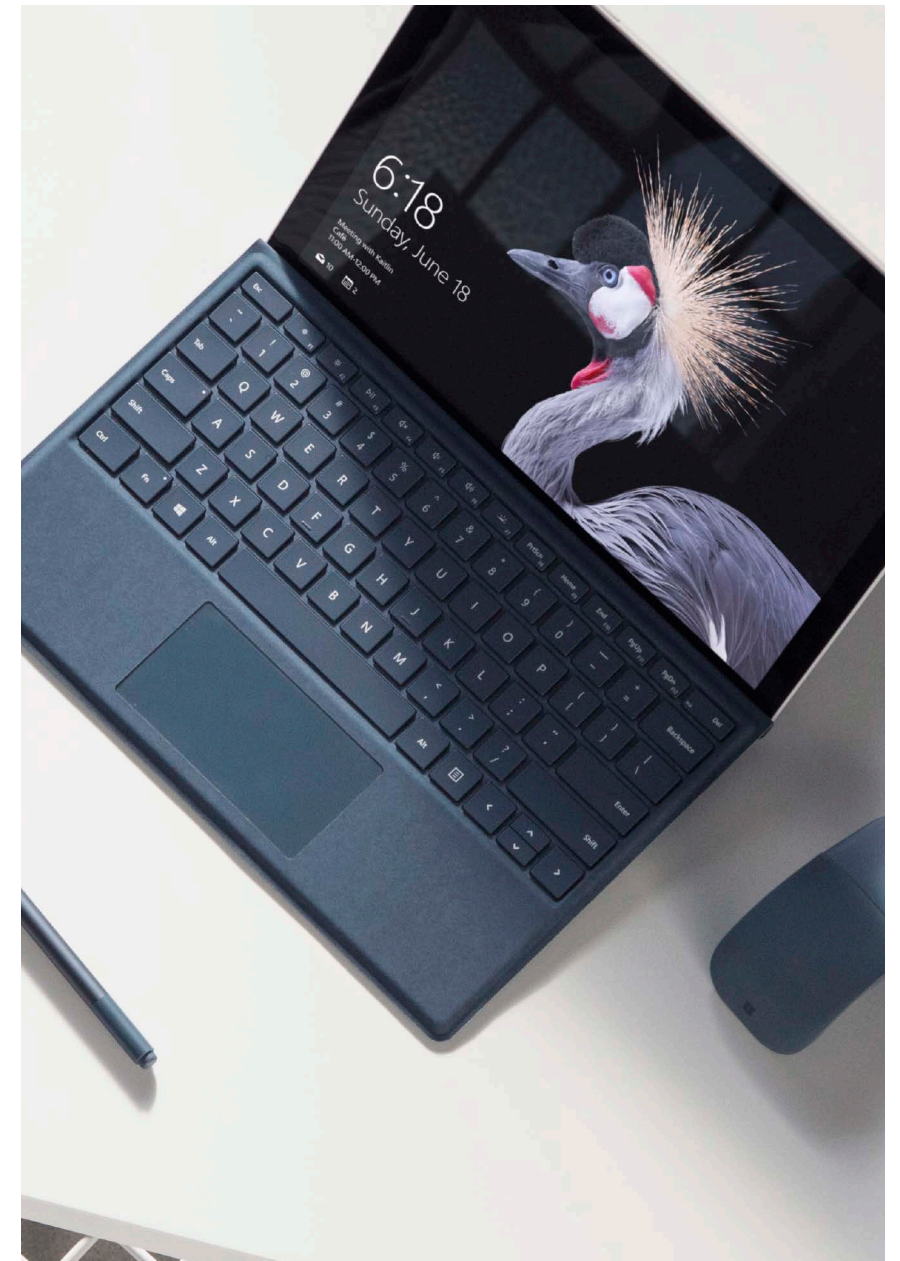
Trends in new regulations in C2P by selected topics and calendar year of entry into force



 **1,000+**  
Total new product regulations

 **373**  
Regulations reviewed by our SCS team

 **149**  
Regulations found applicable to Devices' products




## Our strong foundation

Knowledgeable technical experts, digital technology, and documented processes are foundational to our operating model. Devices uses in-house experts in energy, product safety, occupational health and safety, environmental compliance, sustainability, human rights, multiple engineering disciplines, supplier labor, and supplier health and safety who partner with design, development, manufacturing, and supply chain functions.

Digital technology and the Microsoft platform extend the integrated Devices teams’ speed and ability to address complexity.

## Tools and technology enabling supply chain sustainability

Technology enables efficiency and transparency in our secure and collaborative [Modern Workplace](#). Interacting with our partners through our technology platforms builds trust and a shared understanding of information. Our platforms allow business decision makers to consume real-time information and make optimal sustainability-related decisions using mature and robust sustainability models.

<p><b>Compliance Model</b></p>	<p>The Compliance Model is supported by <a href="#">Microsoft 365</a> and other tools, and key metrics are automatically reported and tracked through a configurable <a href="#">Power BI</a> dashboard hosted on <a href="#">Microsoft Azure</a> that enables management access to the most recent qualitative and quantitative performance metrics. All documentation is available through an <a href="#">Office 365 SharePoint</a> site that is configured for document control.</p>
<p><b>Supply chain risk analysis and mitigation</b></p>	<p>Power BI dashboards provide a 360-degree view of our most important supply chain metrics in one place, updated in real time. This visibility has transformed how we embed compliance and sustainability into our business and is a significant component of our supply chain management. In the raw materials sourcing portion of our supply chain, we use Power BI data set layering to view associated risks geographically. See the SEA and <a href="#">Responsible Sourcing of Raw Materials</a> section of this report for a deeper discussion of our supplier risk mitigation strategy.</p> 
<p><b>Audit Management System</b></p>	<p>To monitor and evaluate the social and environmental performance of our suppliers, we use an Audit Management System (AMS) built using Microsoft technologies and tools, including <a href="#">Visual Studio</a>, <a href="#">Visual Studio Team Services</a>, the <a href="#">Microsoft .NET Framework</a>, <a href="#">Azure SQL Database</a>, and <a href="#">Azure Blob Storage</a>, hosted on Microsoft Azure. Combining Power BI with the AMS gives SCS, Manufacturing, and Strategic Sourcing the ability to harness greater insights into the data through modern data visualizations and simple report authoring. The AMS enables our Social and Environmental Accountability (SEA) program to address supplier complexity across hundreds of factories through quick access to business intelligence regarding current and historical SEA audit information. Users can upload, manage, and flexibly extract data about multiple suppliers from “one source of truth” and initiate workflows to manage follow-up and resolve corrective actions.</p>



<p><b>Online supplier training platform</b></p>	<p>The SEA Academy on-line platform complements our existing supplier SEA programs and establishes a scalable system for capability-building training and related communication to Microsoft suppliers and internal stakeholders. The platform was developed using Java on Azure and <a href="#">Windows Server</a> hosted on Microsoft Azure. In FY18, we completed the platform design and development, including website, PC and mobile versions accessible by Microsoft internal stakeholders, supplier, and factory users. The platform includes training modules, a resource center, access to best practices, <a href="#">Workers' Voice Hotline</a> case management, survey capabilities, and linkage to FAQs and Q&amp;As, and the AMS. For more information, see the <a href="#">SEA Academy</a> section of this report.</p>
<p><b>Regulatory compliance</b></p>	<p>Digital technology enables Devices to manage complex product data sets and workflows. Our suppliers provide the material composition for each device and packaging component— now for more than 100,000 components. We use smart technology to evaluate this data for restricted substance compliance, track and eliminate substances, and to inform our voluntary efforts. This process is a gating item during new product development.</p> <p>To drive consistent practices in all product development programs, product engineers and SCS use <a href="#">Microsoft Access</a> database management with a Microsoft SharePoint user interface, providing a security-enhanced repository to track project schedules and other related project content. The system provides a single-point management tool for consistency in communicating and referencing project progress, allowing greater understanding of resources by project and business line, people workloads, and strategic touch points.</p>
<p><b>Factory of the Future</b></p>	<p>We have deployed a “smart building” system at a major Microsoft supplier that helps the supplier more efficiently manage the energy used for heating, ventilation, and air conditioning. This system uses sensors, Azure hosting, the <a href="#">Azure IoT Hub</a>, and Power BI to collect and analyze data enabling a facility’s heating, ventilation, and air conditioning engineers to understand what aspects of their systems require maintenance or calibration. Additionally, these technologies are utilized to reduce scrap production from modeling manufacturing parameters for improved yield. This resulted in \$2 million scrap reduction at this same supplier.</p>

## Management system for environmental sustainability

All significant Devices operating locations are ISO 14001 certified. ISO 14001 is an internationally recognized framework that establishes a process for entities to manage and continuously improve their environmental performance. Through ISO 14001, our customers and other stakeholders receive objective assurance that Devices is responsibly managing the environmental compliance and impacts of our devices and packaging. Additional positive business outcomes include ease of entry to markets, measurable cost savings through reduced waste generation, more efficient energy use, less resource consumption, and reduced risk. In the fall of 2017, we were audited and certified to the revised standard of ISO 14001:2015 with zero major findings.

To continuously improve, we use EMS audit results data contained in the AMS system to create a Power BI dashboard to track progress against our corrective and preventive actions. We also educate employees about the Devices Environmental Management System (EMS) programs. This year, we updated our internal training materials in line with the ISO 14001:2015 standard.

Our FY18 program results are described in the following table.



EMS Programs and Objectives	Targets	FY18 Results
Energy consumption	Install 400kW of solar capacity in a major supplier facility by 12/31/2017	<b>Achieved:</b> For more information, see the <a href="#">Project Sunrise section</a> of this report.
	Reduce CO <sub>2</sub> e emissions	
	Implement an ESB data analytics solution and deploy in a major supplier facility by 6/30/2017	<b>Achieved:</b> For more information, see the <a href="#">Project Sunrise section</a> of this report.
	70% of suppliers by addressable spend (90% spend) report GHG emissions and 10% report targets for emissions to the CDP by 6/30/17	<b>Exceeded:</b> 74% of suppliers responded to the CDP declaration; 17% committed to carbon reduction targets. For more information on CDP, see the <a href="#">Greenhouse gases (GHGs) section</a> of this report.
	MOPR baseline energy and CO <sub>2</sub> e monitoring for FY18	<b>In progress:</b> Energy baseline analysis to be completed by Dec. 2018 due to Hurricane Maria. <b>Achieved:</b> The data center lighting was all converted to LED.
Device design, use, and disposal	Complete seven eco profiles for new and released products by end of FY18	<b>Achieved.</b>
	Minimize environmental impacts of Devices	
	Obtain EPEAT certification for all computer devices and elevate one device to Gold rating	<b>Exceeded:</b> All Surface computers currently being manufactured are registered Gold in the US in the EPEAT 2009 computer category.
	Include at least one additional modular component into one Surface Dev project during FY18	<b>Exceeded:</b> All Surface programs that set design requirements in FY18 included at least one new modular component. For more information, see the <a href="#">EPEAT and ENERGY STAR section</a> of this report.

EMS Programs and Objectives	Targets	FY18 Results
<p><b>Packaging design</b></p> <p>2020 Plan to minimize environmental impact of product packaging</p>	<p>Overall product to package size ratio from 29% to &gt;50% 5% average year-over-year (YOY) individual programs improvement in product to package size ratio</p>	<p><b>In progress:</b> In FY18, revised 2020 target of &gt;8% and 40% was established. FY18 average of all programs is 38%, which is a 2% reduction in ratio gain from the FY17 average of 40%. For more information, see the <a href="#">Packaging section</a> of this report.</p>
	<p>Overall package weight reduction &gt;10%</p>	<p><b>Exceeded for FY18 programs:</b> Average weight reduction of primary packaging was 20%, exceeding YOY and 2020 goals of 4% and 10% reductions, respectively.</p>
	<p>Increase recycled paper content from 70% to &gt;90%</p>	<p><b>On track:</b> In FY18, average recycled content of all paper materials was 69.74%, an increase of 6.30% from FY17. Of papers comprised of recycled materials, the average level of recycled content was 83%.</p>
	<p>Minimum 25% recycled content for all plastics and/or 20% of plastics to be bio-based alternatives. 10% average YOY individual programs increase in recycled content</p>	<p><b>On track:</b> In FY18, 66% of rigid plastic containers used an average of 30% recycled content. All rigid plastics volume contained an average of 20% recycled content. Plastics bio-based alternatives being investigated for EPE foam. In FY18, YOY all rigid and flexible plastics recycled content decreased from 5.64% to 2.12% due to a 28% reduction of total plastics volume, and corresponding reduction of rigid plastic container volume using recycled content.</p>
	<p>Eliminate elemental chlorine in paper bleaching process</p>	<p><b>Achieved:</b> All paper materials that are subject to bleaching process are ECF (elemental chlorine free) or TCF (total chlorine free).</p>
<p><b>Waste</b></p> <p>Minimize waste from direct operations</p>	<p>Train employees and suppliers on improved waste management practices</p>	<p><b>Achieved:</b> New office bins for recycling were rolled out in the Redmond campus with associated communication. Used digital signs for recycling communications. <b>Achieved:</b> Supplier chemical management training including waste management was rolled out via the SEA Academy. For more information, see the <a href="#">Digital manufacturing</a> and <a href="#">Magnesium recycling program sections</a> of this report.</p>
	<p>Develop baseline and action plan for MOPR to reach 90% diversion rate by 2020</p>	<p><b>Achieved:</b> A three-year plan was approved by management.</p>
<p><b>Devices raw materials</b></p> <p>Establish an RSRM program for Devices</p>	<p>Develop RSRM expectations and requirements for suppliers by the end of FY18</p>	<p><b>Achieved:</b> For more information, see the <a href="#">Responsible sourcing of raw materials section</a> of this report.</p>
	<p>Develop suppliers' RSRM capability programs by FY18</p>	<p><b>Ongoing:</b> For more information, see the <a href="#">Our supplier programs aim to build suppliers' capabilities section</a> of this report.</p>

# Our stakeholders

Our stakeholders are passionate about the sustainability of our devices and ongoing efforts to solve social and environmental issues in our value chain. We welcome the challenge of meeting what can be divergent needs.



GRI STANDARDS DISCLOSURE: 102-42, 102-43

Microsoft employees are critical to the program's success and committed to continuously improving product and operational sustainability.



## How our employees impact sustainability



### Development and new product introduction (NPI)

- Design repairability, reliability, and recyclability into our devices
- Reduce energy consumption, volume, and weight of products and packaging
- Use nonhazardous substances, and recycled/recyclable materials



### Strategic sourcing

- Enforce Supplier Code of Conduct and compliance
- Hold suppliers accountable to meet SEA specifications
- Source benign and conflict-free materials



### Manufacturing

- Enforce EHS, labor, and ethics requirements for suppliers
- Focus on management of water, greenhouse gases, and waste
- Refurbish failed or returned products



### Logistics and distribution

- Use carbon-efficient distribution models
- Develop compact products and packaging for palletization efficiency



### Quality repair and refurbishment

- Build high-quality devices to reduce waste
- Recycle product and reuse raw materials
- Promote refurbishment programs

## Communications with stakeholders

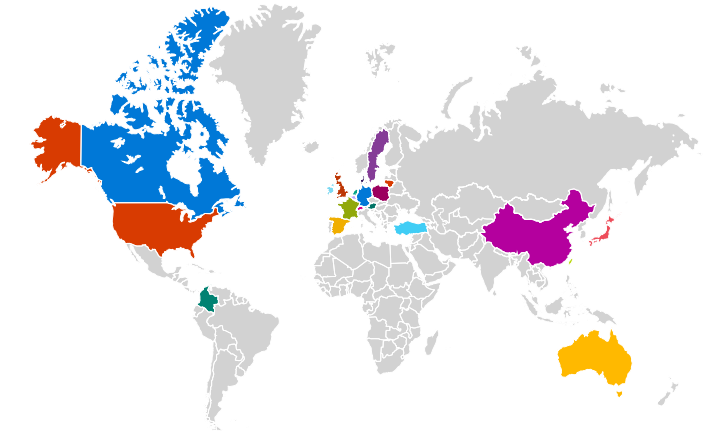
Credible and respectful communication is foundational. A variety of external stakeholders contact Devices for information about our products and programs. We also partner with Investor Relations; Corporate, External, and Legal Affairs (CELA); Marketing; industry organizations; and NGOs to respond to information requests. We strive to be transparent, direct, and personal.

In FY18, we streamlined our online resources to enable stakeholders to more easily locate sustainability information about our products by establishing a universal footer on the Microsoft web pages, which leads them to a self-service portal. Information related to environmental compliance is available at [www.microsoft.com/en-us/legal/ce/environmental-compliance](http://www.microsoft.com/en-us/legal/ce/environmental-compliance), while responsible sourcing information is available at [www.microsoft.com/en-us/responsible-sourcing](http://www.microsoft.com/en-us/responsible-sourcing).

The largest body of inquiries regarding sustainability comes directly from our customers. The total number has quadrupled from 2010. A decline in FY18 corresponds to increased availability of self-serve information on our Microsoft.com websites.

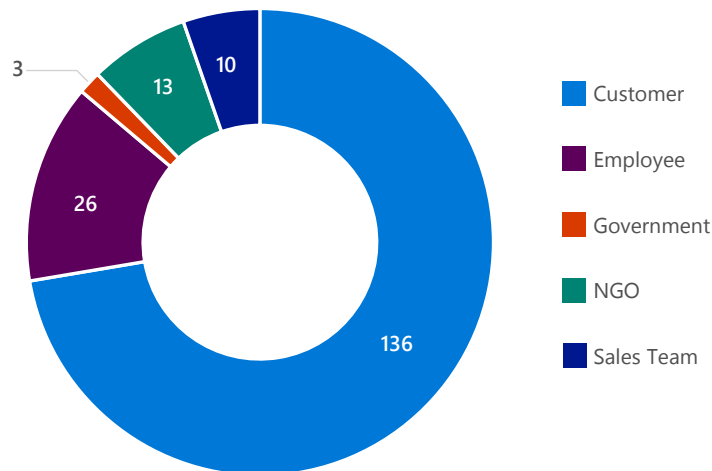
**GRI STANDARDS DISCLOSURE: 102-44**

## Stakeholder inquiries by location

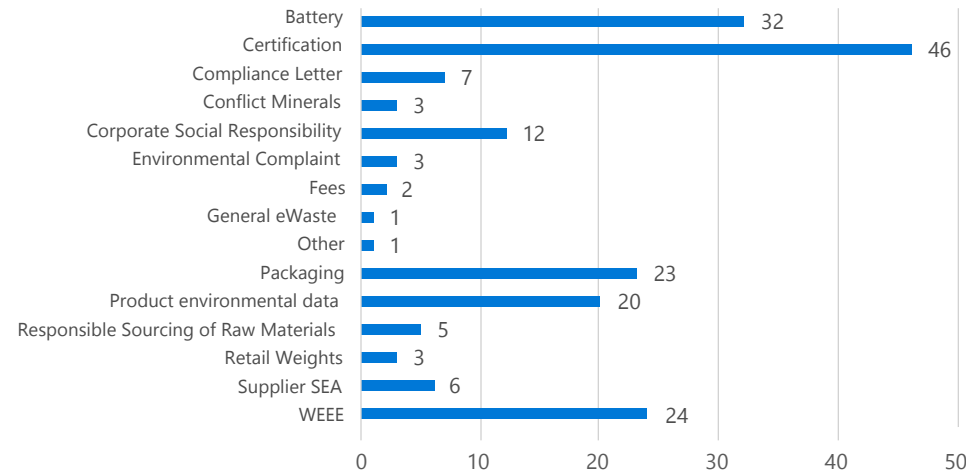


Australia	3	Germany	11	Spain	1
Austria	2	Hong Kong	1	Stockholm	1
Belgium	1	Ireland	2	Switzerland	2
Canada	17	Japan	11	Taiwan	1
China	6	Lithuania	4	Turkey	2
Colombia	1	Netherlands	5	United Kingdom	36
Denmark	1	Perth	1	United States	60
France	18	Poland	1		

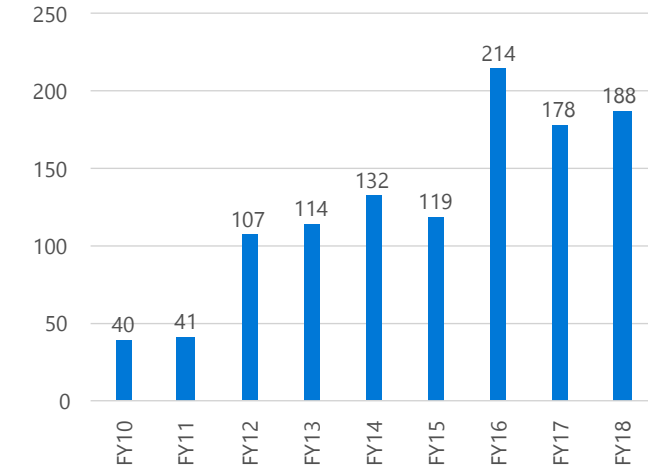
## Count of stakeholder inquiries by stakeholder type



## Count of stakeholder inquiries by topic



## Count of stakeholder requests by fiscal year





## Stakeholder partnerships






Microsoft is dedicated to building the capabilities of and partnering with NGOs and cross-industry sectors.






Our partnerships offer diverse points of view that challenge our ambitions and up-level our thinking.

[GRI STANDARDS DISCLOSURE: 102-13, 102-40](#)






### Partnerships for sustainability





Partner	Description	What we have achieved through this partnership
	Alliance (E-waste Solutions Alliance for Africa) is an industry group that collaborates with governments in Africa to create or expand sustainable framework policies and long-term solutions for end-of-life product management.	The Alliance contributed to supporting recycling legislation and operations in Nigeria and South Africa. The Alliance continues its work in supporting emerging legislation in additional countries, including Ethiopia, Tanzania, and Uganda.
	<a href="#">Alliance for Responsible Mining</a> (ARM) is a global initiative established in 2004, working for the sustainable development of artisanal and small-scale mining (ASM).	Microsoft partnered with ARM to help create opportunities for gold miners and provide them with incentives to become economically, technologically, and environmentally viable enterprises in a responsible manner. Microsoft began working with ARM to develop a market entry standard for artisanal gold miners in conflict and high-risk areas. The standard provides a pathway for stepwise improvements by artisanal miners. Microsoft also partnered with ARM to develop ASM mines' capabilities in Peru to meet the Fairmined standard and increase access to market.
	<a href="#">Business for Social Responsibility</a> (BSR) is a global network of member companies, thought leaders, peers, and stakeholders focused on creating viable sustainability solutions.	HERproject™ was launched in 2014 and implemented in nine Microsoft suppliers, covering 267,418 trainees by the end of FY18. BSR's HERproject™ is a collaborative initiative that strives to empower low-income women working in global supply chains. HERproject™ drives impact for women and business via workplace-based interventions on health, financial inclusion, and gender equality.
	<a href="#">Carbon Disclosure Project</a> (CDP) is an international organization providing a global, standardized system for companies and cities to measure, disclose, manage, and share vital environmental information.	Through disclosing our GHG emissions and supply chain water usage information publicly, we create global transparency, trust, and credibility.

Partner	Description	What we have achieved through this partnership
	<p><a href="#">Entertainment Software Association</a> (ESA) is the trade association of the video game industry in the US.</p>	<p>ESA works with Microsoft, Sony, and Nintendo with respect to emerging energy requirements in the US for game consoles. At present, we are on the docket at the California Energy Commission to determine if console energy use should be regulated. The industry position put forth by the ESA is that the voluntary agreement now in place in the EU is a useful alternative in California as well. Significant energy savings can be achieved in California through a similar agreement, without the need for further legislation.</p>
	<p><a href="#">Game Console Voluntary Agreement</a> Steering Committee.</p>	<p>Microsoft collaborates with other manufacturers of video game consoles to set aggressive targets for energy efficiency.</p>
	<p><a href="#">Green Electronics Council</a> (GEC) collaborates to achieve a world in which only sustainable IT products are designed, manufactured, and purchased. Founded initially to manage EPEAT, the leading global ecolabel for IT products, GEC advocates for sustainable IT by helping both manufacturers and large-scale purchasers.</p>	<p>Our involvement in the EPEAT program helps drive sustainability improvements in our products and in the IT sector. Our Surface computers have achieved EPEAT Gold ratings in the US. As the EPEAT rating criteria become more rigorous over time, Surface computers are adopting even more sustainability enhancing features.</p>
	<p><a href="#">Global Reporting Initiative</a> (GRI) is a nonprofit organization that promotes economic sustainability. It produces one of the world's most prevalent standards for sustainability and corporate social responsibility reporting, the GRI G4 Sustainability Reporting Guidelines.</p>	<p>We follow the most widely used sustainability reporting framework to enable enhanced transparency and accountability. In FY18, Microsoft supported the development of guidance for reporting related to the responsible sourcing of raw materials.</p>
	<p>IEEE <a href="#">Product Safety Engineering Society</a> (PSES) provides ongoing education for its members, keeping them abreast of the latest tools and techniques for addressing product safety and compliance. We are also active on the PSES Technical Activities Committee, which is a hub for industry collaboration regarding the changing regulatory environment worldwide.</p>	<p>Through our membership with the IEEE PSES, we serve the product safety and regulatory profession and the public by fostering the development and facilitation of knowledge exchange in the disciplines of product safety and compliance engineering. PSES brings us together with the thought leaders, including representatives from many Fortune 500 companies, on product safety, product liability, medical devices, safety regulations, forensics, electromagnetic compatibility, and related fields.</p>

Partner	Description	What we have achieved through this partnership
	<p>The <a href="#">International Electronics Manufacturing Initiative</a> (iNEMI) is a not-for-profit, highly efficient R&amp;D consortium of leading electronics manufacturers, suppliers, associations, government agencies and universities. Its mission is to forecast and accelerate improvements in the electronics manufacturing industry for a sustainable future.</p>	<p>We have partnered with iNEMI to advance our thinking on how to refurbish/recycle electronics to recover as much embedded value as possible and advance the circular economy.</p>
	<p><a href="#">Information Technology Industry Council</a> (ITI) and its Environmental Policy Committee (EPC) and Regulatory Policy Committee (RPC) provide members with information and the ability to exchange and present views regarding developing regulatory changes around the world.</p>	<p>ITI brings together many of the leading technology companies to help governments around the world to implement more effective safety and environmental regulations. We work with their safety and environmental committees to help ensure a high level of product safety and environmental protection without creating unnecessary barriers that would prevent consumers from being able to buy leading-edge products.</p>
	<p>The <a href="#">Initiative for Responsible Mining Assurance</a> (IRMA) has developed a Standard for social and environmental performance and a system that delivers recognition for achievement of benchmarks against that Standard. IRMA links investors and private sector purchasers of mined material with mines seeking to lead. The system offers accountability and credibility through multi-stakeholder governance and independent, third-party verification.</p>	<p>We have partnered with multiple stakeholders to implement an independently verifiable, responsible mining assurance system to improve social and environmental performance at the source of minerals used in our products.</p>
	<p><a href="#">Institute of Public &amp; Environmental Affairs</a> (IPE) is a non-profit environmental research organization that aims to expand information disclosure to communities on the hazards and risks in their environment, promoting widespread participation in environmental governance.</p>	<p>Through the IPE website, we quickly identify our suppliers' performance on environmental compliance in China. Since May 2006, IPE has provided a pollution database to monitor corporate environmental performance. IPE's aim is to expand environmental information disclosure to allow communities to fully understand the hazards and risks in the surrounding environment, thus promoting widespread public participation in environmental governance. After partnering with IPE, Microsoft has helped more than 61 suppliers to improve their performance on environmental compliance and close related issues.</p>
	<p><a href="#">International Consumer Product Health and Safety Organization</a> (ICPHSO) is a nonprofit, volunteer-driven, global membership organization dedicated to providing nonpartisan forums for the exchange of ideas and information on health and safety issues related to consumer products.</p>	<p>Through our membership in ICPHSO, Microsoft engages with numerous Fortune 500 companies on best practices involving consumer product safety processes, early insight into proposed consumer product safety legislation, and a network of trade, legal, and regulatory authorities.</p>
	<p><a href="#">International Product Safety and Liability Prevention Association</a> supplies a constant stream of knowledge, current information, and resources to management teams around the world regarding product safety and product liability prevention to help them design and manufacture safer products.</p>	<p>IPSLP helps Microsoft design and manufacture safe products by communicating proposed global product safety and product liability regulations.</p>



Partner	Description	What we have achieved through this partnership
	<p><a href="#">ITRI Tin Supply Chain Initiative</a> (ITSCI) is a joint initiative that assists upstream companies (from mine to the smelter) to institute actions, structures, and processes necessary to conform with the OECD Due Diligence Guidance. The initiative includes small and midsize enterprises, cooperatives, and artisanal mine sites.</p>	<p>Microsoft supports ITSCI, which promotes the understanding of the upstream supply chain from mine to smelter and downstream companies (such as product manufacturers). This initiative currently spans 35 countries and operates at approximately 1,000 mine sites in Burundi, Rwanda, and the DRC, shipping hundreds of tons of minerals per month and involves ~80,000 miners, who in turn provide support for ~375,000 dependents.</p>
	<p><a href="#">Natural Resources Defense Council</a> (NRDC) creates solutions for lasting environmental change, protecting natural resources in the US and across the globe.</p>	<p>Microsoft collaborates with the NRDC to protect wildlife and wild places and to ensure a healthy environment for all life on Earth by decreasing the energy use of its devices.</p>
	<p><a href="#">Organization for Economic Co-operation and Development</a> (OECD) is an international economic body of 34 countries dedicated to stimulating economic progress and world trade.</p>	<p>Microsoft utilizes OECD guidance for supply chain due diligence for minerals from conflict affected and high-risk areas.</p>
	<p><a href="#">Pact</a> is an NGO that provides a process and tool for companies to address child labor in their mineral supply chains.</p>	<p>Microsoft supports a Pact project to eliminate child labor at mining sites in the DRC, specifically in the Manono and Kolwezi regions. The program received international recognition and <a href="#">reduced the number of children working at Manono mines by 77–97 percent</a> during the course of the project to date. The Kolwezi project just finished the first year of its three-year engagement.</p>
	<p><a href="#">Responsible Minerals Initiative</a> (RMI) is the leading industry initiative on conflict minerals, cosponsored by RBA and GeSI.</p> <p><a href="#">Responsible Mineral Assurance Program</a> (RMAP) uses an independent, third-party audit process to identify smelters and refiners that have systems in place to ensure sourcing of only conflict-free materials.</p>	<p>Microsoft participates in RMI workgroups, such as the Cobalt Sub-team, the Smelter Disposition Team, the Global Smelter Engagement Team, and the China Smelter Engagement Team. Microsoft also participates in the annual RMI conference.</p> <p>In partnership with RMAP, we were able to increase the number of conformant smelters or refiners (SORs) in our supply chain.</p>

Partner	Description	What we have achieved through this partnership
 <p><b>Responsible Business Alliance</b> Formerly the Electronic Industry Citizenship Coalition Advancing Sustainability Globally</p>	<p><b>Responsible Business Alliance</b> (formerly EICC, RBA) is a nonprofit coalition of companies committed to supporting the rights and well-being of workers and communities worldwide affected by the global supply chain.</p>	<p>The Microsoft Supplier Code of Conduct (SCC) incorporates the <a href="#">RBA Code of Conduct</a>. Microsoft participates in RBA workgroups, such as the <a href="#">Validated Assessment Process (VAP)</a> workgroup. Microsoft also participates in the annual conference.</p>
 <p><b>step</b> solving the e-waste problem</p>	<p><b>Step</b> (Solving the E-Waste Problem) is an international initiative composed of manufacturers, recyclers, academics, governments, and other organizations committed to solving the world's e-waste problem. By providing a forum for discussion among stakeholders, Step is actively sharing information, seeking answers, and implementing solutions.</p>	<p>Microsoft collaborates in the development of global guidelines for the treatment of e-waste and the promotion of sustainable material recycling.</p>
 <p><b>SUSTAINABLE PACKAGING COALITION*</b></p>	<p>The <b>Sustainable Packaging Coalition (SPC)</b> is a membership-based collaborative that believes in the power of industry to make packaging more sustainable. It is the leading voice on sustainable packaging and champions packaging that is good for people and the environment.</p>	<p>As a member of this organization for over 10 years, Microsoft is playing a leadership role in the SPC Electronics Packaging Committee, focused on the unique packaging challenges faced by the electronic and tech product sector.</p>
 <p><b>wbcscd</b></p>	<p>The <b>World Business Council for Sustainable Development (WBCSD)</b> is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. WBCSD helps make members more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment, and societies. Member companies come from all business sectors and all major economies.</p>	<p>Among other activities with WBCSD, Devices participates in the Factor 10 Circular Economy Project, including the newly formed Global Plastic Initiative (GPI). The GPI is a CEO initiative with commitment to raise USD \$1 billion over the next five years to scale up investments for collaborative market opportunities that help reduce plastic waste and prevent it from entering the environment.</p>

## Materiality assessment

Devices' reporting content is informed by what is material to our business. We conducted a materiality assessment to better understand and prioritize sustainability issues that matter to Devices and our stakeholders. This recommended practice allows us to focus our resources, evolve our strategy, and tailor our sustainability reporting. To conduct the materiality assessment, we took the following steps:

### Step 1 – Identify material categories and issues

We conducted a robust analysis of global standards, existing materiality assessments, and stakeholder engagement results to establish a preliminary list of the categories and issues material to our Devices stakeholders.

### Step 2 – Identify importance to stakeholders

To identify the issues that matter most, we used information gathered while engaging with and in continual collaboration with our various stakeholder groups. (For more information, see the [Partnerships for sustainability table](#).)

**Step 3 – Map importance and impact**

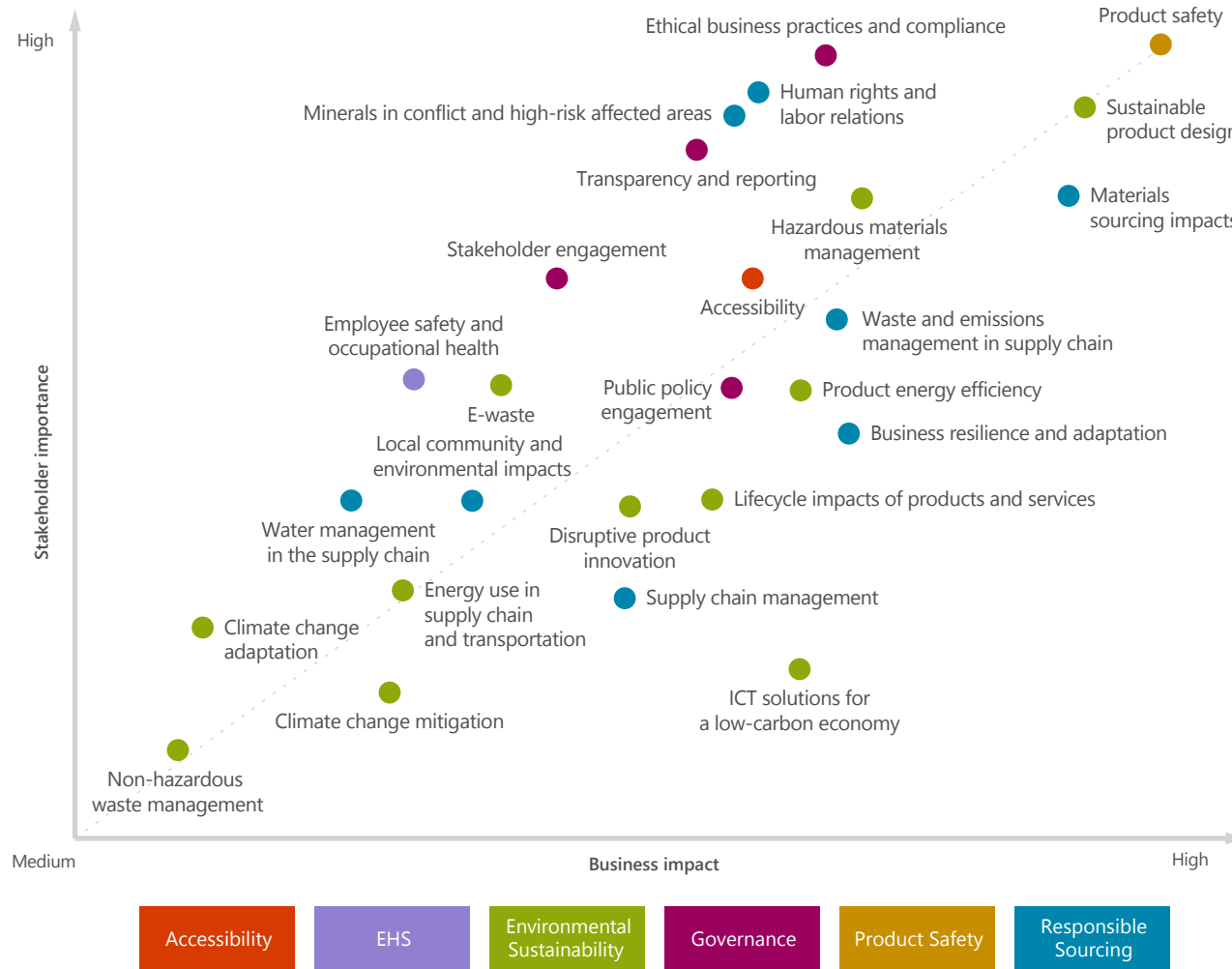
The results were mapped on a matrix against each identified issue’s impact on our ability to deliver on our strategy based on five criteria: Microsoft’s mission, our corporate values, environmental impact, improving lives, product safety, and compliance.

Of the topics that are material to our organization, the 10 most material were determined to be:

- Product safety
- Sustainable product design
- Ethical business practices and compliance
- Human rights and labor relations in the supply chain
- Minerals in conflict and high-risk areas
- Transparency and reporting
- Materials sourcing impacts
- Hazardous materials management
- Waste and emissions management in the supply chain
- Accessibility

The following chart identifies all material issues and the relative materiality of each issue to the others.

**Devices Safety, Compliance, & Sustainability Materiality Assessment**



# 4

## Devices' Sustainability Programs Follow Our Value Stream

Product design

Life cycle assessments

EPEAT and ENERGY STAR

Substance management

Environmental health and safety (EHS) during design



The remainder of this report is organized by our value stream or product life cycle. The value stream frames our efforts to improve the sustainability aspects of our products and processes through product end of life. This extended focus is critical to our business, communities and the planet.

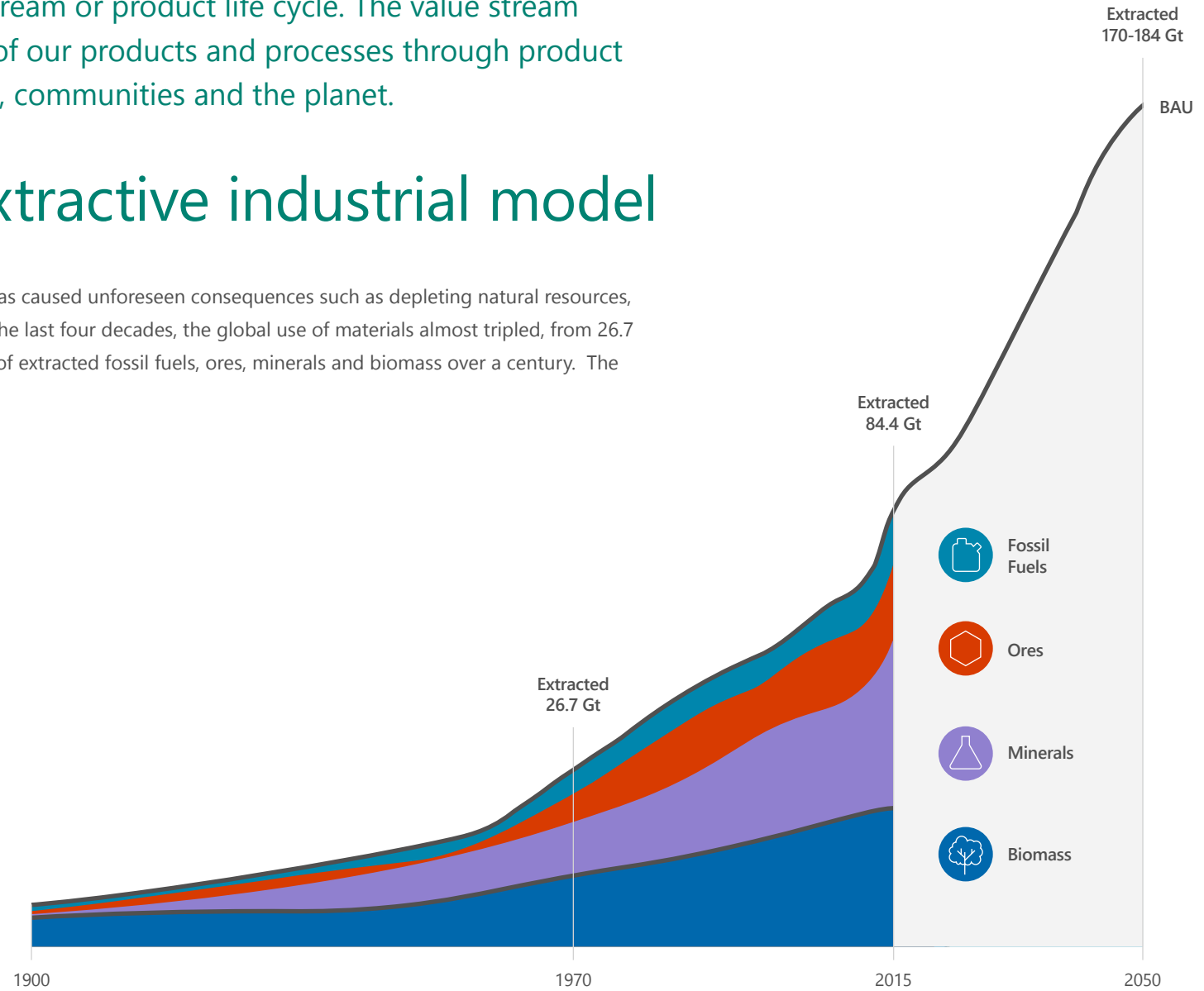
## Venturing beyond today's extractive industrial model

In a resource constrained world, the 'take-make-dispose' extractive industrial model has caused unforeseen consequences such as depleting natural resources, creating environmental pollution and worsening the effects of climate change. Over the last four decades, the global use of materials almost tripled, from 26.7 billion tons in 1970, to 84.4 billion tons in 2015.<sup>3</sup> The chart below shows the quantity of extracted fossil fuels, ores, minerals and biomass over a century. The alarming trend is expected to increase if we continue our current course.

### Raw Material Extraction

Material extraction of fossil fuels, ores, minerals and biomass between 1900 and 2015 when total material extraction amounted to 84.4 Gt.

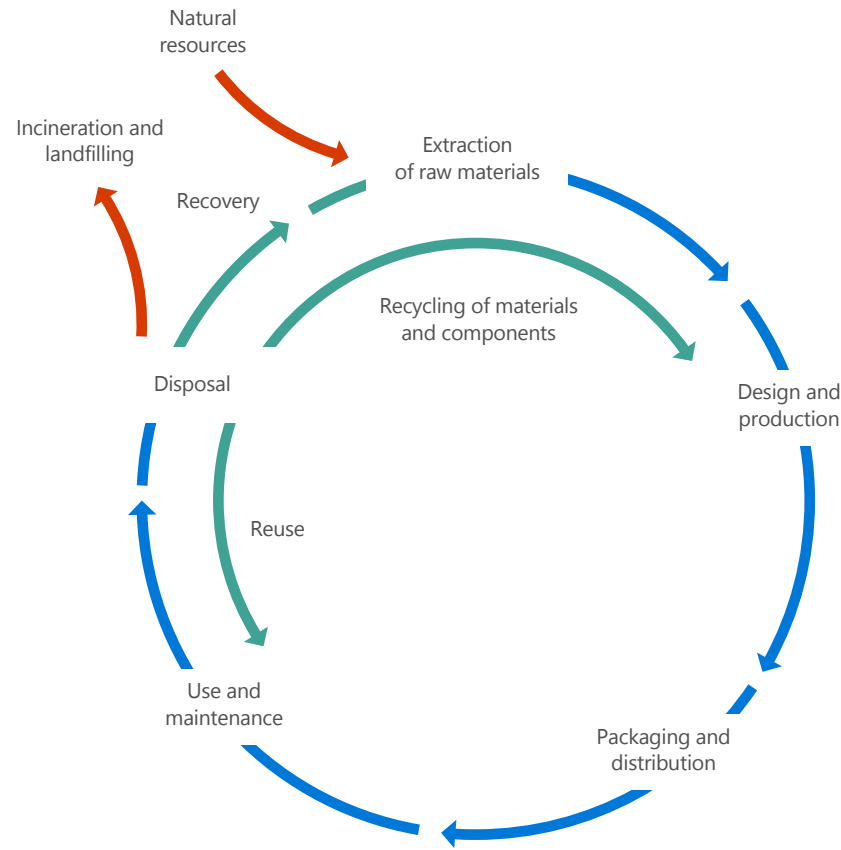
Forecasts show that expected material use is likely to increase between 170 and 184 Gt in 2050 (BAU).



<sup>3</sup>Wit M., Hoogzaad J., Ramkumar S., Friedl H., Douma A.. 2018 January, The Circularity Gap Report, Circular Economy, Shifting Paradigms.

**Product Life Cycle**

At Microsoft, we seek to identify and act on opportunities to reduce a product’s resource use and impacts to people and the environment. The following United Nations (UN) Environment diagram<sup>4</sup> depicts the pathway toward a circular model, where materials are recovered through reuse of products and parts, repair, refurbishment, and recycling materials at end of life. This circular model reduces the dependency on extracting natural resources.



**Regenerative Key Focus Areas<sup>5</sup>**



**Prioritize Regenerative Resources:** Ensure renewable, reusable, non-toxic resources are utilized as materials and energy in an efficient way.



**Preserve and Extend What’s Already Made:** Maintain, repair and upgrade resources in use to maximize their lifetime and give them a second life through take-back strategies, where applicable.



**Use Waste as a Resource:** Utilize waste streams as a source of secondary resources and recover waste for reuse and recycling.



**Rethink the Business Model:** Consider opportunities to create greater value and align incentives through business models that build on the interaction between products and services.



**Design for the Future:** Adopt a systemic perspective during the design process, to employ the right materials for appropriate lifetime and extended future use.



**Incorporate Digital Technology:** Track and optimize resource use and strengthen connections between supply-chain actors through digital, online platforms and technologies.



**Collaborate to Create Joint Value:** Work together throughout the supply chain, internally within organizations and with the public sector to increase transparency and create shared value.

<sup>4</sup>Product Life Cycle, UN Environment [www.lifecycleinitiative.org/starting-life-cycle-thinking/what-is-life-cycle-thinking/](http://www.lifecycleinitiative.org/starting-life-cycle-thinking/what-is-life-cycle-thinking/)

<sup>5</sup>Wit M., Hoogzaad J., Ramkumar S., Friedl H., Douma A.. 2018 January, The Circularity Gap Report, Circular Economy, Shifting Paradigms

# Product design

Product design is critical toward minimizing the environmental and social impact of our products. Our approach is evolving from a product-centric approach to one that includes impacting cross-industry systems through innovation, capability building, and partnerships. Our internal approach to product design considers the environmental impact of the product from ideation through end of life, including:

- Reduction of harmful substances
- Selection of materials
  - › Materials with recycled or bio-based content
  - › Recyclable materials
- Energy efficiency (product and power supply)
- Product longevity
  - › Durability
  - › Repairability, including availability and cost of repair and spare parts
  - › Upgradeability
- Product/part reusability and recyclability
- Weight/volume of product
- Packaging
  - › Selection of materials, reduction of harmful substances
  - › Mass/volume reduction, bulk packaging
- Manufacturing
  - › Socially responsible supply chain: labor, OHS
  - › Energy use; renewable energy
  - › Pollution controls

Our product-specific, resource efficiency (RE), and ecodesign initiatives are based on reducing resource use in products and packaging and using materials that are recycled, recyclable, and less toxic to human health and the environment. Fully recyclable or reusable products and no landfilling of packaging materials are the end goals. Ecodesign unlocks the potential for extending product life expectancy through reliability, durability, repair, refurbishment, and parts harvesting. Combining RE with ecodesign requirements embedded into the design process has a synergistic effect, making products with fewer resources, extending life expectancy, and converting e-waste into usable resources.

This year, we created an ecodesign checklist identifying 60 elements that must be considered during the design phase and development process for all new products and packaging. Progress is closely tracked and rated using points within the checklist for every new product. Decisions regarding the use of environmentally preferable materials, product design, and manufacturing processes have implications including feasibility, cost, product reliability, sales, and brand reputation. As such, we start as early as possible in the design process to include discussions of ecodesign principles and set targets for product performance against our ecodesign checklist.



# Life cycle assessments

We use life cycle assessments (LCAs) to evaluate and reduce the systemic environmental impact of our hardware products. Product environmental LCA is a science-based method to calculate the environmental impacts of all the activities involved in extracting raw materials, producing, using, transporting, and disposing of a product throughout its life cycle.

The LCA calculation is performed using GaBi digital technology—a software tool that runs on the Windows platform. Our calculations are based on an LCA in accordance with ISO 14040 and ISO 14044 standards, complemented by ETSI TS 103 199 and ITU-T L.1410. Our LCA calculations include extraction of raw materials, upstream materials preparation, electronic component manufacturing, subassembly manufacturing and assembly, final assembly, distribution to customer, product use, and end-of-life treatment. As LCA methods, data, and technologies continuously evolve, our LCA results represent our best understanding at the time of publication and are revised as needed.

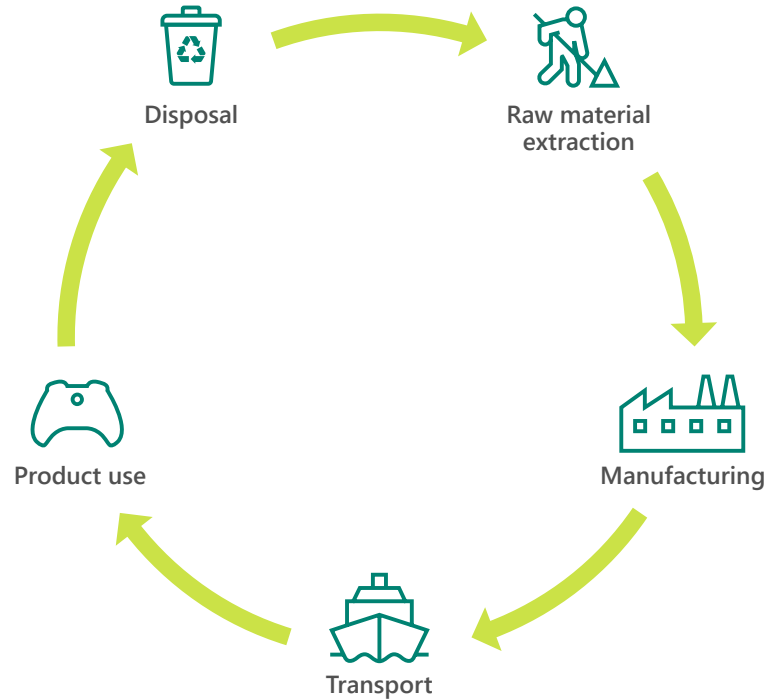
In pursuit of greater transparency in communications with our customers and other stakeholders, we publish environmental data, including LCA results, for our consumer device lines, including the Xbox console and Surface line of products in [Eco Profiles](#). These Profiles provide greenhouse gas emissions in carbon dioxide equivalents (CO<sub>2</sub>e) and nonrenewable energy use over the lifetime of a product. The Eco Profiles identify the breakdown of the materials used, energy consumption, product recycling, and other environmental attributes.



# EPEAT and ENERGY STAR

Microsoft is an EPEAT Participating Manufacturer. Surface Pro, Surface Book, Surface Book 2, Surface Studio, and Surface Laptop have received EPEAT Gold ratings.<sup>6</sup> These ratings are used by and available online to our customers to enable purchasing decisions based on product sustainability.

We also measure and communicate the sustainability of our products through other environmental leadership standards and eco-certification programs, such as ENERGY STAR®, and a voluntary agreement ([Self-regulatory Initiative to Further Improve the Energy Efficiency of Games Consoles, Version 2.5](#)). All of our Surface computers are ENERGY STAR-certified in the US.



<sup>6</sup>EPEAT registered in the US



# Substance management

We proactively evaluate substances and phase out substances from our products when feasible and environmentally preferable alternative materials are available. By working together with the supply chain as well as other key stakeholders, we ensure that best practices for substance management are adopted and promoted, and thus can make a wider impact across our industry sector. Microsoft's substance management program approach extends beyond product design to systemically encompass all aspects of the supply chain from chemicals used in factories to substances contained in our products and packaging.



**GRI STANDARDS DISCLOSURE: 102-11**

## Restricted substances specification

We view meeting health and environmental regulatory requirements as a minimum baseline. Our approach to restricting substances from our products is science-based and follows the precautionary principle to human health or the environment. As a result, our restrictions may be more stringent than regulatory requirements, when appropriate, based on this principle. We also work with third-party toxicologists in the design phase to ensure that our restricted substances specifications reflect current thinking.

Our product specification ([H00594](#)) regarding restricted substances is publicly available and describes the approach to substances of concern. Each time we introduce a new restricted substance, we can quickly identify the components containing the substance along with the related suppliers by simply searching our database of supplier material declarations.

We voluntarily submit our products for independent, third-party testing during the development and manufacturing processes to verify supplier declarations related to restricted substances that have a considerable risk of being present. This testing program continues through the product life cycle. As an additional precaution, third-party auditors monitor suppliers for proper implementation of controls to maintain compliance with the Microsoft restricted substances specification during sustained device manufacturing.

## Phasing out substances of concern

The restricted substances specification is updated annually to reflect legislative developments and our research concerning chemicals' potential impacts on health and the environment.

### Lead, mercury, cadmium

We phased these substances out of our products to conform with the European Union's Restriction on the Use of Hazardous Substances (RoHS) Directive and established stricter Microsoft requirements for cadmium.

### Halogenated flame retardants

We have restricted and limited many halogenated flame retardants as specified in our restricted substances specification. We require that suppliers meet legal requirements and have also voluntarily phased out many halogenated flame retardants in certain applications.

### Nickel

All our devices comply with strict global safety and quality standards. Some metal alloys used on product surfaces such as stainless steel do contain nickel, but standardized testing has shown that these do not cause nickel sensitivity in the general population. We use nickel at levels well within current legal and safety limits. We offer a wide range of devices without stainless steel surfaces as well.

### Phthalates

Use of certain phthalates in our products has been restricted since 2005. We now restrict the use of a broad set of phthalates in all our equipment, including those referenced in EU RoHS, EU Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH), and Proposition 65—the California chemical warning and disclosure law.

# Environmental health and safety (EHS) during design

Our design-related Environmental Health and Safety (EHS) programs begin at the design phase and continue through the end of the product value chain—protecting employees at each stage of the process. They are designed to:

- Establish a means of communication with stakeholders on EHS-related matters.
- Ensure compliance with all applicable laws.
- Advise and make recommendations on workplace safety.

The programs cover employees in Devices. In FY18, the primary focus was to conduct EHS assessments at the Devices laboratories. The purpose of these assessments was to ensure that there are safe and compliant working conditions for all Devices employees.



**GRI STANDARDS DISCLOSURE: 403-2**



# 5

## Responsible Sourcing of Raw Materials

Building on our momentum for transformation

Our strategy further upstream

Raw materials origins

Component category risks

Cobalt in DRC

Tin, Tantalum, Tungsten & Gold in DRC

Gold - ARM Peru Project

Wood



# Building on our momentum for transformation

We care deeply about the sustainability of our upstream supply chain. Microsoft does not harvest or mine raw materials, but we can influence upstream harvesting and mining through our policies and practices. Our approach to raw materials begins with the [Microsoft Responsible Sourcing of Raw Materials policy](#) (RSRM policy). The RSRM policy extends our [Supplier Code of Conduct](#) to the furthest reaches of our upstream supply chain in support of human rights, labor, health and safety, environmental protection, and business ethics. This policy covers all minerals and materials used in our devices and packaging, unbounded by geography.

The related RSRM programs are framed by the five steps of the Organization for Economic Cooperation and Development (OECD) [Due Diligence Guidance](#) for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD Guidance) and the [UN Guiding Principles on Human Rights](#). In FY18, Microsoft implemented new RSRM minimum requirements aligned to the OECD Due Diligence Guidelines in our supplier manual.

1. RSRM policy
2. RSRM management system
3. Identify and assess risk in the raw material supply chain
4. Risk management strategy
5. Audit

The requirements are applicable to all raw materials, including “conflict minerals,” cobalt, and other raw materials. The requirements are publicly available in our [Microsoft Supplier Social and Environmental Accountability Manual Excerpt](#). All directly contracted suppliers agree to adhere to these requirements by contract and commit to passing the due diligence requirements to their sub-tier suppliers. Third-party audits are conducted to assure conformance. Microsoft auditors in China and Southeast Asia were trained on the requirements.



# Our strategy further upstream

Raw material supply chains have multiple levels of processing, documented and undocumented distribution channels, and diverse applications across different industries. The Microsoft span of influence is strongest with our directly contracted suppliers and progressively weakens as we move further upstream.

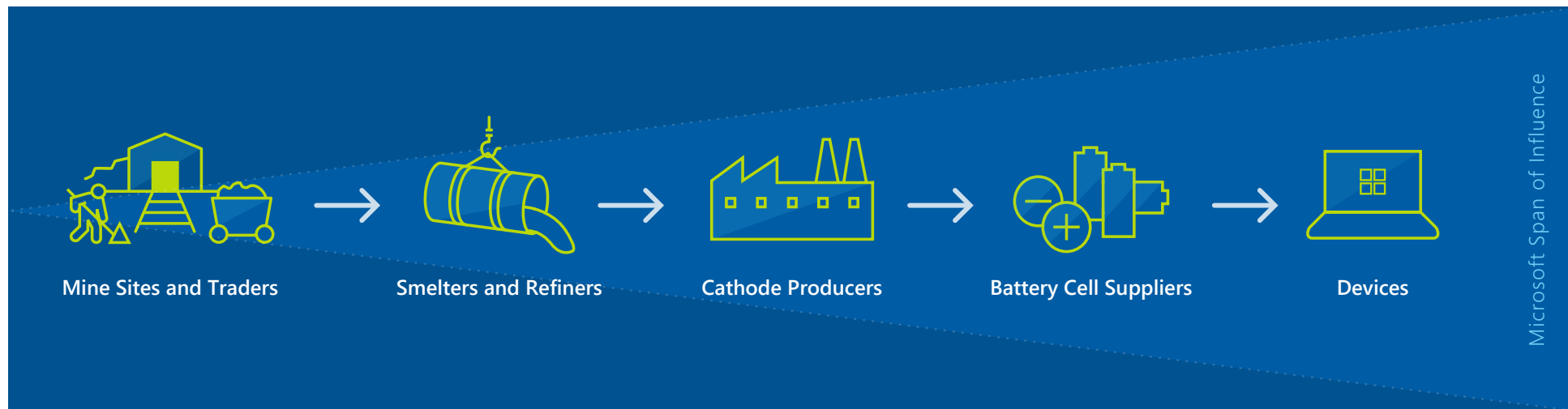
At the far reaches of our supply chain, our strategies and tools must adapt to meet these inherent challenges. Our primary strategy is to collaborate to positively impact sustainability systems and influence global social and environmental improvements through strategic cross-sector and key partnerships and support the use of fairly applied global standards.

In FY18, the team faced several related challenges in growing our RSRM program and meeting our strategic objectives. The challenges include:

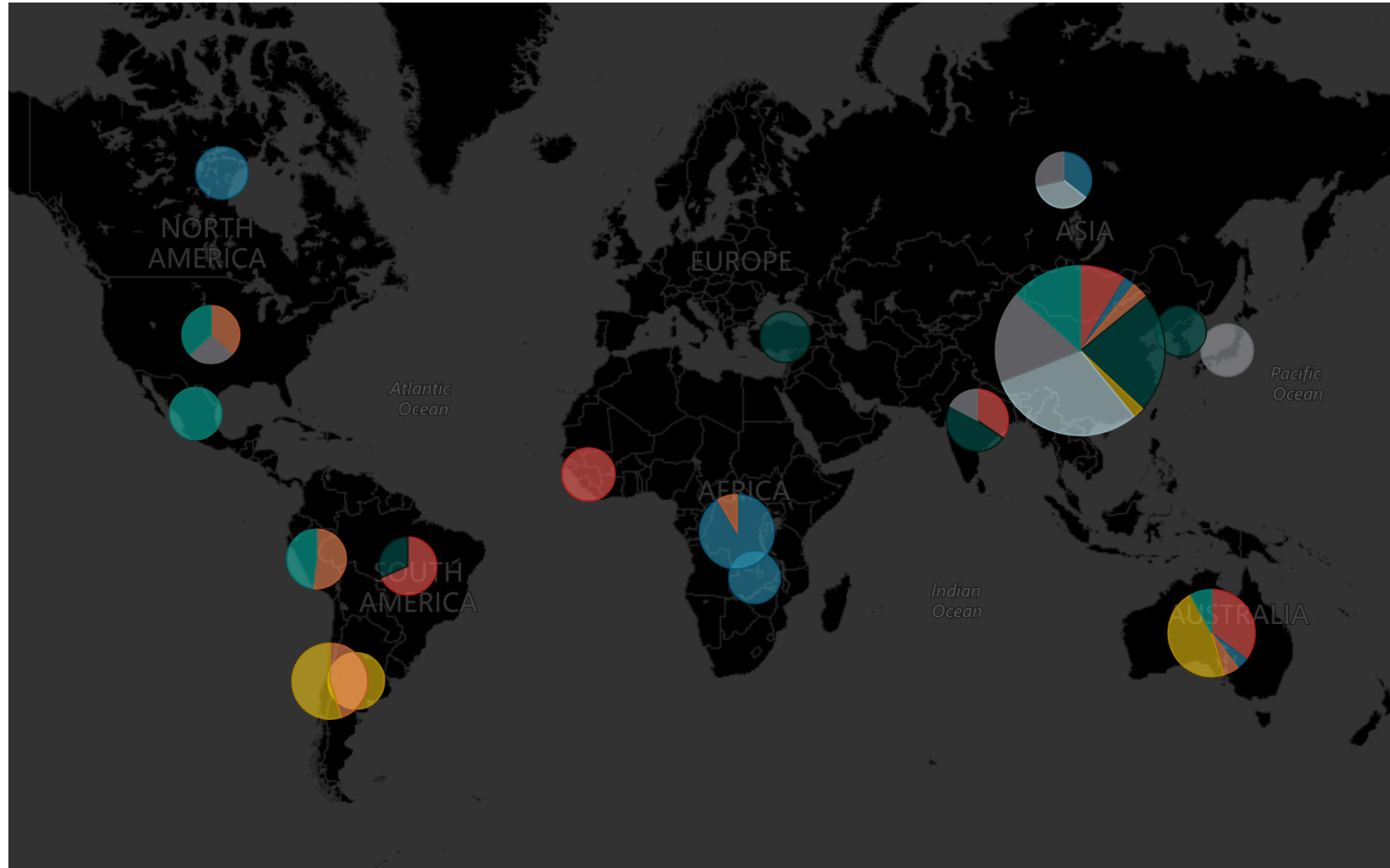
- While industry organizations, like the [Responsible Minerals Initiative](#) and OECD, developed a robust set of tools for mapping and identifying risk in the 3TG supply chain, these tools are nascent for other materials, like cobalt and magnesium. For example, the Responsible Mineral Assurance Program (RMAP) validates thousands of 3TG smelters; for magnesium, extensive individual research and communication is needed to identify even a single entity.
- Many actors in the mineral supply chain are many tiers away from a Microsoft contracted entity. To improve conditions, Microsoft needs to work with contracted entities and ensure requirements are passed to and enforced among many tiers.

- Chain of custody in many minerals is extremely difficult to verify when exchanges are used. For example, chain of custody is frequently lost when gold is sold to the Shanghai Gold Exchange.

Nonetheless, the program continues to mature, and much progress was made through strategic partnerships. For example, in summer 2018, IRMA officially launched the Responsible Sourcing Standard for mining with Microsoft’s and others’ support in a multi-stakeholder effort. This includes a map of stakeholders invested in the IRMA standard. Microsoft will continue to support the standard through pursuing a pilot assessment of the IRMA standard with various mining companies in FY19.



# Raw material origins



Material ■ Aluminum ■ Cobalt ■ Copper ■ Graphite ■ Lithium ■ Magnesium ■ Steel ■ Zinc

We consider risk—based on the country of origin—of the materials used in our products. Due diligence and programming are then developed based on the resulting risk profiles of these product constituents. For FY18, we focused on the following key raw materials: magnesium, tin, cobalt, gold, tungsten, tantalum, and wood.

This map depicts general country of origin information for some raw minerals.

# Component category risks

Three dimensions are considered in performing the risk assessment for raw materials: 1) the risk to Microsoft supply chain, 2) the risk levels of the identified issues, and 3) Microsoft's ability to influence the issues.

## Raw Material Risk Assessment

### Risk to Microsoft supply chain

Identify the material usage in our products by volume, number of parts, and criticality of material. We now have a valuable database of raw materials used in our products. Risk factors include:

- Most common materials and minerals present in Microsoft products
- Proximity of raw materials supplier to Microsoft in the supply chain
- Risk level associated with production

### Risk of issues

Analyze the social, political, and environmental supply chain risk information associated with each critical material for each of the major producing countries. Risks associated with impacts include, but are not limited to:

- Human rights violation
- Child labor
- Environmental degradation
- Conflict
- Corruption

### Microsoft's ability to influence issues

Identify our ability to influence change through internal sourcing and industry groups.

- Creation of organizational behavior changes among suppliers
- Sustainable or substantial impacts
- Existence of viable external resources and partnerships

In FY18, we continued to refine our approach to address component category-specific risks to determine raw material risk by product part category. For example, in the battery component category, suppliers are expected to conduct due diligence aligned to the [OECD Due Diligence Guidelines](#) on raw materials found in their supplied batteries (such as cobalt, graphite, lithium, and rare earth elements) on an ongoing basis. In addition, prior to onboarding a new battery supplier, we require the supplier to demonstrate how due diligence is conducted for raw materials used.

## Primary strategies by key materials

Prioritized material	Risk	Types of components where material can be used	FY18 strategy alignment to the OECD Due Diligence	FY19 goals
<b>Cobalt</b>	Cobalt is associated with social, environmental, and health and safety risks in the DRC, including, but not limited to, child labor, forced labor, bribery, corruption, indirect support of conflict, community exposure to contaminations, and unsafe working conditions.	Battery; trace amounts in other parts such as printing and audio components	Enhanced supplier requirements; developed supplier capabilities to conduct due diligence; mapped supply chain and identified risks; mitigated risk and enhanced on the ground remediation.  <i>See the <a href="#">Cobalt in the DRC section</a> of this report.</i>	Implement Responsible Mineral Assurance Process (RMAP) for cobalt smelters and refiners, grow on-the-ground remediation efforts, identify opportunities for continuous improvement in supply chain and grow supplier capabilities.
<b>Aluminum*</b>	Aluminum production may impact human health through pollution and improper treatment of by-product. The mining and refining process may also release substantial GHG emissions, including PFC emissions.	Enclosures and printed circuit boards (PCBs)	Mapped aluminum supply chain; identified opportunities for improvement at raw material suppliers; improved onboarding and vetting of new suppliers.	Pilot project to increase use of recycled product and explore partnerships to determine possible underreported risks in aluminum supply chains in China.
<b>Gold</b>	Gold mining is associated with mercury pollution, unsafe and poor working conditions, and armed conflicts. In China, it is associated with heavy metal contamination and ecological risks.	PCBs, trace amounts in cables and connectors, integrated circuits, memory and storage	Mapped supply chain; identified high-risk areas for sourcing; partnered with industry to mitigate risk; reported on findings in Conflict Minerals Report (CMR); partnered with ARM to develop sustainable sources in Peru and Colombia.	Grow partnership with ARM to bring sustainably sourced artisanal gold to larger markets, and drive nonconformant smelters, especially in China, to conformance.
<b>Tin</b>	Tin mining in Indonesia is associated with environmental degradation and poor/unsafe working conditions; in China, producers were shut down for failure to meet environmental compliance standards. Myanmar also has a growing number of high-risk operations.	Enclosures and mechanicals	Mapped supply chain; identified high risk areas for sourcing partnered with industry, such as ITSCI and Tin Working Group to mitigate risk; reported on findings in CMR; partnered with Tin Working Group to develop best practice standards in Indonesia.	Develop further best practices in Indonesia, explore partner opportunities in Myanmar, and drive nonconformant smelters to conformance.

\*Added as priority material for FY19

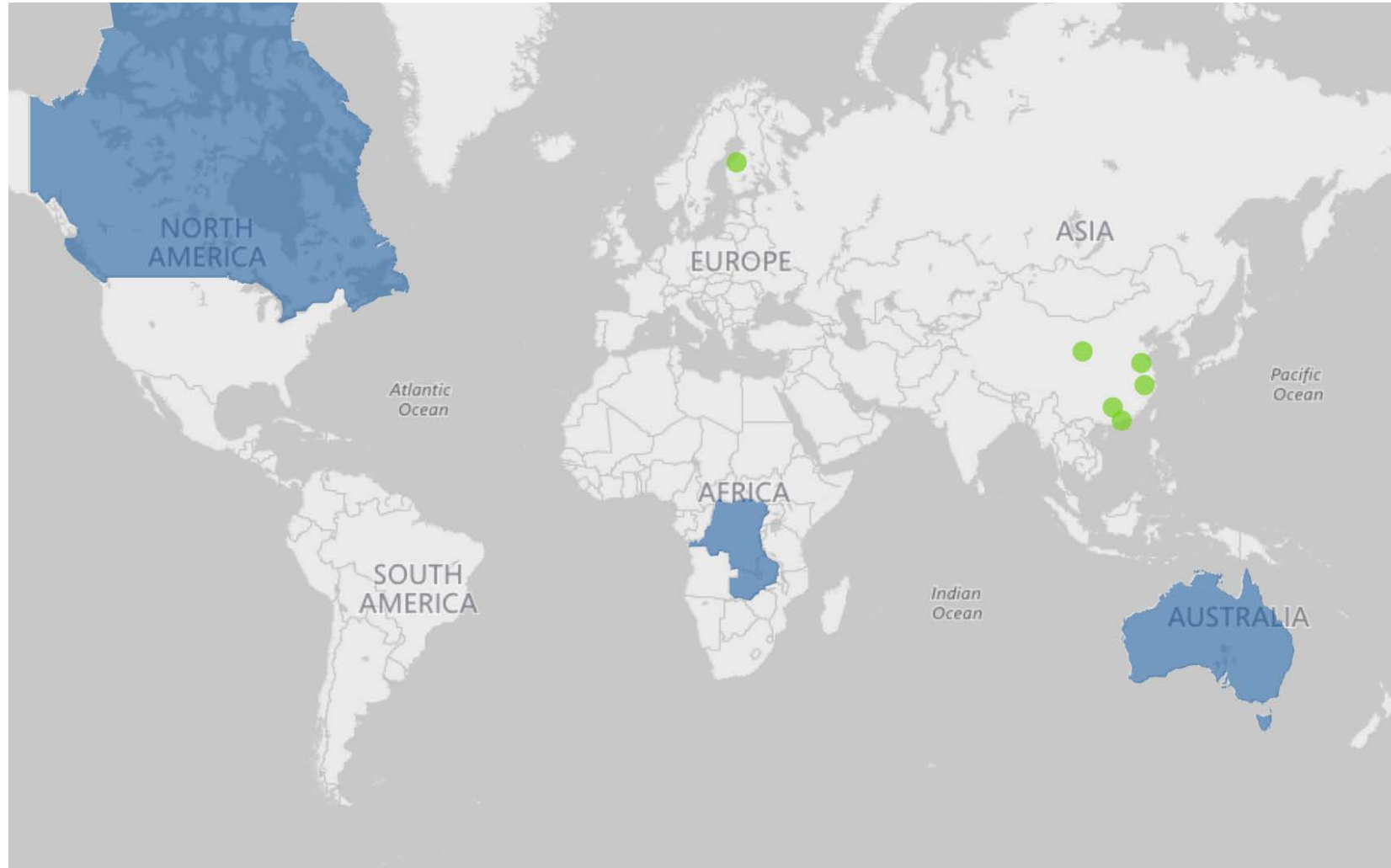


## Primary strategies by key materials

Prioritized Material	Risk	Types of Components where material can be used	FY18 strategy alignment to the OECD Due Diligence	FY19 goals
<b>Tantalum</b>	Tantalum production is associated with armed conflict in the DRC.	Mechanicals	Mapped supply chain; identified high-risk areas for sourcing; partnered with industry to mitigate risk; reported on findings in annual CMR.	Ensure tantalum smelters/refiners remain at 100% conformance to the RMAP standard.
<b>Tungsten</b>	Tungsten production is associated with conflict in the DRC.	Mechanicals	Mapped supply chain; identified high-risk areas for sourcing; partnered with industry to mitigate risk; reported on findings in annual CMR.	Drive tungsten smelters/refiners to 100% conformance.
<b>Magnesium</b>	Magnesium is associated with high CO <sub>2</sub> e emissions and toxicity.	Enclosures	Mapped magnesium supply chain to identify risk.	Continue to map magnesium supply chain, identify opportunities for improvement at magnesium raw material suppliers, implement grievance hotline at key suppliers, and pursue opportunities to further reduce process waste.
<b>Copper*</b>	Copper mining in many regions is associated with risks to ecosystems and communities with demands to water and pollution from mine sites. In addition, in Peru industrial mining has been a source of social conflict.	PCBs; cables and connectors	*Newly added	Identify opportunities to increase recycled content and explore partnerships with the copper industry.

\*Added as priority material for FY19

# Cobalt in the Democratic Republic of the Congo (DRC)



■ Cobalt countries of origin ■ Cobalt smelter locations

Microsoft is committed to continually improve our supplier due diligence and capability building efforts to drive change and accountability regarding cobalt mining and use. In FY18, an internal cross-discipline task force was created to develop and execute the strategy to ensure the responsible sourcing of cobalt for batteries. We’ve also worked with our directly contracted battery suppliers and surveyed their contracted sub-tier suppliers to identify participants such as Huayou Cobalt. We continue to validate this data and related mapping effort.

### Cobalt Smelters and Countries of Origin

As of August 2018, there are seven confirmed smelters located in five China provinces (Guangzhou, Jiangsu, Lanzhou, Zhejiang, and Zhuhai) and one confirmed smelter in Kokkola, Finland. The cobalt smelters are: Gem (Jiangsu) Cobalt Industry Co., Ltd.; Lanzhou Jinchuan Advanced Materials Technology Co., Ltd.; Zhejiang Huayou Cobalt Co., Ltd.; Quzhou Huayou Cobalt New Material Co., Ltd.; Zhuhai Kelixin Metal Materials Co., Ltd.; Guangdong Jiana Energy Technology Co., Ltd.; Jiangsu Xiongfeng Technology Co., Ltd.; and Freeport Kokkola. There are an additional six possible smelters that have not been confirmed. The cobalt countries of origin are Australia, Canada, Democratic Republic of the Congo, and Zambia. We are assuming, but have not validated, that all confirmed smelters source from the DRC. We will be able to solidify country of origin information when audits are conducted.



We have continued our partnership with entities like the Responsible Minerals Initiative (RMI) and Pact to build upstream due diligence standards. The RMI cobalt sub-team is proceeding with its responsible sourcing of cobalt efforts through mapping of the cobalt supply chain to identify key factors, defining clear expectations for the responsible sourcing of cobalt,

and independently validating due diligence. The RMI and Responsible Cobalt Initiative (RCI) are engaged in a joint audit program where refiners are expected to conduct due diligence of their supply chain with a focus on demonstrating due diligence for all OECD Due Diligence Guidelines Annex II risks, which includes child labor.

# Cobalt supply chain integrity at Microsoft

Working towards responsible sourcing of raw materials in a complex, global marketplace

As our direct influence attenuates upstream, our strategies and tools adapt to meet challenges. Partnerships influence global improvements and positively impact our supply chain to its furthest reaches.

**Partnerships are essential**

Organizations like PACT and IRMA mitigate risks and improve supply chain transparency and integrity.

**Standardized requirements**


Our strategy and programs are aligned to OECD's 5 steps.

**Supply chain due diligence**

We work with battery suppliers to identify their sub-tier suppliers and build upstream due diligence capabilities.


**Leveraging our technology**

We use technology such as Power BI and Microsoft Azure, to continually improve supply chain information and risk mitigation.




**Mine Sites and Traders**

DRC produces 40-60% of world's cobalt supply. Mine sites span across DRC, Zambia, Australia and Canada.




**Smelters and Refiners**

8 confirmed smelters in China and Finland, 6 unconfirmed smelters.




**Cathode Producers**

Cobalt is a critical mineral in lithium ion (li-ion) batteries and used in the battery cathodes. These cathodes are directly purchased by the battery producers.




**Battery Cell Suppliers**

Microsoft contracts to purchase li-ion batteries. Currently, the cobalt used constitutes less than 1% of the market.



**Devices**


Cobalt is found in batteries, hard drives, connectors, printed circuit boards and ink pigments. By weight, it is most present in battery cells.




MINING OPERATIONS TAKE PLACE IN HIGH-RISK AREAS

BUSINESS PRACTICES ARE OFTEN OPAQUE AND CHALLENGING


THERE ARE HUMAN RIGHTS CHALLENGES, SUCH AS CHILD LABOR AND ENVIRONMENTAL DEGRADATION




NICKEL/COPPER ORE: 25KG




PROCESSED COBALT: 50-70G



COBALT CATHODE: 45-65G



COBALT BATTERY PACK: 40-60G



INSTALLED LI-ION BATTERY

FROM ORE TO BATTERIES

Data is accurate as of August 2018

Microsoft Span of Influence

But, this work alone is insufficient to address the issue of child labor in mining. By coupling our supply chain programs with direct efforts to eradicate child labor in cobalt mining in the [DRC through a constructive partnership with Pact](#), Microsoft can help remove children from working in mines to foster improvement beyond the narrow purview of our own supply chain.

FY18, marks the first year of a three-year commitment on this important work with Pact in Kolwezi, DRC. Notable highlights of this project include:

- Held stakeholder meetings to secure buy-in and local ownership of the project.
- Conducted site assessment visits to map the main economic activities both within and outside the mining sector, including the key economic and political actors.
- Formed and trained the neighborhood committee and mine outreach group. The group consists of 27 members from three identified project zones (15 men and 12 women) spanning all geographic areas of the zones and spanning a mix of economic actors and recognized community leaders. In addition, a sub-group committee was formed and trained to help with mine outreach. Training included use of data collection tools (education on data privacy), child protection and assistance developing messaging to raise awareness in the mines.
- With over 300 in attendance, the official launch activities were completed, which included speeches by community leaders and a performance by the popular Karindula dance group emphasizing messages related to the need to combat child labor in mining.
- Baseline surveys were conducted in all three target mining areas to determine outcomes of future interventions.



Photos provided by Pact

# Tin, Tantalum, Tungsten & Gold (3TGs) in DRC— Supporting a conflict-free supply chain

Our [Conflict Minerals Report](#) (CMR) for calendar year 2017 shows our progress in supporting a conflict-free supply chain. In 2017, the number of Responsible Minerals Assurance Process (RMAP) conformant smelters or refiners (SORs) in our supply chain increased from 249 to 253. Since our last CMR filing, we have made these improvements to our raw material due diligence:

- Fully integrated our RSRM program into our Social and Environmental Accountability (SEA) audit process through the full use of our audit management system.
- Publicized our SEA supplier manual, which includes RSRM requirements, to increase transparency of the program.
- Strengthened external partnerships to increase on-the-ground risk mitigation and enhance our due diligence capabilities.
- Strengthened internal partnerships to identify raw material risk early in product development.

We will continue to encourage SORs to participate in the RMAP and expand our knowledge about 3TGs in our supply chain. Our ability to identify, assess, and mitigate risks associated with our raw materials sourcing will improve with ongoing due diligence efforts with both our direct and sub-tier partners. Consistent with our commitments, we plan to take the following steps to continuously improve our RSRM due diligence efforts:

- Enhance our use of digital technology to improve supply chain information and risk mitigation.
- Increase use of external data sources to proactively identify raw material risk in conflict affected and high-risk areas (CAHRA).
- Continue our active participation in the RMAP Smelter Engagement Team to bring nonconformant SORs into the conflict-free supply chain.
- Further our engagement with NGOs like [IRMA](#), [ARM](#), and [Pact](#) to establish global responsible sourcing standards and support programs in the mineral supply chain.

**We have realized positive results from a Microsoft-supported project in the DRC that reduced child labor in 3TG mines by more than 75 percent.** The results of Pact's [Watoto Inje Ya Mungoti](#) (Children Out of Mining) project show tangible promise.

*This project “reached 4,100 beneficiaries, of whom 1,881 were children. Bans on child labor were enforced at 23 mine sites in the target area by the end of the project. Reduction in child labor between 77 percent and 97 percent over the course of the project to date.”*

We have committed to continue this partnership with Pact (began in 2014) to develop sustainable strategies and programs designed to address the diverse circumstances of children who may work at 3TG mine sites. We believe that direct and culturally appropriate intervention is the most effective means to address this issue in a humanitarian way. While our ongoing partnership with Pact is not a comprehensive solution to the complex problems in the DRC, we continue to learn valuable lessons and will expand on our collaboration with Pact and other partners in the coming years.

For more information, see our [blog](#) and view this [video](#) to learn more about the Pact projects.

# Gold – ARM Peru project

Since 2014, Microsoft has partnered with ARM in developing the Fairmined Standard for mining gold and associated precious metals. The standard requires artisanal and small-scale mining (ASM) organizations to mine responsibly and address issues such as formalization and legalization of mining operations, environmental protection, labor conditions, traceability of Fairmined minerals, and socio-economic development. In FY18, Microsoft provided support to ARM for a multi-donor program on [“Promoting an Inclusive Model of Responsible Artisanal and Small-Scale Mining, based on the Fairmined Standard”](#) in Ananea (Puno, Peru). The program aims to improve the quality of life of artisanal and small-scale miners through the adoption of good social, organizational, and environmental practices. Its vision is that Ananea will become a sustainable and responsible mining territory through local ownership and participation in the design of public

policies. In addition, the program supports vulnerable mining groups such as female gold partners. The outcomes of the project include the following:

- Development of Oro Puno Mining Organization capabilities to meet the Fairmined certification.
- Tailored commercialization guidelines to facilitate Fairmined gold trading and exportation from Fairmined-certified mines in Puno. The lack of efficient routes to sell and export certified gold was previously one of the largest obstacles for developing and scaling the Fairmined scheme in region. ARM assisted in accumulating gold in the area to reduce transportation costs, consolidating gold supply chains in regions.
- Established a Fairmined Premium Committee.

- Completed stakeholder mapping in the Puno region and identified candidates for additional certification.
- Reinforced ARM presence in Peru and attracted additional funding for the next two and a half years. Microsoft’s support of the Fairmined standard in Peru in FY17 attracted support from additional donors such as Fondation Ensemble, the US Department of State through the Colorado School of Mines, and the Ford Foundation. This support will allow ARM to continue to scale and grow Fairmined certification in the region.

# Wood

Paper products derived from wood is a resource supported by a relatively mature sustainability structure. Microsoft is able to rely upon global standards for sustainable forestry and established markets for recycled paper. In line with our overall sustainability goals and efforts to minimize environmental impacts, we continue to assess the sustainable sourcing of paper-based materials, including the use of “certified” materials such as Forest Stewardship Council (FSC) and Pan European Forestry Council (PEFC) chain of custody. We currently require Microsoft suppliers to adhere to

Microsoft packaging specifications for using legal and well-managed forest sources. In addition, we require our suppliers to implement sustainability best practices (ISO 14001), and we encourage development of FSC or PEFC Chain of Custody (CoC) certification.

Our focus to date has been on increasing post-consumer recycled content of paper, which now stands at approximately 70 percent in line with our 2020 goal. This, combined with innovative design and engineering to reduce

the amount of materials used, has been our primary strategy in terms of reducing impact. As we continue to assess the use of certified material sources, we will continue to specify reductions in materials usage and increased recycled content.

# 6

## Sustainable Manufacturing

Our supplier programs aim to build suppliers' capabilities

Environmental sustainability in manufacturing

Factory worker occupational safety and health

Labor and human rights

SEA impact



**Our supplier programs aim to build suppliers' capabilities** Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights SEA impact

Our sustainable manufacturing strategy is to improve supplier capabilities related to labor, human rights, health and safety, and the environment. We have also expanded our investments in renewable energy, reduced process waste, and efficient energy use.

## Our supplier programs aim to build suppliers' capabilities

Our influence in our upstream supply chain is highest with directly contracted suppliers. Our supplier Social and Environmental Accountability (SEA) strategy supports the important need to build the capabilities of these supply chain partners. In FY18, we continued to utilize key metrics, enhanced technology-based solutions, and focused capability-building programs to drive sustained behavior change with our suppliers. Our focused category strategy and tailored metrics have also allowed a scalable approach through customized interventions based on the needs and capabilities of different categories of suppliers.

To better understand the effectiveness of the SEA program, we partnered with a local Chinese-based consultancy to complete a detailed factory survey in 14 selected factories. The survey was completed by 136 SEA professionals, 318 factory management staff, and 908 workers. The baseline survey indicated that Microsoft audit and professional guidance had the most significant impact on the factories surveyed.

About 80 percent of survey respondents of factory SEA professionals reported that Microsoft has contributed significantly to factories' improvement on labor rights, health and safety, and environmental topics.



**GRI STANDARDS DISCLOSURE: 308-1, 308-2, 407-1, 408-1, 409-1, 412-2, 414-1, 414-2**





**Our supplier programs aim to build suppliers' capabilities** Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights SEA impact

## Supplier tiers

For business purposes, we classify our hardware suppliers into "tiers."

### Tier 1

Manufacturing partners with whom Microsoft has a direct contractual relationship to manufacture Microsoft hardware components and products.

### Tier 1.5

Suppliers with whom Microsoft has a direct contractual relationship to produce consigned parts and provide components or materials to our Tier 1 suppliers (our manufacturing partners).

### Tier 2

Suppliers with whom Microsoft has a direct contractual relationship to provide components or materials to our Tier 1 suppliers (our manufacturing partners).

In general, we do not have a contractual relationship with sub-tier suppliers, who supply components or materials to Tier 1 or Tier 2. However, in some cases, we have a direct contractual relationship with strategic Tier 3 or Tier 4 suppliers, which provide components to our Tier 2 suppliers.

## SEA Stages

We categorize all directly contracted suppliers and related factories according to a three-step model of maturity that we call SEA Stages. Microsoft SEA experts design and offer capability-building programs according to this model of maturity.

### Compliance

The supplier factory meets all applicable legal and Microsoft requirements. The factory has not demonstrated its ability to move from reactive risk management to strong management systems. Factories at this stage tend to have repeat findings identified in audits.

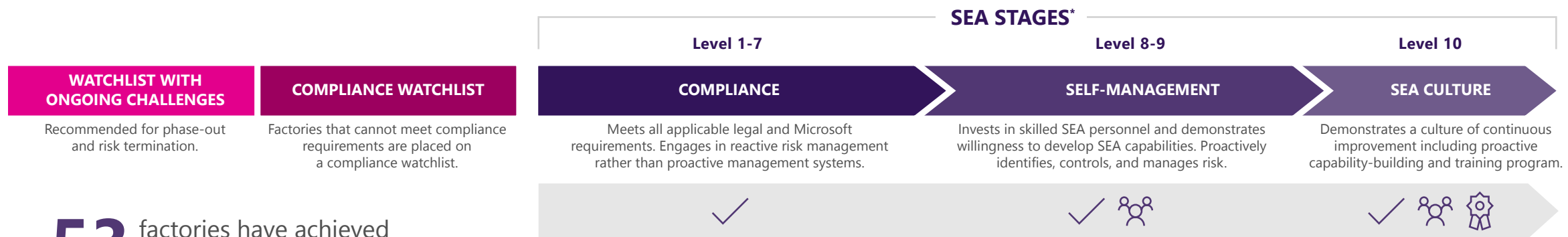
### Self-Management

The supplier factory has invested in skilled SEA personnel and demonstrates the willingness to develop its SEA capabilities. The factory has management systems in place that proactively identify, control, and manage risk.

### SEA Culture

The supplier factory demonstrates a culture of continuous improvement, which includes proactively participating in capability-building and training programs.

Microsoft SEA and Strategic Sourcing support suppliers that show the willingness to build their capabilities and proactively improve their management systems. We provide incentives for showing maturity through these SEA Stages, which include less frequent audits, recognition at supplier events, and consideration for future business awards. Factories that cannot meet compliance requirements are placed on a compliance watchlist.



\*Levels are determined by audit performance, government or media citations, repeat NCs, participation in capability-building and training programs, highly-capably resources, and other criteria.

**53** factories have achieved **SELF-MANAGEMENT** SEA stage

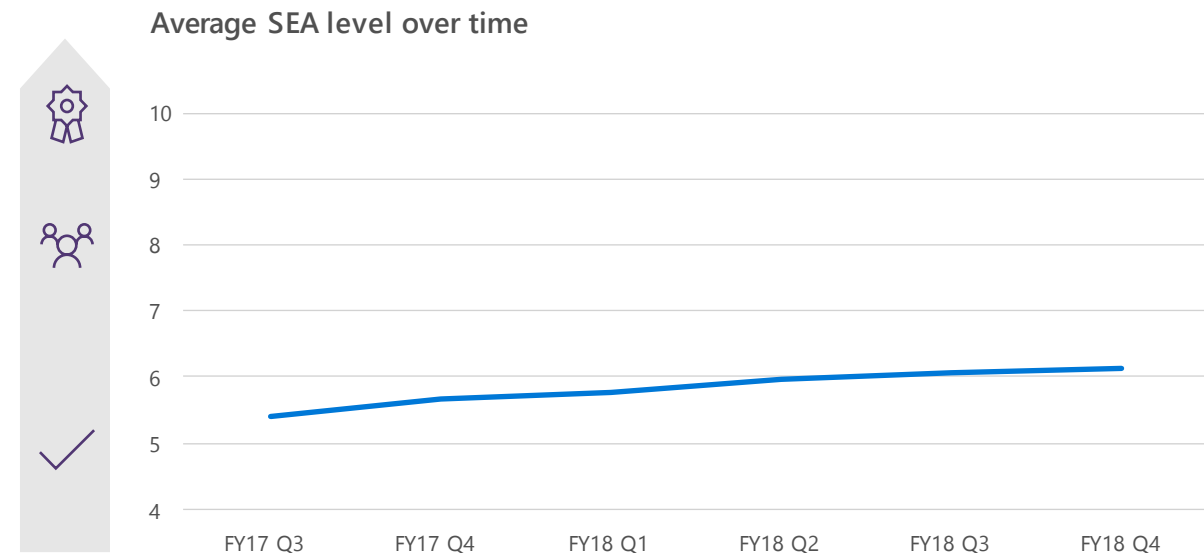
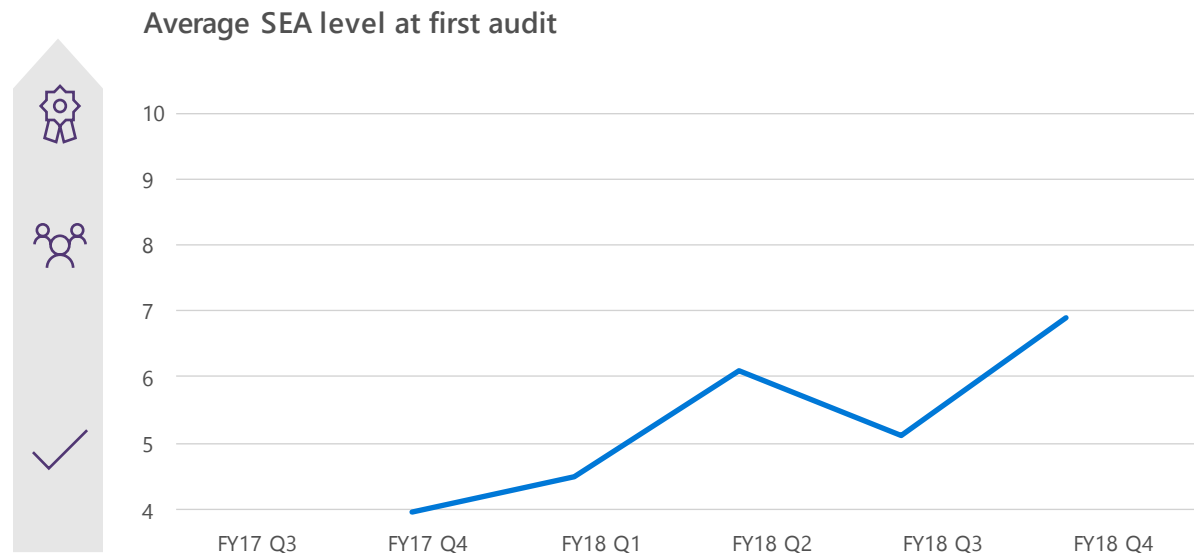
**Our supplier programs aim to build suppliers' capabilities** Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights SEA impact

In FY18, 53 factories achieved the Self-Management stage, where 35 of these factories at their first audit demonstrated Self-Management stage and the remaining improved from the Compliance stage.

Our analysis of data from FY18 yielded the following insights:

- The average supplier stage level improved over the past five consecutive quarters. This indicates that the overall SEA capabilities of Microsoft's supply chain continue to show maturity.
- The average SEA Stage for new suppliers immediately after their initial capability assessment (ICA) has improved in four of the last five quarters. Improvements are attributed to the following:
  - › Audits expanded in FY18 to lower-risk categories that performed well on their ICA.
  - › Improved screening criteria to ensure onboarding of only those suppliers with stronger management systems.
  - › Capability building with suppliers prior to the ICA.
- On average, 25 suppliers are at the Compliance stage of maturity every quarter. Some are new, while others continue to have challenges. Suppliers that are unwilling to improve are recommended for phase-out and risk termination of their business with Microsoft.

The SEA stages metric allows Microsoft to measure continuous improvement and holistic performance over time. This is a key metric in addition to audit results, which may measure performance only at a single point in time.



**Our supplier programs aim to build suppliers' capabilities** Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights SEA impact



## Improvement in supplier and factory onboarding

We continue to improve our approach to supplier engagement. In FY18, we increased controls and transparency to gate suppliers during the development process. This ensures that at supplier and factory onboarding only those suppliers and factories that can meet Microsoft requirements are selected for new development projects. A product cannot move past development validation review without confirmation that no restricted factory is used and that all relevant factories have received an initial capability assessment.

## Category risk profiles

In FY18, to further embed SEA into the business process and continuously improve our approach to identify and manage risk, the SEA team aligned our strategy to our product part sourcing categories for Tier 1 and Tier 2 suppliers. This allows us to clearly highlight the specific audit, EHS, labor, and RSRM risks for each category. These profiles allow the use of customized tools such as audit plans, visual scans, and an onboarding questionnaire that match the needs of each product part category. The category risk profiles are viewed by internal stakeholders using Power BI.

For example, when onboarding a new printed circuit board (PCB) supplier, the supplier is required to provide detailed evidence on chemical management and water treatment facilities. A cables and connectors facility may be required to provide evidence of labor management, given its labor-intensive processes. The category risk profiles show internal stakeholders, such as Development, Strategic Sourcing, and CELA, the risks associated with each category of suppliers. The information can also be used to mitigate this risk early, such as at the product design phase.

**Our supplier programs aim to build suppliers' capabilities** Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights SEA impact

## SEA Academy

The SEA Academy provides various training programs to help suppliers advance through the [SEA Stages](#). The SEA Academy can be used by suppliers' management, workers, third-party audit firms, internal Microsoft sourcing managers, factory managers, and new product introduction teams, among others.

In FY18, an online training platform and mobile application were developed to scale trainings. We launched 24 online courses via our SEA Academy platform for supplier factories. The developed courses reflect the results of a training needs assessment conducted with our suppliers. Available trainings include:

Factory SEA Professionals and Internal Stakeholders	Factory Supervisors	Workers
<p><b>General Course:</b> Onboarding Training</p> <p><b>Labor Courses:</b> Working with Labor Brokers Working with Students &amp; Migrant Workers China Social Insurance</p> <p><b>EHS Courses:</b> Fire Safety Hearing Protection Chemical Safety Lock Out Tag Out (LOTO) Working in Height-confined Space</p>	<p>Resolving Conflict Handling Worker Feedback Bullying, Harassment, and Sexual Harassment Supervisor Health and Safety Pre-Shift Meeting Providing Feedback Motivating Workers</p>	<p>Managing Personal Relationships Personal Hygiene and Infectious Disease Prevention Core Labor Rights/Code of Conduct Basics of Chinese Labor Law Basics on Chinese Labor Contract Law Personal Protection Nutrition and Health Managing Personal Finances Stress Management Communication and Grievance</p>

## Training execution, effectiveness, and impact

### Internal stakeholder training

In FY18, a series of training sessions was delivered based on training needs. Topics included SEA requirements and risk identification skills:

- Two visual scan trainings for internal stakeholders to improve their risk identification skills
- One hotspot training for sourcing managers to improve their SEA awareness
- One audit process training for factory managers to understand the audit process
- Two SEA dashboard trainings for sourcing team to understand the SEA-related data, further driving the factories to be compliant.



**Supplier training**

Based on the supplier training needs evaluation and SEA priority, a series of EHS and labor management system trainings were also delivered in FY18. Training topics included:

- Chemical management
- Permit to work
- Impact analysis of VOC online monitoring requirements
- Confined space entry
- Dispatched worker management
- Microsoft working hour requirements

A total of 50 participants from 48 suppliers joined the trainings at our Suzhou office in China, 48 of whom are in charge of EHS management in their factory. Training participants gave a rating of 4.85 out of 5 for overall training evaluation. Comparing pre- and post-training test results, participants' knowledge on chemical management increased by 200 percent.

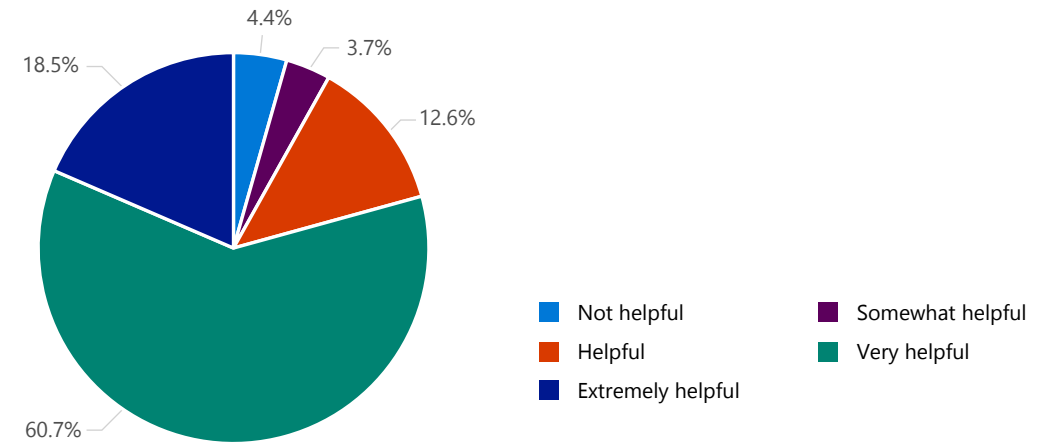
**Auditor training**

A key SEA Academy priority in FY18 was to improve third-party auditors' capabilities in risk assessment, especially in high-risk areas in Southeast Asia. Microsoft engaged with two training and auditing firms to deliver two 2-day auditor workshops respectively in Suzhou, China, and Phuket, Thailand.

A total of 67 participants from four audit firms in China and 36 participants from three audit firms in Thailand joined the training. Participants gave a rating of 4.6 in China and 3.7 out of 5 in Thailand for the overall training evaluation. Comparing pre- and post-training test results, participants' knowledge of Microsoft requirements and risk-assessment skills improved 49 percent in China and 44 percent in Thailand.



How much has Microsoft helped with our factory EHS work?



**Our supplier programs aim to build suppliers' capabilities** Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights SEA impact

## Third-party Audit program

Essential to our compliance management system is supplier monitoring through third-party audits. Approved third-party auditors use standard protocols and audit tools developed based on the RBA [Code of Conduct](#) and supplemental criteria from Microsoft, including the Microsoft [Supplier Code of Conduct](#), [SEA specifications](#), and legal requirements.

The on-site audit incorporates:

- Review of documentation, including policies and procedures, personnel records, time records, payroll, and legal permits related to Labor and EHS.
- A site tour to assess physical conditions and current practices, including work environment, fire and emergency equipment, machine protection, personal protective equipment, hazardous materials storage and handling, wastewater treatment, and dormitory, canteen, and kitchen hygiene and safety.
- Employee interviews in their preferred language and away from their factory management.

## Supplier risk assessment and audit frequency

Suppliers are classified as high, medium, or low risk. The risk level determines the audit frequency for each factory:

- **High risk:** annual audit
- **Medium risk:** biennial audit
- **Low risk:** triennial audit

All suppliers undergo a risk assessment that takes into account the following:

- Previous SEA audit results
- High EHS risk processes, such as:
  - › Magnesium-aluminum polishing
  - › Spray painting, electroplating
  - › Lithium/manganese batteries manufacturing
  - › Printed circuit board (PCB) manufacturing
  - › Solvent printing
- High-risk labor situations, such as:
  - › Use of indirect employees
  - › Use of student workers
  - › Use of international migrant workers
  - › Payment of recruitment fees
- Country risk
- Media identification of nonconformance
- Supplier SEA management capability

Our supplier programs aim to build suppliers' capabilities **Environmental sustainability in manufacturing** Factory worker occupational safety and health Labor and human rights SEA impact

## Ensuring quality of the third-party audits

We have been qualifying third-party audit firms and their individual auditors who audit on behalf of Microsoft since FY14. Auditors are retained based on their skills and experience and assigned based on the skillset needed to review factory operations. The qualification includes résumé reviews, on-site evaluations, and/or interviews to ensure they meet minimum Microsoft requirements. In FY18, we increased our shadow audits in Asia, the US, and Europe to help us better understand overseas auditors' capabilities. The auditors receive a monthly scorecard reflecting their overall service and performance, which guides our allocation of work to the firms. We require corrective actions for any deficiencies found.

Qualified local auditors are available in all countries where medium-risk and high-risk suppliers are located. From FY17 to FY18, our local auditors increased from 22 to 29 countries commensurate with business changes.

# Environmental sustainability in manufacturing

We seek to improve the environmental sustainability of the manufacturing portion of the product life cycle through reductions in emissions, efficient use of resources, recycling, and use of renewable energy.

## Digital manufacturing

Devices manufacturing leverages digital technology, strategic partnerships, and smart business practices to build hardware while also reducing impact to the environment. This year, sustained investment in digital transformation led to deeper understanding of how to utilize data and systems to drive process optimization while minimizing waste and the disposal of solid material. We achieved target yields for Surface Pro 5 assemblies faster than previous generations. Improving yield means devices are built to specification quickly and efficiently, minimizing both product and material waste.

Our digitally connected factories allow us to consume and share critical supplier performance data, driving efficient product life-cycle management activities. Continuous improvements to predictive analytics capabilities were made in FY18, which monitor and alert for process failures that may result in material scrap.

Our supplier programs aim to build suppliers' capabilities **Environmental sustainability in manufacturing** Factory worker occupational safety and health Labor and human rights SEA impact

As we drive innovation in manufacturing technology, we are mindful of the ecological footprint our systems may leave behind. Each of our manufacturing technology solutions is enabled by Microsoft's sustainable cloud infrastructure and highly optimized data centers.

Both our Power BI and IoT platforms are run on data centers designed to use fresh-air cooling and efficient water utilization, which has led to 50 percent less energy usage than those built in previous years. Virtualization technologies have also allowed data center operators to consolidate workloads per server, increasing utilization from 11 percent to 50 percent. As a result, we have seen significant energy savings and reduced carbon output. Learn more about how green data centers are helping [Microsoft cut carbon emissions 75 percent by 2030](#) and supporting our [commitment to renewable energy](#).

Devices is committed to delivering innovation in manufacturing process and technology while minimizing impact to the planet.

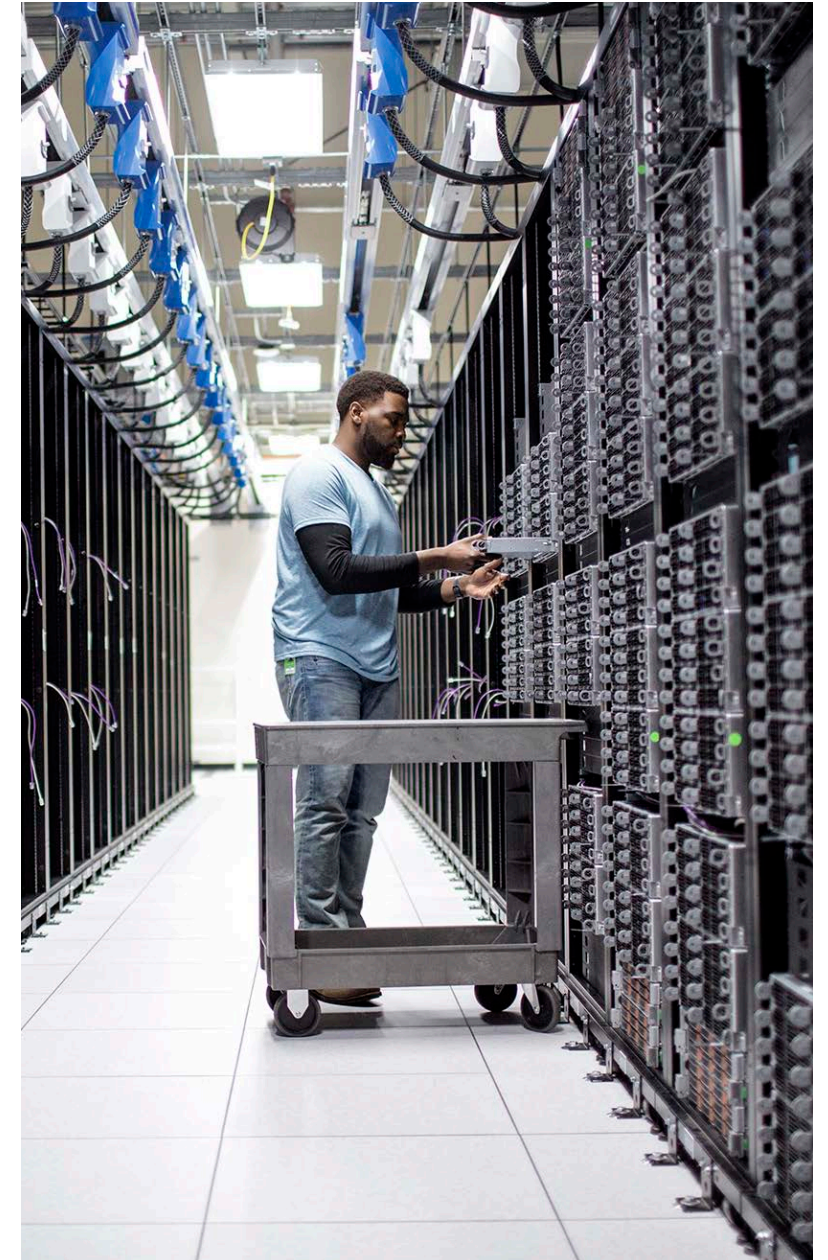
## Greenhouse gases (GHGs)

Most emissions associated with our Surface devices are associated with energy use during the manufacturing phase. Therefore, Devices is focused on reducing greenhouse gas (GHG) emissions associated with the manufacture of our products at our supplier factories. Our strategy is to understand our operating baseline, establish systems to routinely measure and monitor GHG emissions, and then establish and meet targets to reduce the GHG impact of our suppliers.

Microsoft reports our carbon dioxide equivalent (in CO<sub>2</sub>e) emissions as a byproduct of our device and packaging manufacture, transport, use, and disposal to the CDP. FY18 was the first year Devices requested hardware suppliers to report climate change and water usage to the CDP based on 95 percent spend. Their CDP disclosure included corporate climate change policy, GHG reduction targets, energy and renewable energy usage, total carbon dioxide equivalent (CO<sub>2</sub>e) emissions from production and transport of products and packaging and much more. The information submitted by our suppliers provides us with assurance that they are following best practice on corporate climate change and allows us to understand where future opportunities for improvement exist.



**GRI STANDARDS DISCLOSURE: 305-3, 305-4, 305-5, 305-6**





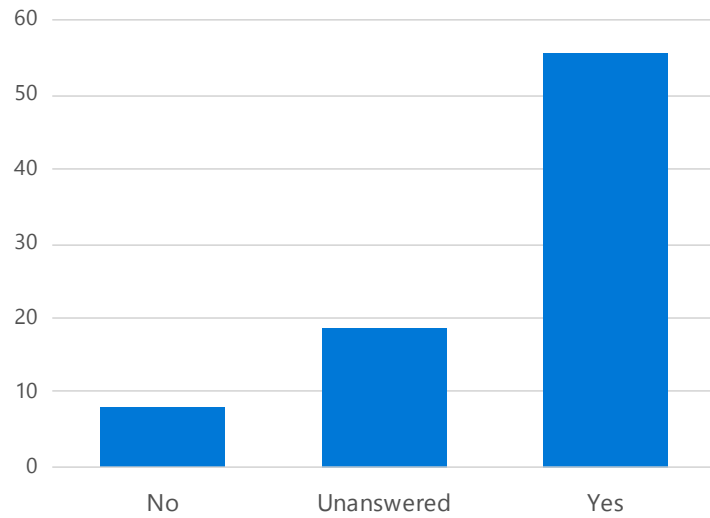
Our supplier programs aim to build suppliers' capabilities **Environmental sustainability in manufacturing** Factory worker occupational safety and health Labor and human rights SEA impact

Of the suppliers requested to participate in the CDP climate change disclosure, 75 percent submitted responses including all our Tier 1 suppliers. It's apparent that our suppliers are already engaged in GHG reduction measures.

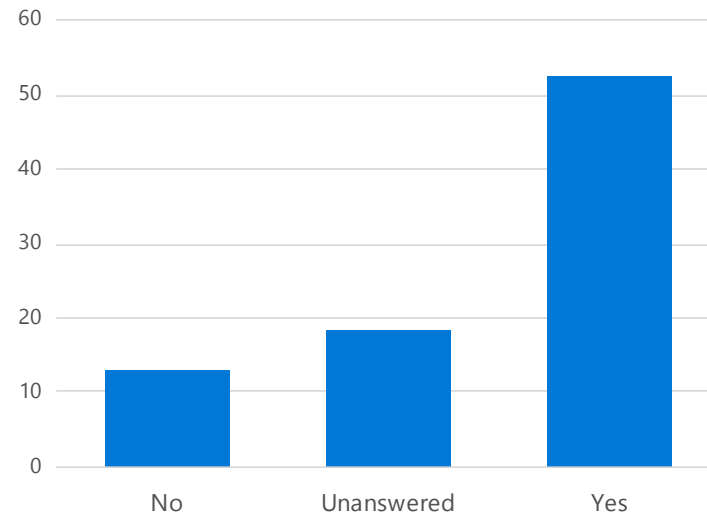
Suppliers reporting to CDP	170
Responding suppliers to emissions reporting section	85
Number of suppliers reporting reduction	61
Suppliers with incomplete responses	24
Total GHG (metric tonnes CO <sub>2</sub> e) reduced by polled suppliers in FY18	5,064,426.61

This year's data will become the baseline year for our future reduction targets. Devices is committed to measuring and working toward reducing GHG emissions associated with the manufacture of our products.

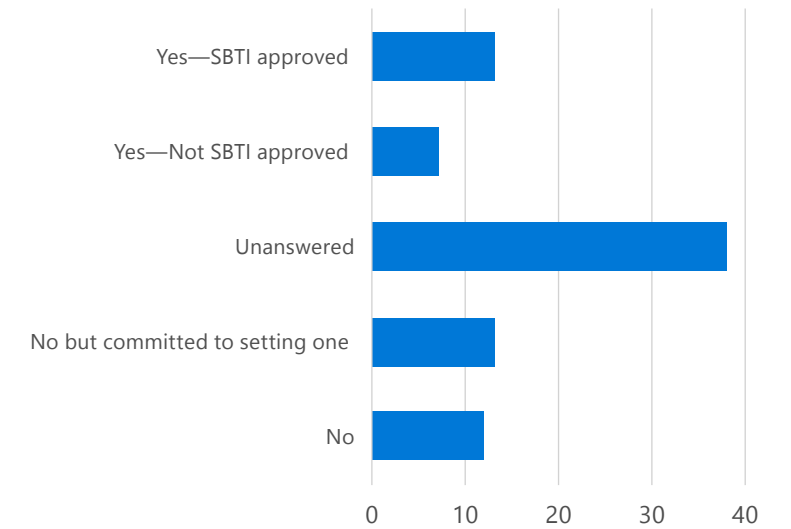
Count of suppliers integrating climate change into business strategy



Count of suppliers reporting emissions reduction initiatives



Count of supplier reports with science-based targets (SBT)



Our supplier programs aim to build suppliers' capabilities **Environmental sustainability in manufacturing** Factory worker occupational safety and health Labor and human rights SEA impact

## Factories of the Future and reducing our carbon footprint

We are experimenting with empowering Microsoft digital technology to learn how we can assist our suppliers to reduce their GHG impacts.

### Project Sunrise

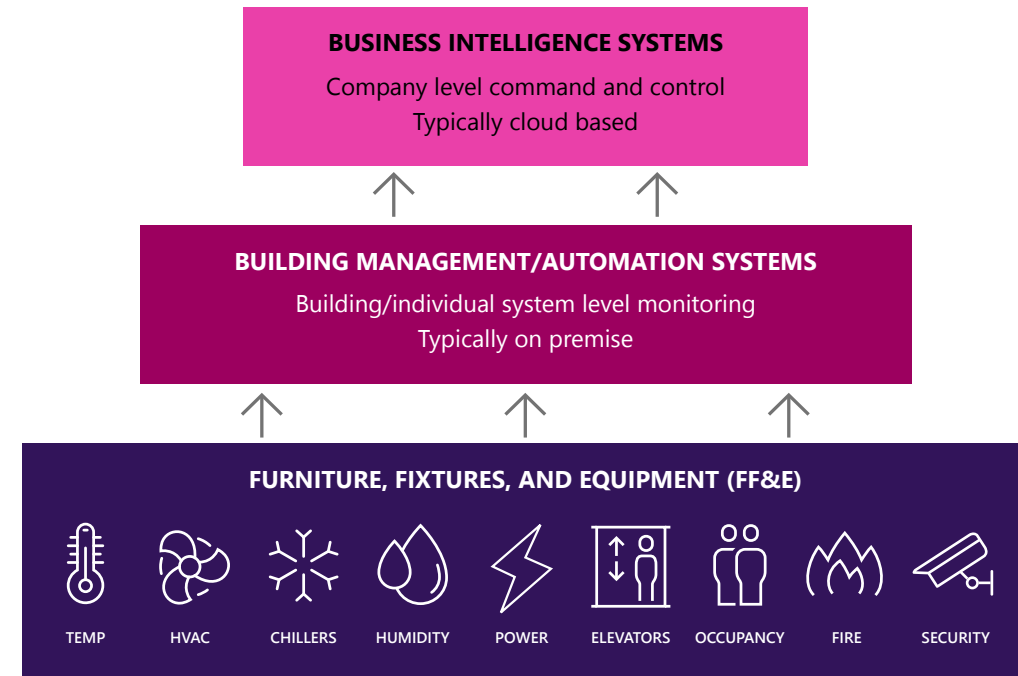
In FY 2018, Devices completed a two-year project to deploy smart-building technology and solar energy to three factory building sites at a major supplier to reduce GHG emissions while reducing the cost to manufacture. The deployment involved a review of the existing heating ventilation and air conditioning systems (HVAC), facilities team capabilities, and data source integrity. Based on this assessment, Microsoft installed an energy smart building system with over 3,000 sensors covering the HVAC systems to reduce energy use and allow for the implementation of smart-building technology.

Microsoft formed a project team with the factory's facilities management to develop smart-building logic using the Azure IoT platform and Power BI dashboard analytics to monitor and predict efficient HVAC operations.

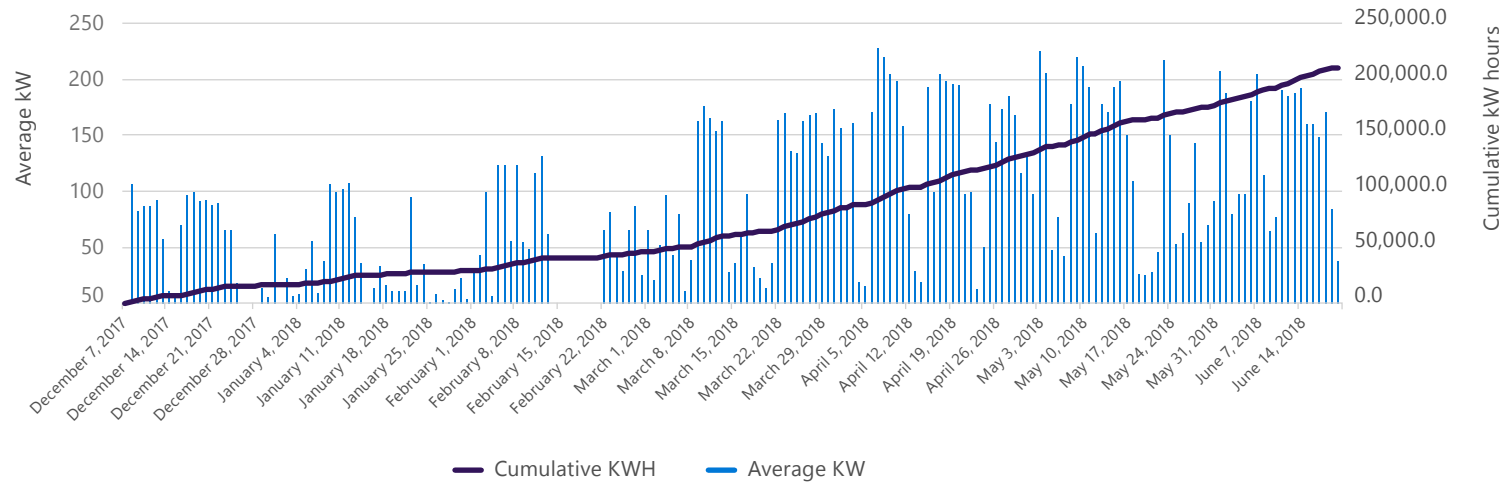
Additionally, Microsoft funded a solar panel installation at the facility, which generated 252,619 kW hours of electricity in FY18. The expected energy generation for calendar year 2018 is 540,512 kW.

The project was a valuable learning experience:

- Suppliers may not be initially receptive to innovative technology to achieve energy savings without further demonstration of viability.
- Manufacturing suppliers have a relatively short Return on Investment horizon.
- Technology may not be viable with existing infrastructure. For example, factories may have to install additional energy-saving infrastructure, such as variable frequency drives.
- Low-hanging fruit in the way of green building savings may be available, such as LED lighting and reflective coatings.
- Factory culture regarding infrastructure maintenance may need to change to receive the benefit of energy savings.



### Project Sunrise Power Trend and Energy Accumulation



The project is now fully installed and operational. The solar panels, installed at the beginning of calendar year 2018, combined with the smart building system operating since June 2018, are projected to reduce GHG emissions (in CO<sub>2</sub>e) by approximately 3 million pounds per year. This collaboration between Microsoft and a major supplier is an example of Devices' approach to sustainability that furthers Microsoft's empowerment mission.

Through these efforts, coupled with the digital manufacturing ([see the Digital manufacturing section](#)) employed in these same buildings, Microsoft is developing a template for the factory of the future. Suppliers can create shared value through using digital solutions to operate more sustainably while reducing the cost to manufacture.

### Climate vulnerability hotspot analysis

Devices completed a Supplier Vulnerability Assessment, Hotspot Analysis in FY18 based on geographic locations of supplier manufacturing sites as determined by city boundaries. The purpose was to investigate potential impact of natural disasters, which have increased in number and in intensity during the last decade. Droughts, floods, windstorms, hurricanes, earthquakes, or tsunamis strike more often and create significant economic impact.

The analysis concluded that our manufacturing supplier sites are generally at lower overall risk than the average of manufacturing sites around the globe. However, there are two cities where we manufacture that have very high risk: one for extreme rainfall, cyclonic activity, and sea-level rise, and another for heat stress.

To address these potential risks, we are in the process of conducting deeper reviews of the precise locations of the manufacturing sites within these general high-risk areas determined by city boundaries to better understand the level of risk for each site. From an occupational health and safety perspective, we continue to verify through audits the emergency preparedness and response processes of all contracted suppliers.

Our supplier programs aim to build suppliers' capabilities **Environmental sustainability in manufacturing** Factory worker occupational safety and health Labor and human rights SEA impact

## Ozone-depleting chemicals

The ozone layer of the atmosphere prevents harmful ultraviolet radiation from reaching the earth's surface. Most nations adopted the Montreal Protocol in 1987 and agreed to phase out the production and use of ozone-depleting chemicals (chlorofluorocarbons). Devices restricts the use and release of ozone-depleting chemicals (ODCs) in the production of our devices and packaging in both owned and supplier facilities. Our supplier specifications ban the use of ODCs in the manufacture of our products and packaging and by manufacturing equipment. We require annual supplier declarations of conformity from Tier 1 suppliers of taxable imported products and high-risk Tier 2 suppliers. We implement independent verification auditing of suppliers with operations at higher risk for using ODCs.

## Water

Water scarcity is among the most pressing environmental problems of the 21st century. In China, almost half of the country is experiencing moderate to extreme droughts, with the northwestern region being the most severely hit. As noted above, in FY18 we requested suppliers, based on 95 percent spend, to participate in the CDP water usage questionnaires. This included disclosure of actions around water use measurement, management such as analyzing water-related risks, and reporting to ensure suppliers are following best practice on corporate water stewardship. Seventy percent of the covered suppliers submitted responses. This information allows us to understand risks and opportunities regarding water scarcity in our supply chain.



**GRI STANDARDS DISCLOSURE: 303-1, 303-2, 303-3, 306-1**

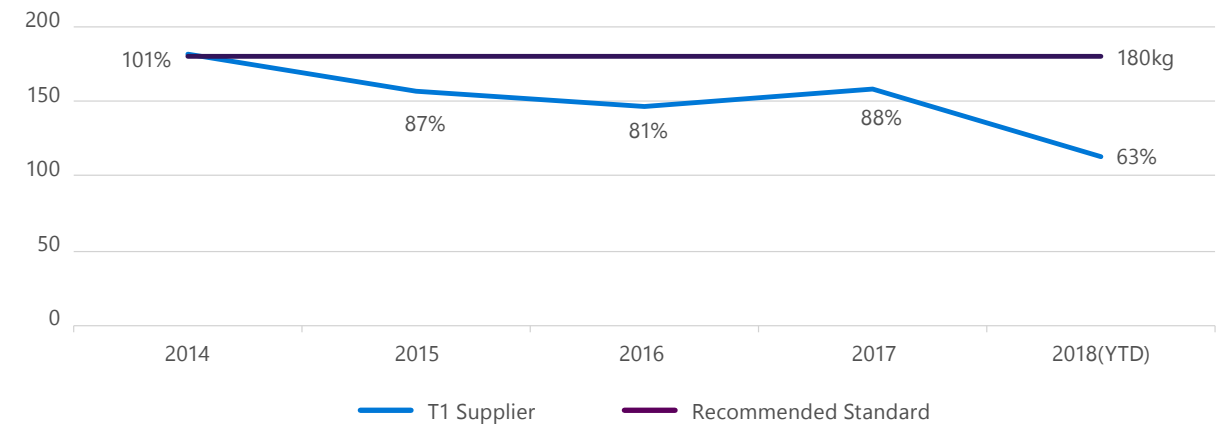
## Tier 1 water management

In general, the manufacturing suppliers in Microsoft's device supply chain are not heavy users of water resources. Nonetheless, water conservation practices are critical to manage water scarcity. Microsoft SEA experts have provided education on water conservation to Tier 1 suppliers.

<sup>7</sup>Water Balance Approach: Based on conservation of mass, the sum of inflows must equal the sum of outflows plus any change in storage.

Tier 1 factories have been encouraged to save every drop of water, report any water leakage, and to set up monitoring systems for potable water consumption. Microsoft SEA team worked with suppliers on a water balance approach.<sup>7</sup> As a result, the number of leakage points in the underground pipes at several factories have been identified and repaired.

**Daily potable water consumption average in Microsoft T1 Suppliers site (kg/person/day)**



For potable water consumption, our data shows that factories are conserving water. In the last four consecutive years, the consumption has decreased and is well below the recommended standard.

Based on these findings, Microsoft does not believe that water consumption reduction targets for its suppliers is necessary and believes efficient practices are already in place. At the same time, Microsoft ensures that factory workers have access to potable water and that the water is tested to ensure that it meets applicable drinking water standards.

## Waste management

As concern for the environment has grown in recent years, the importance of recycling has become more evident: the more materials that are recycled, the less environmental degradation from extraction and processing and the less useful waste going to landfills.

Our supplier programs aim to build suppliers' capabilities Environmental sustainability in manufacturing **Factory worker occupational safety and health** Labor and human rights SEA impact

## Magnesium recycling program

We worked with our suppliers to recycle the magnesium waste generated by our suppliers' factories to allow efficient reuse of the alloy. In FY18, we achieved 97 to 99.6 percent of magnesium scrap waste recycling at associated supplier sites.

Recycling scrap metal reduces the substantial amounts of GHG emissions produced during the various smelting and processing operations used when making metal from virgin ore. This provides new opportunities for the metal to be reused.

Reuse avoids issues associated with mining, such as acid effluent that can result in water and air pollution. By recycling, we also reduce the need to manage extensive and potentially dangerous piles of mine tailings as solid waste.



# Factory worker occupational safety and health

Safety of workers is a primary Microsoft manufacturing priority. Success requires that safety be deeply ingrained into the fabric of the factory's culture. Since June 2013, Devices has conducted an EHS culture program in partnership with Tier 1 suppliers with the objective to create a culture where operators "own" safety responsibility for their workplace.

The goal is for workers to comply with safety practices and procedures not because they have to, but because they want to. And they do this regardless of whether their supervisor is present. They should seek to improve safety not only for themselves but their team and organization more broadly.

SEA experts focus on the following efforts to cultivate a culture of daily individual accountability for safety:

- Management commitment
- Employee involvement and engagement
- Capability building
- Safety behavior observation



[GRI STANDARDS DISCLOSURE: 403-2](#)

## Factory safety professionals' capability building

The safety professionals employed by the suppliers are critical to the success of our SEA program. Our suppliers vary in maturity with some factories maintaining a strong EHS management system while others have limited EHS capabilities.

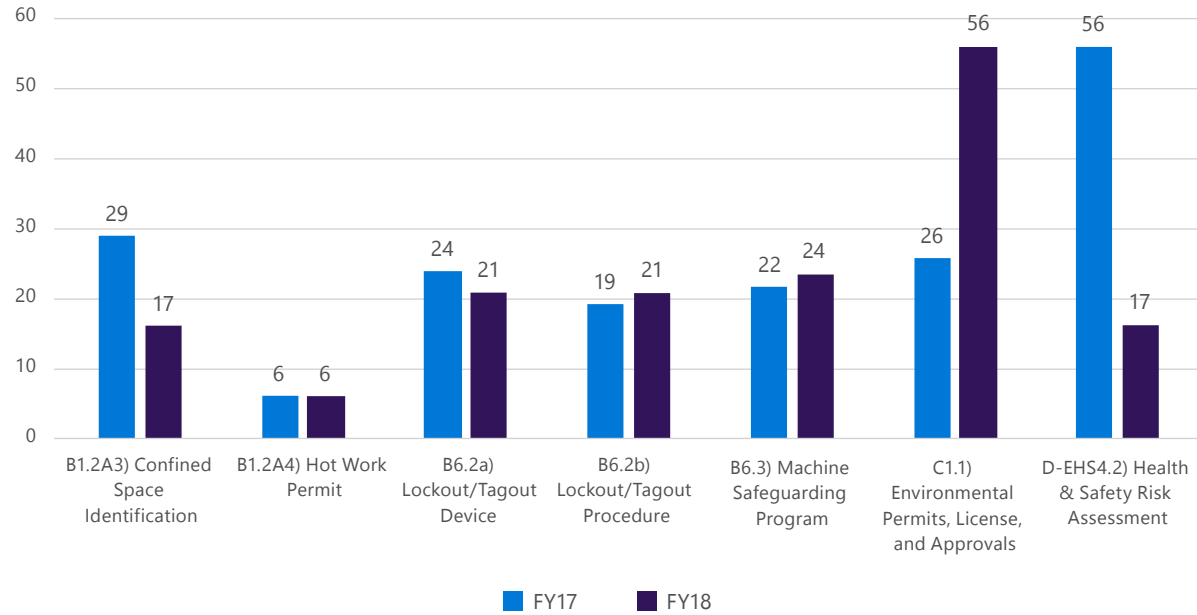
To improve this situation, Microsoft launched a series of EHS capability-building programs through the SEA Academy ([see the SEA Academy section](#)) to drive EHS improvement in our supply chain. In FY18, we introduced the SEA Webinar program, targeting the EHS professionals in our suppliers. We held four webinars with a total of 403 supplier participants. The topics addressed major EHS concerns in the previous SEA audits and regulatory compliance priorities in newly emerging EHS regulations, such as:

- Environmental Protection Acceptance Inspection Method and the potential impact
- New labor management requirements
- Lockout/tagout
- Permit to work
- Impact analysis of VOC online monitoring requirement
- Confined space entry management
- Machinery safety risk assessment

Our supplier programs aim to build suppliers' capabilities Environmental sustainability in manufacturing **Factory worker occupational safety and health** Labor and human rights SEA impact

Most of the factories have shown improvement regarding the actions identified to manage those areas. The following chart compares the number of related issues found in SEA audits for FY17 and FY18.

### Factory safety professional's capability-building NCs



Training, factory visits, and expert support to build the supplier capabilities are an effective strategy toward improving the supplier's performance over time.

(Note: For C1.1, the enforcement of environmental regulations is stricter in China in these years. The number of issues associated with these stricter requirements has increased. We continue to focus our actions in this area.)

## Process chemical management

The Process Chemical Management program is also key to eliminating safety and health risks for workers. In FY17, we initiated a supplier chemical improvement project for 100 suppliers:



In FY18, we updated our [H00594 specification](#) and supplier chemical program guidelines to give suppliers more clarity and detailed guidance on chemical life-cycle management.

We also continued to verify the chemical management system in place for a second batch of 100 suppliers and conducted on-site chemical assessments to create a chemical inventory for all the major component categories and identify improvement opportunities where we will focus on continuous improvement. We identified additional chemicals for potential restriction or phasing out. Our goal is to assist our suppliers in achieving a high safety standard of chemical management, which demonstrates that the suppliers can systematically manage risks associated with chemical hazards and provide a better environment for their workers.

Our supplier programs aim to build suppliers' capabilities Environmental sustainability in manufacturing **Factory worker occupational safety and health** Labor and human rights SEA impact

## Individual Tier 1 supplier safety performance

Incidence rates used by the US Occupational Safety and Health Administration (OSHA) are collected to identify the relative level of injuries and illnesses in our Tier 1 suppliers' manufacturing facilities. These rates also help determine both problems and progress in preventing work-related injuries and illnesses.

Factories must record accidents that are work-related injuries, illnesses, and fatalities according to OSHA Standards. Injuries are considered by OSHA to be work-related when an event or exposure in the work environment causes or contributes to the condition. OSHA recordable rate of injuries and illnesses can be computed from the following formula:  $\text{Number of injuries and illnesses} \times 200,000 / \text{Employee hours worked} = \text{Incidence rate}$ .

Since the launch of Microsoft's safety culture program in Tier 1 supplier sites, we have emphasized building the leadership's commitment and employee's engagement. To fully integrate safety into the business core culture, Microsoft's SEA team provides coaching to help our suppliers promote and foster a culture where safety is as a core value. The team also helps suppliers to set up risk observation programs where all workers engage in safety. After three years of implementation, the OSHA recordable injury rate of our Tier 1 suppliers has declined significantly.

Learning from this program, we will pilot this in selected Tier 2 suppliers in FY19.

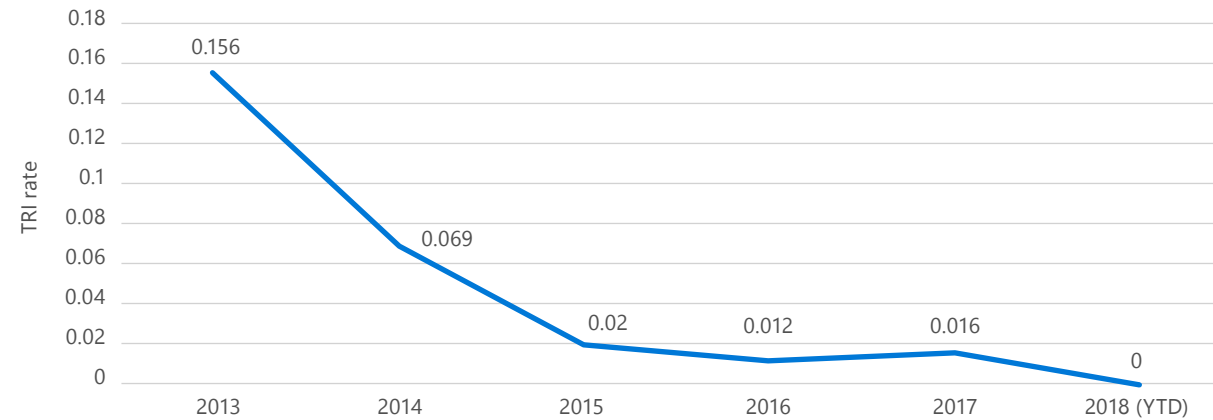
## OSHA recordable injury rate performance in Tier 1 supplier factories

T1 Supplier	2013	2014	2015	2016	2017	2018 (YTD)
Supplier A	1.04	0.24	0.11	0.28	0.24	0.00
Supplier B	0.06	0.13	0.02	0.00	0.00	0.00
Supplier C	0.06	0.00	0.00	0.00	0.00	0.00
Supplier D	0.11	0.04	0.05	0.00	0.00	0.00
Supplier F	0.00	0.00	0.00	0.00	0.00	0.00

*Incidence rate = number of injuries and illnesses X 200,000/employee hours worked*

While the declining TRI rate is positive, every supplier should strive for zero TRIs.

## Total recordable injury (TRI) rate performance in Microsoft Tier 1 suppliers



*According to data and statistics from the US Department of Labor website, the benchmark for electronic computer manufacturing was 0.7 in 2016.*

# Labor and human rights

Given the high-risk labor and human rights issues that exist in some Asia countries, we continue to invest in many measures to monitor and help build our supplier capabilities to manage these risks. These include, but are not limited to, risk mapping, a worker's hotline program, and training for auditors and suppliers.

## Asian countries supply chain risk mapping

In FY18, the SEA team began mapping existing and newly emerging labor risks in our global supply chain, including social benefits, working hours, wages, freedom of association, migrant workers, student/juvenile workers, interns, and temporary workers/subcontractors. This included analyzing legal requirements and interviewing auditors from eight countries: Japan, South Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand, and Vietnam. The interview results indicated:

- Migrant workers and working hours remain at high risk for violations in over 50 percent of the countries.
- The migrant workers are mainly from China, Bangladesh, Indonesia, Vietnam, and the Philippines, and North Korean workers are not banned in-country.
- Malaysia and South Korea are at high risk regarding working hours, migrant workers, and temporary workers/subcontractors.
- Payment of recruiting agency fees by workers is common in countries using migrant workers.
- Other issues relating to foreign migrants are working conditions, health and safety, excessive overtime, and discrimination.
- Auditors also reported harassment, abuse, and freedom of speech issues.

The results of the risk mapping broaden our understanding of the risks outside of China and will be used to guide our program design and establish priorities moving forward.

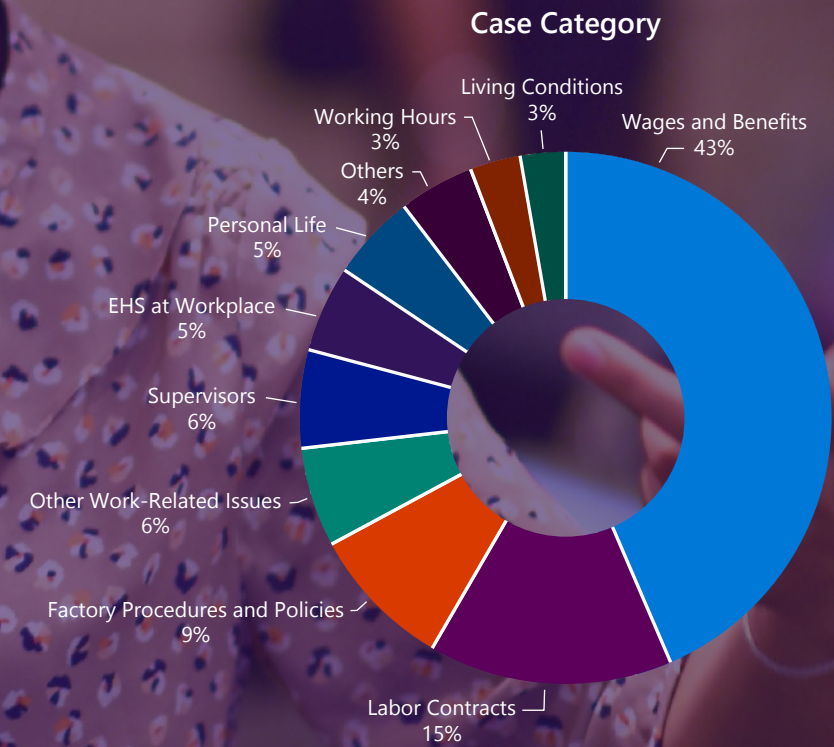




# Workers' Voice Hotline program

The Workers' Voice Hotline program, launched in April 2014, provides workers with a reliable and anonymous reporting channel. This avenue of communication helps resolve worker workplace concerns and enables a more transparent, efficient, and interactive factory management system.

In FY18, the hotline was managed by a third party in all five Tier 1 factories and two selected Tier 1.5 factories. On-site orientation was provided to 2,510 workers. The hotline received and resolved 115 inquiries, mainly concerning wages and benefits, labor contracts, factory procedures, and policy. In FY19, we plan to scale the program beyond Tier 1 to all remaining Tier 1.5 factories and selected Tier 2 factories. Workers will be able to use the existing toll-free number and the new hotline case management on the SEA Academy platform.



## Strategies for prevention of human trafficking and forced labor in the supply chain

All forms of forced labor are specifically banned by the [Microsoft Supplier Code of Conduct](#). Forced labor can take various forms, such as slavery, bonded labor, or debt bondage; physical confinement in the work location; exploitative practices, such as forced overtime; and lodging of deposits (financial or personal documents) for employment. Any form of indentured, bonded, or prison labor is prohibited. Also prohibited is the support of any form of human trafficking of involuntary labor through threat, force, fraudulent claims, or other coercion.<sup>8</sup>



**GRI STANDARDS DISCLOSURE: 412-3**

### Policies and procedures

Microsoft evaluates its supplier policies and procedures related to prevention of human trafficking and forced labor. Suppliers are required by contract to adopt and follow the [Microsoft Supplier Code of Conduct](#) and [SEA Specifications](#).

### Transparency and engagement

Since FY16, Microsoft has disclosed the efforts to prevent and combat human trafficking and forced labor in the [Microsoft Slavery and Human Trafficking Statement](#) pursuant to the UK Modern Slavery Act of 2015. In FY18, to better understand the risk of forced labor in its supply chain, we completed focused labor analyses and surveys, and identified vulnerable workers, country risks, country laws, and regulations to focus attention on regions with a higher human trafficking risk. In FY18, the Microsoft SEA team also provided awareness trainings to our Strategic Sourcing team, suppliers, audit partners, and other interested groups.

A Microsoft human rights core group was also established with experts representing SEA; Corporate, External, and Legal Affairs (CELA) including human rights, corporate affairs, and stakeholder engagement; Responsible Sourcing for Indirect Procurement; Cloud Supply Chain and Provisioning (CSCP); and Microsoft Cloud Infrastructure Organization (MCIO) Data Center EHS & Compliance. This group will share best practices across, build awareness, and develop cross-company strategies to facilitate continuous improvement of Microsoft's human rights initiatives.

### Audits and due diligence process

Forced labor and human trafficking can be difficult to detect. Our suppliers' facilities are audited on 36 check points, document reviews, and worker and manager interviews. Interviews of migrant workers are conducted in their native language.

In FY18, 168 factories were audited, with 24 major findings in the Freely Chosen Employment category. These findings were distributed as follows:

### Numbers of findings per type

Restriction of workers' freedom of movement	1
Retention of worker identity documents	1
Forced overtime	1
Workers having paid fees for recruitment or employment	3
Freely chosen employment policy and procedure that does not prohibit forced labor and human trafficking	6
Contractual relationship	12

Factories were required to create corrective action plans for all of these findings. For example, during an FY18 audit of a Taiwanese supplier, we found that migrant workers were charged recruitment fees from a labor agency. Although the practice is legal in the sending and receiving country, it is prohibited by the Microsoft Supplier Code of Conduct (which is based on the RBA Code that prohibits this action). The factory was immediately requested to provide remedy and a corrective plan that included changing its recruitment practices and reimbursing the impacted employees.

### Capability building

We provided awareness and other trainings to build the capabilities of our suppliers to correctly identify forced labor issues in their operations. We also provided training to internal teams within Microsoft.

In FY18, we also offered two days of training in Thailand for external auditors. The training was developed in partnership with an NGO that specializes in human rights and labor issues and focused on how to identify potential human trafficking and forced labor risks and effective identification during audits to capture potential nonconformance. Representatives from Thailand, South Korea, Japan, Vietnam, Singapore, and the Philippines, among others, participated in active discussions about combating the key issues in their respective countries.

<sup>8</sup>Forced labor defined by the [United Nations \(UN\)](#) as "any work or service that is exacted from any person under the menace of any penalty, and for which that person has not offered himself or herself voluntarily."

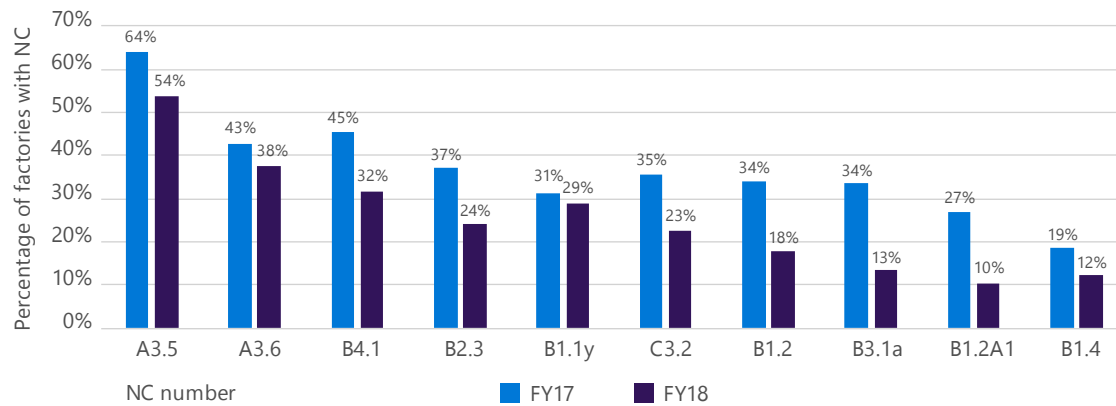
# SEA Impact

## FY18 results indicate program focus and improvement

Our data indicates that strong partnerships with Manufacturing and Strategic Sourcing managers are driving suppliers to sustain year-over-year improvements. In the chart below, the top 10 issues identified in FY17 all have been decreased significantly in FY18. (Note: The percentages in FY17 shown in this table may differ from this year because we counted only nonconformances (NC) found in the audited suppliers that are still active now.)

[GRI STANDARDS DISCLOSURE: 308-1, 308-2, 407-1, 408-1, 409-1, 412-2, 414-2](#)

Factory percentage with NCs by NC number and fiscal year

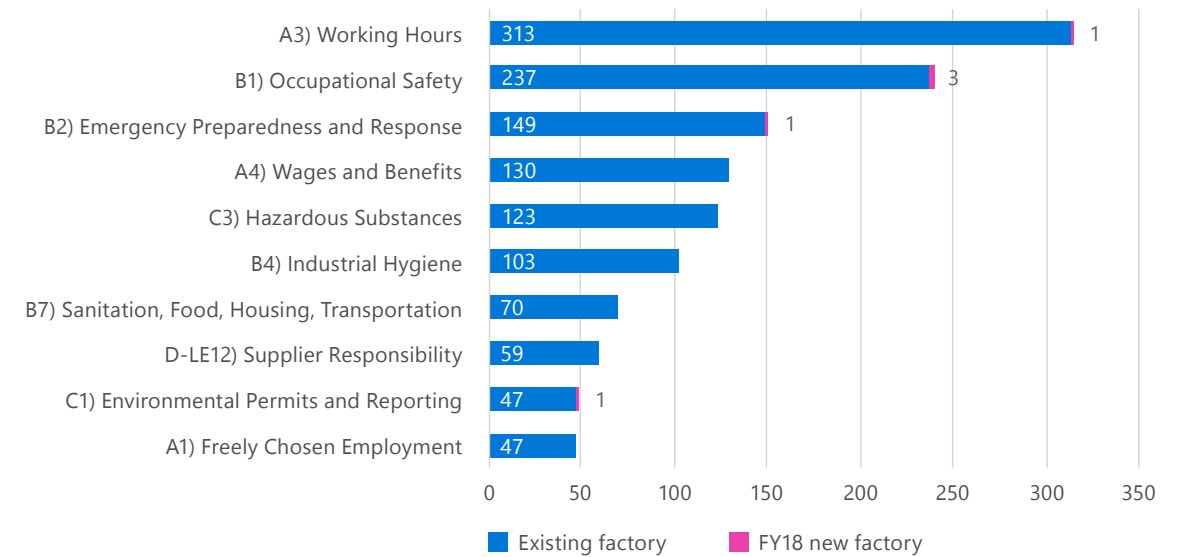


The top 10 SEA issues commonly found across all factory audits, which remain ongoing areas of focus are:

- Overtime exceeding local limit (A3.5)
- One day off per week (A3.6)
- Chemical exposure controls (B4.1)
- Chemical leakage prevention (C3.2)
- Emergency exit accessibility (B2.3)
- OHS permits, license (B1.1y)
- General work safety hazards (B1.2)
- Electrical hazard controls (B1.2A1)
- Emergency washing facility accessibility and maintenance (B3.1a)
- Personal protective equipment (PPE) (B1.4)

The following chart shows the top 10 NC provisions distribution for 170 existing and three new factories for the Devices supply chain in FY18.

NC number for top 10 provisions for FY18 new and existing factories



Our supplier programs aim to build suppliers' capabilities Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights **SEA impact**

## SEA audit and assessment findings

In FY18, we completed 340 third-party audits and Microsoft assessments of 173 factories for Devices suppliers. These audits and assessments continue to provide us with insight into the needs and challenges of our supply chain and guide our investments in supplier capability and future improvements.

In the following SEA Audit and Assessment Results table, we provide year-over-year data on findings of critical/serious nonconformance with the requirements covered in these audits and assessments. These critical or

serious findings were escalated to Microsoft senior management, and the suppliers were placed on restricted status with no new Microsoft business awarded until the issues were resolved. In all instances, the suppliers instituted corrective action plans that were approved by Microsoft, and follow-up audits confirmed that the suppliers were implementing the corrective action plans.

## SEA Audit and Assessment Results

Category/Provision	Percentage of suppliers with critical/serious nonconformances <sup>1</sup>					
	FY16		FY17		FY18	
	New Suppliers	Existing Suppliers	New Suppliers	Existing Suppliers	New Suppliers	Existing Suppliers
<b>Labor</b>						
<b>Freely Chosen Employment</b>	0%	0%	0%	0%	0%	0%
<b>Child Labor Avoidance<sup>2</sup></b>	6%	5%	5%	3%	0%	3%
<b>Working Hours<sup>3</sup></b>	18%	9%	39%	20%	0%	19%
<b>Wages and Benefits<sup>4</sup></b>	9%	2%	11%	5%	0%	1%
<b>Humane Treatment<sup>5</sup></b>	0%	0%	1%	0%	0%	1%
<b>Nondiscrimination</b>	3%	0%	1%	0%	0%	0%
<b>Freedom of Association</b>	0%	0%	0%	0%	0%	0%

### FY18 Results:

<sup>1</sup>Percentage represents the number of suppliers with critical/serious findings on each issue out of the base of suppliers audited and assessed by third-party audits and Microsoft SEA assessments. Audits and assessments are based on the RBA audit protocols with additional Microsoft requirements. In FY18, there were zero critical NCs identified.

<sup>2</sup>Child labor avoidance. Out of the five cases, one historical child labor NC was identified, and one worker was found to have used another individual's ID card during the hiring process. The other three cases were related to student workers who worked overtime.

<sup>3</sup>Working hours. All findings are related to workers' work week exceeding 72 hours or workers working for more than 24 consecutive days without a rest day.

<sup>4</sup>Wage and benefits. There was one case of insufficient overtime wage for student workers and one case of insufficient overtime wage paid for dispatched workers.

<sup>5</sup>Humane treatment. There was one serious finding identified: a male security guard used his hands to search pregnant female workers to check if they were taking away product parts.

Our supplier programs aim to build suppliers' capabilities Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights **SEA impact**

Category/Provision	Percentage of suppliers with critical/serious nonconformances <sup>1</sup>					
	FY16		FY17		FY18	
	New Suppliers	Existing Suppliers	New Suppliers	Existing Suppliers	New Suppliers	Existing Suppliers
<b>Health and Safety</b>						
Occupational Safety	0%	1%	0%	0%	0%	1%
Emergency Preparedness and Response	0%	0%	0%	0%	0%	0%
Occupational Injury and Illness <sup>6</sup>	0%	0%	0%	0%	0%	0%
Industrial Hygiene <sup>7</sup>	0%	0%	0%	0%	0%	1%
Physically Demanding Work	0%	0%	0%	0%	0%	0%
Machine Safeguarding	0%	0%	0%	0%	0%	0%
Sanitation, Food, Housing, and Transportation <sup>8</sup>	0%	0%	0%	0%	0%	1%
<b>Environment</b>						
Environmental Permits and Reporting	2%	0%	0%	0%	0%	0%
Pollution Prevention and Resource Reduction	0%	0%	0%	0%	0%	0%
Hazardous Substances	0%	0%	0%	0%	0%	0%
Wastewater and Solid Waste	0%	0%	0%	0%	0%	0%
Air Emissions	0%	0%	0%	0%	0%	0%
Product Content Restrictions	0%	0%	0%	0%	0%	0%

**FY18 Results:**

<sup>6</sup>Occupational safety. One factory was found to have non-functioning sensor alarms for liquid oxygen.

<sup>7</sup>Industrial hygiene. One factory was identified with inadequate occupational health surveillance.

<sup>8</sup>A drinking water test was inadequate and failed to meet legal requirements.

Our supplier programs aim to build suppliers' capabilities Environmental sustainability in manufacturing Factory worker occupational safety and health Labor and human rights **SEA impact**

Category/Provision	Percentage of suppliers with critical/serious nonconformances <sup>1</sup>					
	FY16		FY17		FY18	
	New Suppliers	Existing Suppliers	New Suppliers	Existing Suppliers	New Suppliers	Existing Suppliers
<b>Ethics</b>						
<b>Business Integrity</b>	0%	0%	0%	0%	0%	0%
<b>No Improper Advantage</b>	0%	0%	0%	0%	0%	0%
<b>Disclosure of Information</b>	0%	0%	0%	1%	0%	0%
<b>Protection of Intellectual Property</b>	0%	0%	0%	0%	0%	0%
<b>Fair Business, Advertising, and Competition</b>	0%	0%	0%	0%	0%	0%
<b>Protection of Identity</b>	0%	0%	0%	0%	0%	0%
<b>Responsible Sourcing of Minerals</b>	0%	0%	0%	0%	0%	0%
<b>Privacy</b>	0%	0%	0%	0%	0%	0%
<b>Non-retaliation</b>	0%	0%	0%	0%	0%	0%
<b>Management Systems</b>						
<b>Labor and Ethics Mgmt. Systems</b>	0%	0%	0%	0%	0%	0%
<b>Environment, Health &amp; Safety Mgmt. Systems</b>	0%	0%	0%	0%	0%	0%

## SEA Program Correlation study

In FY18, we conducted detailed studies to evaluate the effectiveness of Microsoft's SEA programs and whether they contributed to our business performance and product quality. Our studies focused on the correlation between SEA programs and Devices' business performance in several categories of suppliers. The results of the study supported a finding of a positive correlation between a factory's SEA performance and business output.

<sup>1</sup>"New Suppliers" refers to those suppliers that newly onboarded into our Audit Management System during FY18 to the Microsoft Device Supply Chain and audited for the first time.

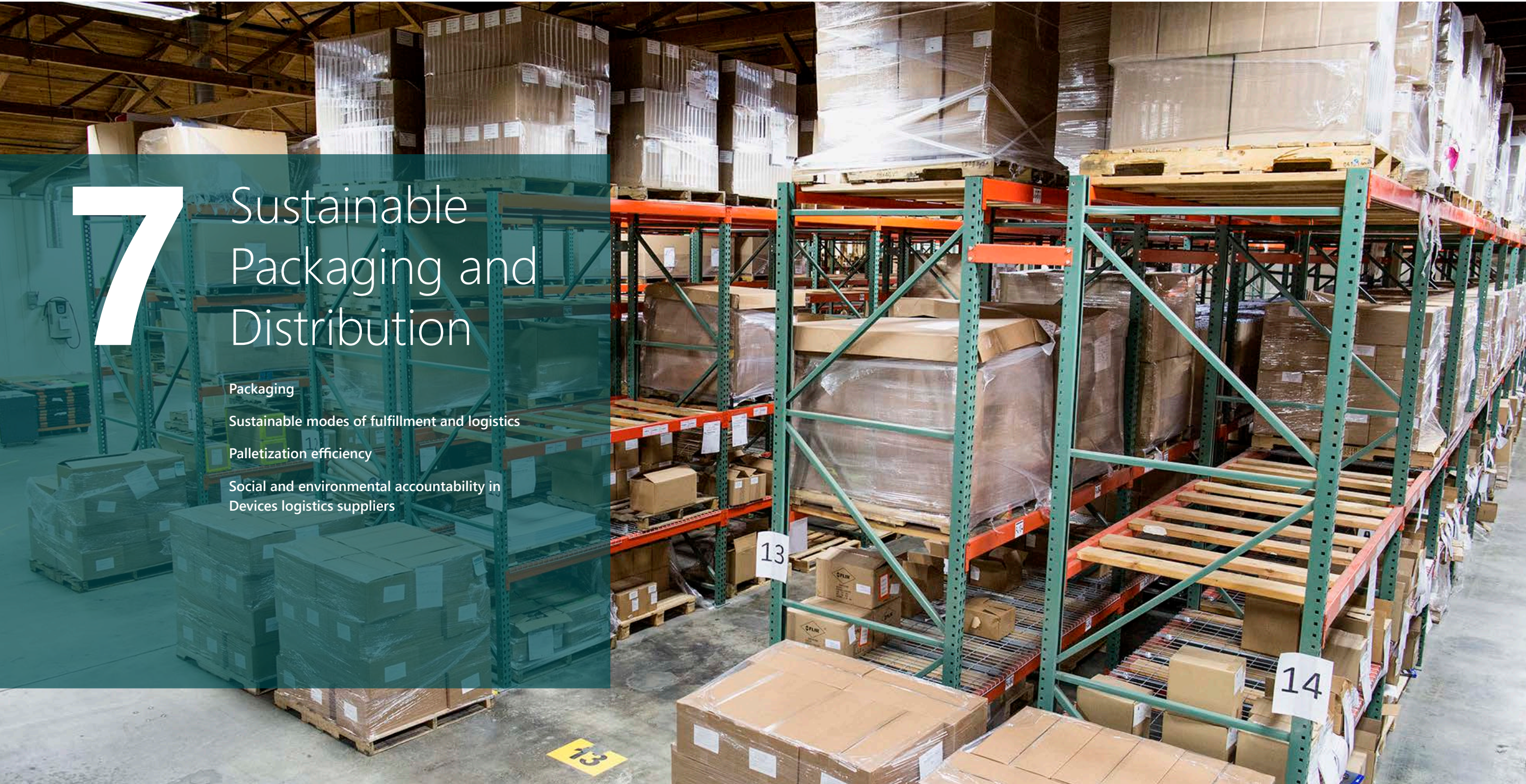
# 7 Sustainable Packaging and Distribution

Packaging

Sustainable modes of fulfillment and logistics

Palletization efficiency

Social and environmental accountability in Devices logistics suppliers



As we move through the value stream of the product, we continue our focus on sustainability when addressing packaging for shipping, distribution, the mode of transport and sale.

# Packaging

We continue to decrease our packaging environmental footprint through a science-based approach and collaboration with our supply chain and industry partners. Opportunities for sustainability in packaging include using less packaging material, using the right materials, and optimizing manufacturing processes. By sharing our measures, progress, and knowledge, packaging sustainability creates business value, drives innovation in design and materials, and supports an efficient and sustainable supply of raw materials.



## Packaging strategy

We align our goals across three key areas of contribution that support sustainable management:

### Financial

Design sustainable packaging that optimizes the supply chain, is cost viable, is compliant with regulatory requirements, and increases our corporate value.

### Environmental

Commit to our customers that our design and engineering delivers packaging materials that achieve measurable sustainability gains. Optimize, through data analysis, the use of renewable and/or recoverable materials plus process efficiencies.

### Social

Assume global responsibility for packaging to mitigate risks for the human community. Create a positive impact on brand and contribute to business value through internal and external partnerships

We have a “paper first” packaging strategy. Paper makes up 97 percent of our packaging material and only 3 percent is plastic. The papers we use consist of different materials depending on whether the packaging is for use in retail (for our print and graphics branding) or distribution (to protect products and their accompanying retail packaging). In addition to traditional wood-based papers, we use interior packaging derived from bagasse, which is a sugarcane processing waste by-product.

Plastic materials provide protection for our products. Our strategy is to look for ways to minimize plastics use. Examples include eliminating plastic bags and reducing engineering foam cushioning to the minimum amount required. Further, we strive to use plastics with recycled content and resins that are accepted for use in recycling systems. We are beginning to leverage modeling and simulation tools to optimize performance and minimize material use.



## Packaging 2020 goals

In 2016, Microsoft Global Packaging developed “2020 goals” across six key indicators of environmental impact. Our goals and metrics continue to encourage right-sized packaging, increased use of recyclable content, and a reduction in the amount of packaging used. In FY18, we evolved our metrics down to five key indicators for increased focus on design impact.

We track targets for materials that include increased recycled content, lightweighting and size reduction of designs, reduction of GHGs, and ease of recycling. Our development of 2020 goals and aligning sustainability measures integrates sustainability deeper into the development process.

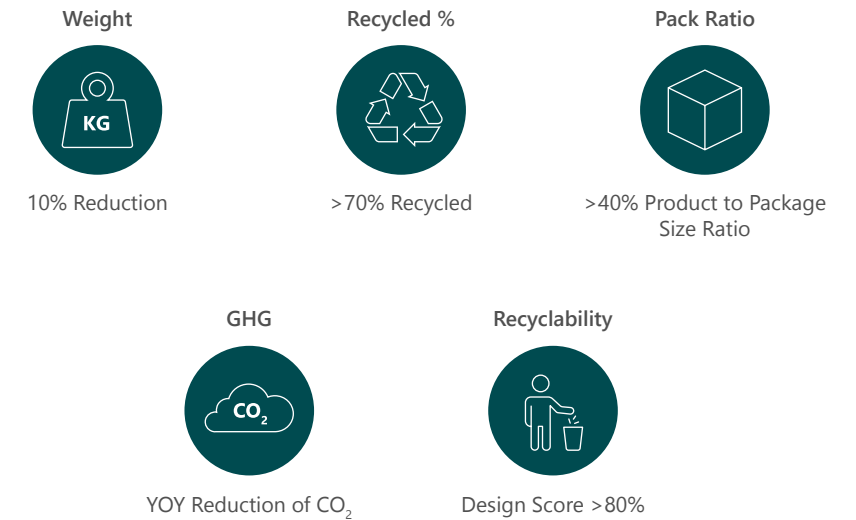
## Measuring our packaging sustainability

When measuring the sustainability of our packaging designs, earlier is better, and much of the work occurs parallel with the product design. As part of early design concept reviews, we measure and compare weight, size, and recyclability of each different concept. Bringing sustainability to the forefront of development engages stakeholders where they can make the most difference and provides a sustainability perspective to our business decisions.

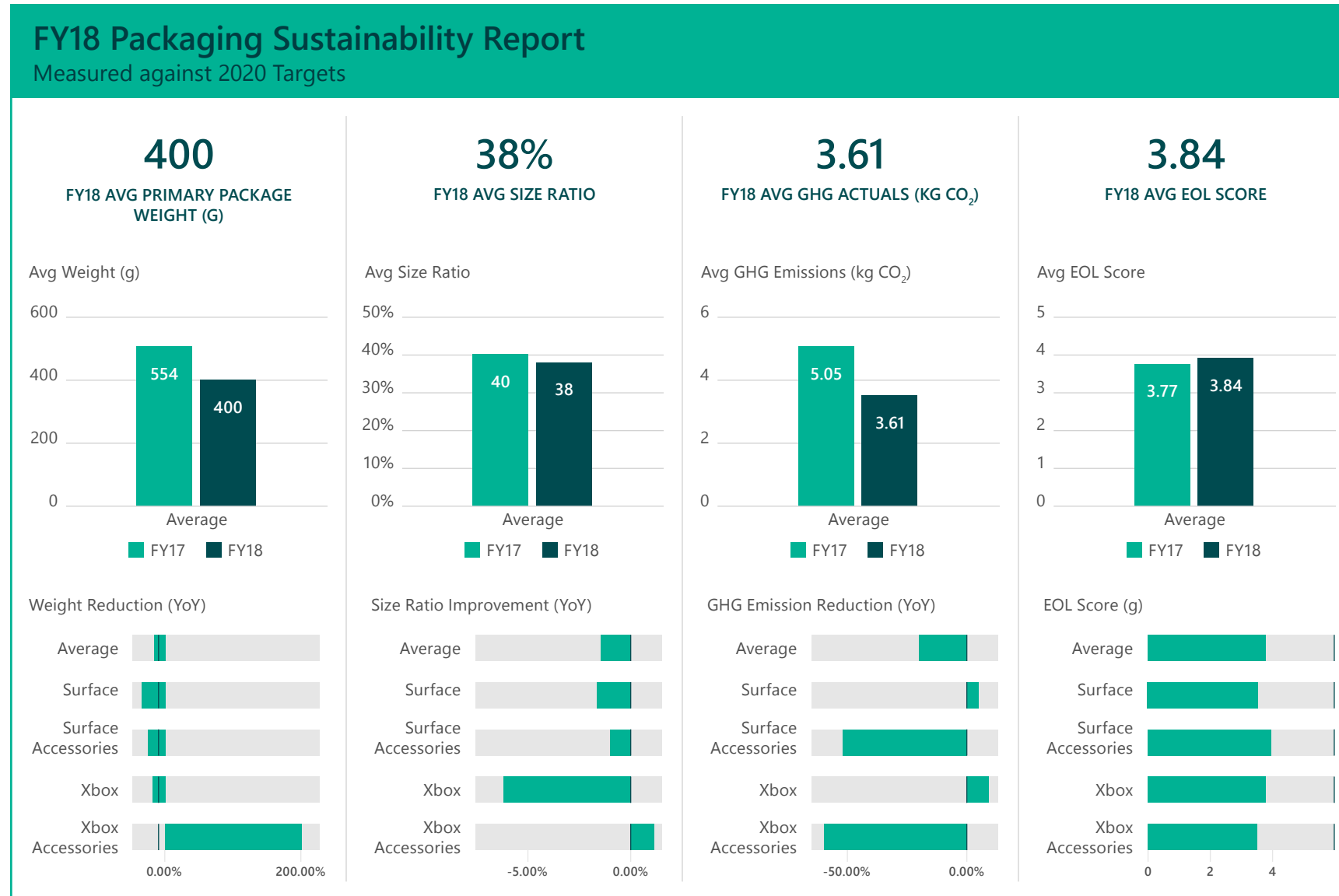
Where multiple alternative concepts are evaluated, we use three key measures to compare the designs before selection. Using package weight, size, and materials recyclability scoring, we assess the relative environmental impacts of design concepts, comparing environmental scorecards against earlier design versions as benchmarks.

As our packaging becomes standardized, we compare design platforms and identify focus areas for improvement using comprehensive scorecards. The use of recycled content for paper packaging and plastic material is included in our scorecard metrics:

- In FY18, the recycled content of all paper types, by volume, was 70 percent.
- For plastics, which includes flexible films and rigid forms, the overall recycled content by volume was 2 percent.
- The volume by weight of all plastic materials used in packaging, including rigid plastics, films, and foam cushioning, decreased by 28 percent.



FY18 comprehensive system-level scorecard and our 2020 goals—for newly introduced FY18 programs.



Packaging sustainability highlights in FY18 for all new programs:

- 72 percent of packaging is from recycled materials.
- Recyclability of packaging improved by 2 percent, with packaging on average achieving 84 percent of the total possible recycling score (4.2 on a scale of 1 to 5, with 5 being the highest score).
- Packaging weight is lighter by 20 percent.
- Packaging materials volume increased 3 percent.
- Average packaging size to product ratio is within 2 percent of achieving 2020 goal.
- GHG emissions were down by 29 percent.

## ISO 14001 packaging targets







Microsoft Global Packaging participates in the Devices ISO 14001 Environmental Management System (EMS) and meets ISO standards in supply chain management of manufacturing operations. Packaging has a significant impact on environmental management from the perspective of corporate social responsibility. The raw materials used in packaging, the efficiency of manufacturing and distribution, and the end package design regulations and fees all impact achieving a sustainable supply chain. ISO 14001 packaging targets are aligned to these supply chain impacts and are designed to deliver improved efficiencies and lower environmental impact. We accomplished the following in FY18:

- Continued to measure new packaging designs against our 2020 sustainability goals, driving smart decisions that advance our progress on sustainability metrics.
- Further integrated environmental design evaluations into our decision-making process as part of a new program management capability and tool set.
- Used key metrics to right size packaging to minimize empty space, reduce material usage, and improve logistics footprint.
- Pursued lightweighting of packaging by focusing on the development of simplified commercial packaging and implemented a lightweight rigid box structure for PC accessories.
- Mitigated the further use of polystyrene and EVA foams used in packaging.
- Assessed paper source third-party certification opportunities (SFI, FSC, PEFC).
- Completed annual reporting of packaging design environmental scorecard and metrics, tracking progress to 2020 plan targets.

## Commercial packaging pilot and environmental impact

In FY18, we began development of a new commercial packaging system for our line of Surface computers and accessories. This program offers the opportunity to significantly improve our environmental impact by minimizing packaging weight, using a greater percentage of recycled content, and improving space efficiency. The program will launch in FY19. Preliminary metrics are noted here:

### Commercial Pilot: Eco Impact Potential (Surface Book)

	 Retail	 All in one	 Folio 5 pack	
Weight	1498g	596g	435g	 ~65% weight reduction
Paper Recycled %	54%	52%	74%	 Up to 27% increase in recycle content
Pack Ratio	9607cm <sup>3</sup>	6883cm <sup>3</sup>	6317cm <sup>3</sup>	 ~30% more space efficient <i>Easy to separate, collapse and recycle</i>

## Australian Packaging Covenant

The packaging development process works in tandem with our commitment to the Australian Packaging Covenant (APC), which Microsoft voluntarily signed in March 2009. The covenant is governed by the Australian Packaging Covenant (APC) Organisation—a co-regulatory, not-for-profit organization that partners with government and industry to reduce the harmful impact of packaging on the Australian environment. The program is a unique form of voluntary commitment against which we benchmark our global sustainability program for packaging. As one of the original signatory members to the covenant, we agreed to reduce the environmental impact of consumer packaging by encouraging improvements in packaging design, recycling rates, and better packaging stewardship.

Every year, we report our packaging sustainability improvements against an action plan to reach our goals. In 2017, we met and exceeded a number of key performance indicators (KPIs) under the APC Action Plan. Microsoft KPIs are shown in the following table.

**Criteria scores**



**Level 0—Not yet started**  
The organization does not have a plan and has not started investigating options for action under the relevant criteria.

**Level 1—Getting started**  
The organization is developing a plan or is investigating options for action under that criteria (e.g. agreeing on goals and targets).

**Level 2—Good progress**  
There are documented procedures in place (e.g. to implement the Sustainable Packaging Guidelines) or some progress has been achieved, data tracking shows up to 20% of products have achieved the desired outcome.

**Level 3—Advanced**  
The organization has specific, measurable targets in place, or data tracking shows that >20% of products have achieved the desired outcome.

**Level 4—Leading**  
The organization has more rigorous procedures in place, or an ambitious target has been met (e.g. >50% of products have achieved the desired outcome).

**Level 5—Beyond best practice**  
The organization has more rigorous procedures in place, or an ambitious target has been met (e.g. 100% of products have achieved the desired outcome).

**Packaging compliance**

Microsoft also implements strict policies to ensure that our products and packaging fully comply with global environmental requirements. For more information on packaging compliance, see our [Environmental Compliance Letter](#).

**Industry collaboration with the Sustainable Packaging Coalition (SPC)**

SPC is a membership-based collaborative that believes in the power of industry to make packaging more sustainable. Microsoft actively participates and supports the goals of the SPC. We've been a member of this organization for more than 10 years. SPC is the leading voice on sustainable packaging and champions packaging that is good for people plus the environment. The SPC envisions a world where all packaging is:

- Sourced responsibly
- Optimized for efficiency
- Effectively recovered
- Nontoxic
- Low impact

We utilize tools generated by the SPC, including COMPASS®, design-assessment software that compares the environmental impacts of packaging. Microsoft plays a leadership role in the SPC Electronics Packaging Committee, which is focused on the unique packaging challenges faced by the electronic and tech product sector. Projects within this committee are focused on:

- Recovery options for electrostatic discharge (ESD) bags
- The impact of polystyrene bans and restrictions on transportation packaging
- The role of e-commerce shipping on electronics packaging

In 2019, Microsoft will cohost the SPC Impact Conference in Seattle. We look forward to sharing examples of our environmental leadership during this event and partnering to drive further advancements toward a sustainable future.

[sustainablepackaging.org](https://sustainablepackaging.org)

Download the most recent official [APC report](#).

# Sustainable modes of fulfillment and logistics

The efficient use of our end-to-end fulfillment and logistics network is a significant component of our GHS reduction strategy. Microsoft earned a 2018 SmartWay Excellence Award, EPA’s highest recognition for demonstrated leadership in freight supply chain energy and environmental performance.

We can deliver products directly from the manufacturing line to a customer or through our distribution network, allowing us to make the right business decisions while reducing our carbon footprint. We operate a world-class transportation management system (TMS) that ensures we optimize our freight by reducing the number of shipments and use the appropriate transportation mode to deliver our product from origin to destination locations.

By using smart technology in our distribution centers, we reduce our carbon footprint by ensuring we do not unnecessarily consume energy. Launched in July 2017, our most current state-of-the-art distribution centers include lighting that is motion activated and warehouse material-handling systems that operate when activity is detected and are idle when there is no activity.

To increase the energy and environmental efficiency of our freight operations, we partner with SmartWay®, a public and private collaboration between the US Environmental Protection Agency (EPA) and the freight transportation industry. Through this partnership, we can accelerate the availability and adoption of advanced, fuel-efficient technologies and operational practices. As a certified SmartWay Transport Partner with the EPA, we continue to improve fuel efficiency and overall environmental performance.

Our emphasis on the use of ocean and rail transport rather than air and parcel shipment reduces our carbon footprint through fuel efficiency. We have also moved from parcel shipping to less-than-load (LTL) shipping, which increases load efficiency.



**GRI STANDARDS DISCLOSURE: 412-3**

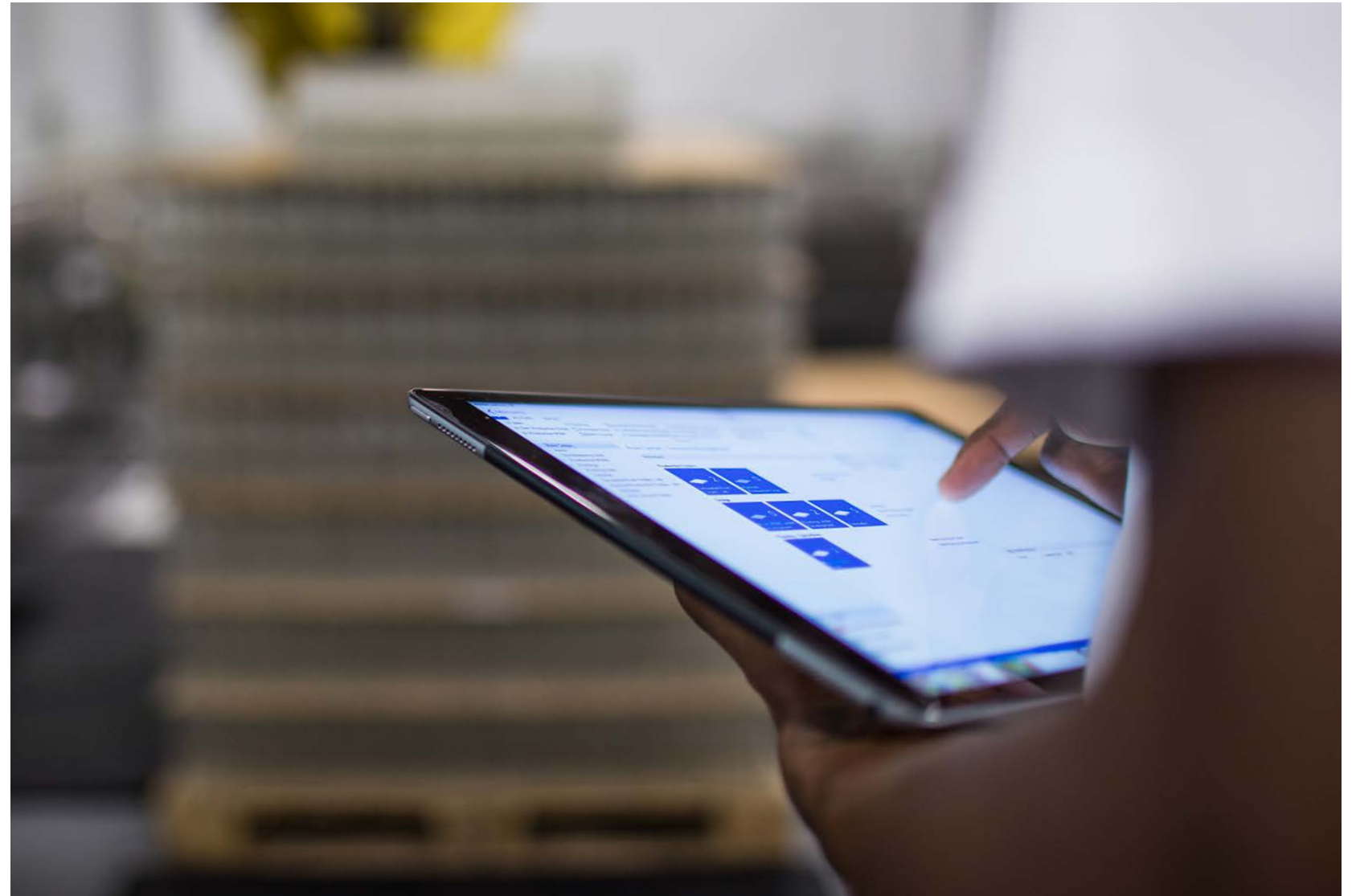
## FY18 Devices shipping

	Air	LTL	Ocean	Parcel	Truck	Rail	Grand Total
<b>Shipments</b>	25,146	84,696	7,946	3,592,211	87,993	46	3,798,038
<b>Units shipped</b>	25,110,448	55,446,572	41,870,347	24,287,568	45,918,971	96,976	192,730,882

# Palletization efficiency

The optimization of transport packaging is fully integrated into the design and development of our primary packaging. We optimize packaging as a holistic system to achieve the maximum environmental benefits possible. In this way, our transport and palletization designs reduce waste, energy, and GHG emissions and lower overall product cost. Several variables are considered when optimizing efficiencies in pallet configuration, such as product-to-package ratio, product fragility, load stability, and the distribution channel.

Our packaging team strives to maximize the quantity of product per pallet based on the dimensions of our transport packaging, and within the dimensional and weight constraints of the carriers. We utilize palletization software to run models and select the best pallet pattern for maximum quantity and load stability. Our goal is to achieve pallet densities of no less than 90 percent space utilization. We will frequently adjust packaging sizes and the quantity of units per shipping case to achieve this target or greater.



# Social and environmental accountability in Devices logistics suppliers

In FY18, we expanded our SEA program to include logistics suppliers. These suppliers are responsible for moving final product and cover all of our trucking, air freight, and shipping channels, as well as warehousing solutions. SEA risks for these suppliers may include the following:

## Trucking, air freight, and shipping suppliers

- Greenhouse gas emissions
- Forced labor
- Adverse working conditions
- Lack of means to collective bargaining
- Discriminatory practices
- Lack of grievance mechanisms and right to remedy
- Occupational health and safety, prevention of injury and illnesses, and physically demanding work
- Human trafficking
- Inadequate management of security forces
- Bribery and corruption

## Warehousing suppliers

- Greenhouse gas emissions
- Discriminatory practices
- Lack of grievance mechanisms and right to remedy
- Occupational health and safety, prevention of injury and illnesses, and physically demanding work
- Safe operation of machinery

As with all our suppliers, we expect our logistics suppliers to meet legal and regulatory standards according to the Microsoft Supplier Code of Conduct. To gain a deeper understanding of business practices covering these key risks, we have completed initial steps (such as development of the initial questionnaire and engagement with internal partners) to help us gather more information to inform our SEA approach with these suppliers in FY19.

# 8

## The Customer Use Phase

Energy efficiency

Ensuring devices are safe for use by customers and employees

Hardware length of use

Product service models

Accessibility and inclusivity

Making our devices secure







The use phase of our devices ultimately begins when the customer completes their out-of-box setup to initialize the devices. From a product life-cycle perspective, this phase is especially focused on energy efficiency and the needs of our diverse user base. In addition, product quality, reliability, and repairability are key to extending the useful life of the products.

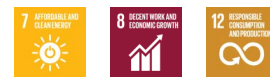
## Energy efficiency

### Energy efficiency improvements in Surface Pro

Microsoft has been working with partners to develop hardware and software that provide increasing computing power while reducing energy consumption. The evolution of the Surface Pro using Windows illustrates these improvements. In the Surface line of mobile devices, the energy efficiency of the use phase has become so efficient that a greater portion of the related GHG emissions are associated with the manufacturing phase of the life cycle, assuming three years of use.

The Microsoft Surface Pro was first introduced in February 2013 running the Windows 8 Pro operating system. The Surface hardware development teams have continually improved the performance and energy consumption ratio with each new generation of Surface Pro. ENERGY STAR provides a standardized method to calculate estimated total energy consumption (ETEC) that provides an estimate of annual energy consumption in kilowatt hours per year (kWh/y). In this report, we have used ENERGY STAR Computer Specification Version 6.1 to calculate energy consumption.

Estimating a device’s computing performance is more challenging. Different devices are optimized to perform different tasks. In this report, we have used two common industry benchmarking programs for this analysis: PCMark7 and 3DMark11. PCMark7 was introduced by Futuremark®, now a UL company, to benchmark Windows 7. Although the Surface Pro now runs newer operating systems, this benchmark is used because it can be applied consistently across the different operating systems. This benchmarking program shows performance in typical office tasks. 3DMark11 is another UL Benchmarks product that analyzes the graphics processing unit (GPU) and graphics capability of a system. The “Entry” profile tests basic graphics and computing capability, and the “Performance” profile tests the GPU more extensively.



GRI STANDARDS DISCLOSURE: 412-3

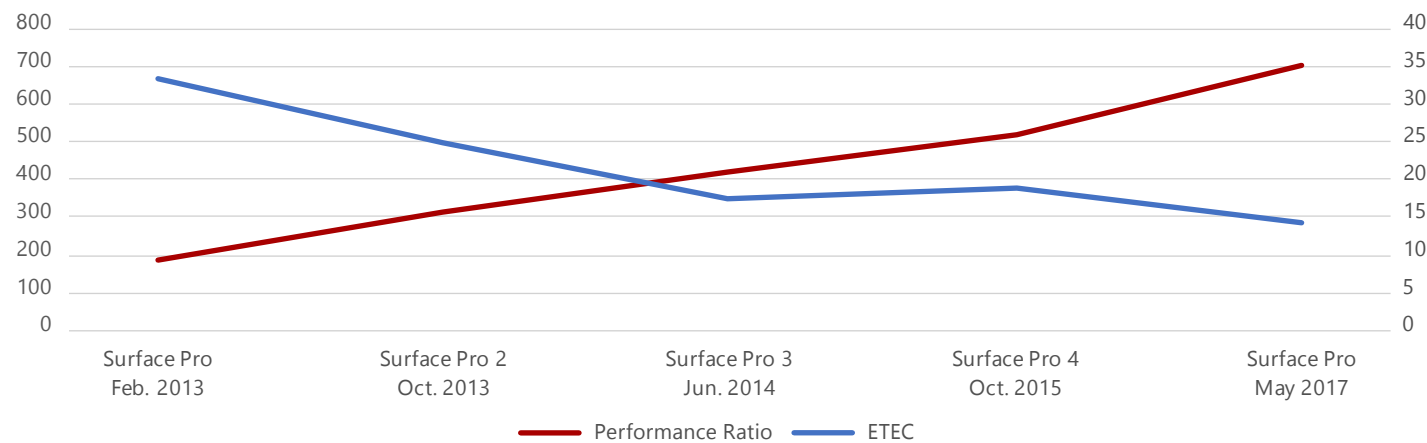
**Energy efficiency** Ensuring devices are safe for use by customers and employees Hardware length of use Product service models Accessibility and inclusivity Making our devices secure

For the analysis of the Surface Pro line of devices, the performance-to-energy ratio was calculated using the sum of the PCMark7, 3DMark11 Entry, and 3DMark Performance scores and dividing by the ETEC for each model.

Surface Product	Model	Release Date	Operating System	Estimated Total Energy Consumption (ETEC)	PCMark7	3DMark11 Entry	3DMark11 Performance Benchmarks	Performance Ratio
Surface Pro	1514	Feb. 2013	Windows 8 Pro	33.34	4673	1019	552	187
Surface Pro 2	1601	Oct. 2013	Windows 8.1 Pro	25.01	4922	1906	997	313
Surface Pro 3	1631	Jun. 2014	Windows 8.1 Pro	17.46	5024	1313	984	419
Surface Pro 4	1724	Oct. 2015	Windows 10 Pro	18.71	5403	2697	1556	516
Surface Pro	1796	May 2017	Windows 10 Pro	14.14	5731	2782	1666	705

The results are an example of joint value between the customer experience and sustainability. This chart shows energy consumption decreasing while compute power (performance) has increased with each new product release.

Surface Pro Energy and Performance



## Energy efficiency improvements in Xbox

The Xbox line of game consoles has also reduced energy consumption during the use phase within a generation while achieving a greater level of gaming performance. For example, since the launch of Xbox 360 in 2005, our engineering teams successfully reduced standby power by a factor of 10 to less than three-tenths of a watt, resulting in a 60 percent reduction in energy use. In this line of devices, a greater portion of related GHG emissions is associated with the consumer-use phase assuming eight years of use.

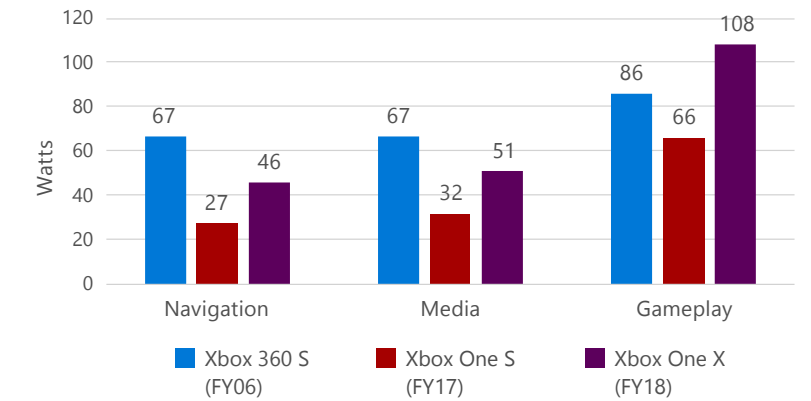
Carrying lessons learned from Xbox 360 forward, we continued our commitment to reduce energy use through the design of Xbox One and Xbox One X. Xbox One provides eight to 10 times the processing power of Xbox 360, while Xbox One X is four times more powerful than Xbox One. These processing power advances challenge our ability to lower the total power consumption of Xbox One X, which is our ultimate goal.

Despite this significant increase in power for each generation, power needed for media play and the dashboard is 30 percent less than that of Xbox 360 at launch. The increase in energy efficiency results from scalable processor architecture that wasn't available for Xbox 360. Other efficiencies are gained by providing the user with choices about console functionality while in standby mode. Customers can configure the Xbox One console to use either instant-on power mode or energy-saving power mode, depending on their preferences. By configuring the energy-saving power mode to turn on and off like a laptop, customers have the option of disabling features and can drop the Xbox One console's standby power use by 98 percent. Customers can select this option at any time.

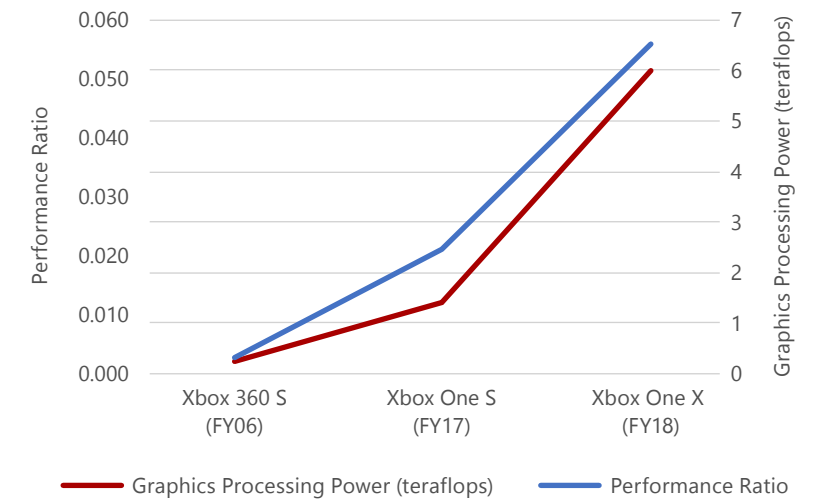


## Improving energy efficiency

Average Power Consumption  
Xbox 360 S, Xbox One S, and Xbox One X



## Xbox Power and Performance



For more information, see our energy efficiency page at [www.microsoft.com/en-us/legal/compliance/energy](http://www.microsoft.com/en-us/legal/compliance/energy).

# Windows 10 and 14 million acres of forest

Windows 10 works efficiently with our new Surface devices—providing consumers more computing power and a better user experience while consuming far less energy. As our OEM partners increasingly offer these new technologies with their devices to take advantage of these Windows 10 features, we can enable financial savings while increasing device sustainability.

Exciting advances in computing devices and software work together in combination to significantly reduce the energy consumption of computers. First, breakthroughs in silicon architecture have resulted in multi-core central processing units (CPUs) with scalable functionality. CPUs can activate only the number of cores necessary for any given task and dynamically shut off unneeded cores. New system-on-a-chip designs further allow for power reduction by integrating the microprocessor with peripheral circuits more efficiently than was possible with separate components.

At the same time, advances in the design of other energy-critical components have evolved to better allow them to enter a low-power state when not in use. In addition, solid-state drives (SSDs) are replacing rotating media hard-disk drives (HDDs). The SSDs eliminate the motors required by HDDs, reducing power consumption, yet they take less time to store and retrieve data. This efficiency, in turn, expedites transition times between different power-management states and enables users to power down more frequently when their machines are idle.

Critical to taking advantage of hardware advances is a modern operating system architecture that intuitively allows dynamic selection of the components and modality needed for any given task. Unneeded functionality can effectively “turn off” and be ready to power back up quickly when needed.

## Windows 10 is designed to take advantage of these innovations in devices to provide lower power consumption without compromising performance.

Windows 10 also introduces a new low-power standby functionality called “Modern Standby,” which replaces previous low-power states for inactive computers. Historically, computers would need to go into sleep or hibernate mode to conserve power when not in use. Older operating systems had the option to put the computer to sleep after 30 minutes of inactivity. However, it took some time for the computer to return to a fully operational state, and it could take even longer for email and applications to update with data missed while the computer was asleep. As a result, many users disabled the sleep function to optimize their computer for performance—often resulting in machines that were never turned off or even allowed to go to sleep.

Modern Standby can provide the low-power consumption of sleep mode while keeping email and applications updated through periodic low-power connected updates. The mode selectively powers down components using the scalable architecture while periodically activating selective portions of a device to keep the system up-to-date. When paired with SSDs, Modern Standby allows a computer to return to normal operation without a perceptible delay. Modern Standby gives users less incentive to disable power management, meaning

more computers will go into a low-power sleep mode than before. Because the computer returns to normal operation quickly, the default time for entering the mode can be set to 10 minutes instead of the more traditional 30-minute delay. These advances increase the likelihood that more computers enter the low-power mode sooner and remain there longer, saving even more energy.

Application software has also been designed with scalability in mind. Software designers have optimized applications for the modern user who uses mobile computing that requires reduced energy consumption for extended battery life. Programs help reduce energy consumption by taking advantage of the scalable hardware. Many programs have a scalable architecture themselves that only uses the computing power needed for the task at hand without consuming extra power on background tasks.


### Potential impact on sustainability

**700M**   
 Approx. number of Windows 10 monthly active devices<sup>9</sup>

**32.32**   
 Terawatt-hours/year potential annual energy saving devices<sup>10</sup>

**\$5.2B**   
 Potential annual financial savings in USD<sup>11</sup>

**16.77M**   
 Metric tons potential annual carbon reduction<sup>12</sup>

**3.59M**   
 Equivalent vehicles removed from the road each year<sup>12</sup>

**14.2M**   
 Equivalent acres of forest saved each year<sup>12</sup>

*Why do these savings matter to the environment? When we calculate potential savings per computing device, at scale, the annual savings can equate to substantial economic savings while enabling us to increase our positive impact on sustainability.*

<sup>9</sup>The number of active Windows 10 devices as of April 30, 2018.

<sup>10</sup>The potential energy savings is calculated by multiplying the number of Windows 10 devices in use by the energy consumption difference between 2009 and 2014 computers as determined by the ENERGY STAR ratings system. "Laptop" includes laptop, notebook, and tablet computers. "Desktop" includes desktop, all-in-one, and server devices. Where specific market data is not available, this analysis assumes a 4:1 ratio of laptop to desktop sales. Windows 10 mobile, wearable, and IoT devices are excluded. Windows 10 consoles are included.

<sup>11</sup>Savings in electricity prices across regions are calculated as follows:

- Electricity prices for the United States are from the International Energy Agency – Key World Energy Statistics 2017
- The electricity price for Asia is the average consumer price paid for energy in Central and East Asia, excluding Japan and China.
- Energy prices for Japan are from the International Energy Agency – Key World Energy Statistics 2017
- Energy prices for China are from the Chinese National Energy Administration.
- Energy prices for Canada are from the International Energy Agency – Key World Energy Statistics 2017.
- Energy prices for Europe are from the European Commission Eurostat reports. The prices for France, Germany, and the UK are broken out separately. The prices for Western and Eastern Europe are averaged separately.
- Energy prices for India are from the Indian Ministry of Power, Tariff & Duty of Electricity Supply in India, March 2014.
- Energy prices for Latin America are an average of the consumer prices for electricity across the region, excluding Mexico and Argentina.
- Energy prices for Mexico are from the Comision Federal de Electricidad.
- The price of electricity in Argentina has varied significantly due to economic instability. Prices used for this analysis are based on the consumer price reported by Bloomberg News, January 29, 2016.
- Energy prices for the Middle East are based on an average across the region.

<sup>12</sup>The conversion from kWh to carbon reduction is based on the International Energy Agency (IEA) emission factors 2016 edition.

- The conversion is based on the CO<sub>2</sub>-equivalent emissions for electricity generation, excluding heat, adding in the correction factors for transmission and distribution losses, electricity trade with other countries, methane factors, and nitrous oxide factors.
- The factor for trade is excluded where regions are aggregated, such as for Latin America and Central/Eastern Europe. IEA does not provide trade factors for these regions where energy purchase and sales are almost entirely within the region.
- IEA provides separate data for the Middle East and Africa. Those values are averaged for the "Middle East and Africa" category used in this analysis. The IEA European average data is used for Western Europe, excluding France, Germany, and the UK.
- IEA European average data is used for Central and Eastern Europe.
- Conversions from energy to vehicles and forest sequestration are determined using the US Environmental Protection Agency Greenhouse Gases Equivalencies Calculator.

# Ensuring devices are safe for use by customers and employees

Product safety is a major component of delivering products that our customers and employees trust. Product safety is emphasized and reviewed at the most senior levels of the Devices organization. The [Devices Product Safety Principles](#) guide the safety aspects of our products from design until end of life. The Devices Product Safety Management System ensures devices brought to market are safe for their intended use and can be safely and responsibly recycled or managed at disposal.

Through our memberships in several organizations, we learn about upcoming and proposed regulations. In addition, we regularly share best safety practices related to consumer products with representatives from industry and trade associations, as well as other manufacturers. For more information, see the [Our stakeholders section](#).

During product concept and early design, product safety engineers conduct hazard analyses and risk assessments. Identified risks are eliminated or mitigated during subsequent design, testing, and manufacture consistent with the hierarchy of health and safety controls methodology. Engineering product safety reviews are conducted at initial product concept and repeated through design, prototype review, testing, manufacturing, consumer use, and at the end of the product's useful life.

Our comprehensive product safety specifications, testing requirements, and design guidelines are documented in a product safety manual. Using a combination of Microsoft Azure, Access, and SharePoint, Devices has implemented a cloud-based digital repository to house all documentation specific to each individual device, including all product certifications, test results, and product safety documentation.

## Hardware length of use

Our aspiration for our products is to reach the highest levels of quality and craftsmanship. Hardware designers make choices on how all the components and materials are assembled to make the final product. These choices have a profound impact on the length of the product life cycle. Microsoft uses computer simulation and materials characterization techniques to improve product designs for longevity. Thermo-mechanical computer techniques like Finite Element Methods are used to identify the loads on components and materials in different application scenarios. Materials are characterized for their initial strength and degradation over time using advanced techniques. Product designs are guided by choices that ensure that strength exceeds loads over extended periods of use.

[Energy efficiency](#) [Ensuring devices are safe for use by customers and employees](#) [Hardware length of use](#) **[Product service models](#)** [Accessibility and inclusivity](#) [Making our devices secure](#)

Our emphasis on longevity extends to components and materials. Microsoft products use components and materials sourced from global suppliers. We implement an intensive component and material selection and qualification process. We work with component suppliers on their design and assembly processes to establish qualification protocols. Products are launched only after components are qualified to exceed product life requirements.

Quality improvements continue to be made after products are launched. We monitor product health based on quality monitors in the factory, customer experience reports, and product returns. Returns are analyzed for actual causes for return. Learnings for design, process, or materials are incorporated into devices in production and for future designs. This closed-loop feedback system reduces the probability for failure in field for existing products and prolongs device life.

Our design and quality principles coupled with our product service models contribute toward length of customer use. Software is another important factor. Microsoft can extend product life through Windows 10 software updates. This service disconnects the delivery of functions and devices. It allows continued use of older generation devices, decreasing the need to replace hardware. The positive impact of these software updates can extend the use phase of both third-party and Microsoft first-party devices.

## Product service models

Surface products are designed to deliver superior performance and reliability and are designed with sustainability in mind. As part of Microsoft's commitment to sustainability, they meet high, internationally recognized standards, like EPEAT, for their design, including repairability. In our current Surface product line, six products have achieved the highest US [EPEAT](#) gold rating, the leading global eco-label for the IT sector.

Microsoft devices are repairable for both the software and the hardware, and we make available to customers a variety of means to extend the life of products. For Surface software issues, Microsoft provides a free [Surface Diagnostic Toolkit](#) to fix common software issues. Using this tool, the customer can differentiate software issues, which can be easily fixed by the customer, from hardware issues, which may require professional help. Microsoft also provides [self-help guidance](#) to fix common issues related to software and settings.

Hardware issues can be fixed through the [Devices Service and Repair](#) program for devices in and out of warranty. Getting a product serviced is an easy process that requires the customer to register the device online and enter details about the issue. Information is provided on how much out-of-warranty repairs will cost. A shipping label and tracking number are provided to the customer for the repair location. Obtaining help and repairs is also simple for Xbox customers. [Warranty and service information](#) is provided online. Customers can obtain online information about [warranties](#) for all Microsoft products.



# Accessibility and inclusivity

As stated in Microsoft’s mission statement, “empower every person on the planet to achieve more,” our inclusive design principles open up experiences and reflect how people adapt to the world around them. Our technology is designed to deliver increased access, reduced friction, and more emotional context to the greatest number of people. We partner across internal teams and with schools, nonprofits, filmmakers, and companies that believe in inclusive design as an approach to creating.

## Our inclusive design principles

### Recognize exclusion

Exclusion happens when we solve problems using our own biases. As Microsoft designers, we seek out those exclusions and use them as opportunities to create new ideas and inclusive designs.

### Learn from diversity

Human beings are the real experts in adapting to diversity. Inclusive design puts people in the center from the very start of the process, and those fresh, diverse perspectives are the key to true insight.

### Solve for one, extend to many

Everyone has abilities and limits to those abilities. Designing for people with permanent disabilities actually results in designs that benefit people universally. Constraints are a beautiful thing.

## Inclusive design in action: Evolving the Xbox controller

The Xbox platform and hardware teams have been hard at work to address the needs of those with mobility impairments. [The Cornell University 2016 Disability Status Report for the United States](#) data tells us that 7.1 percent of people in the US have a permanent ambulatory impairment.

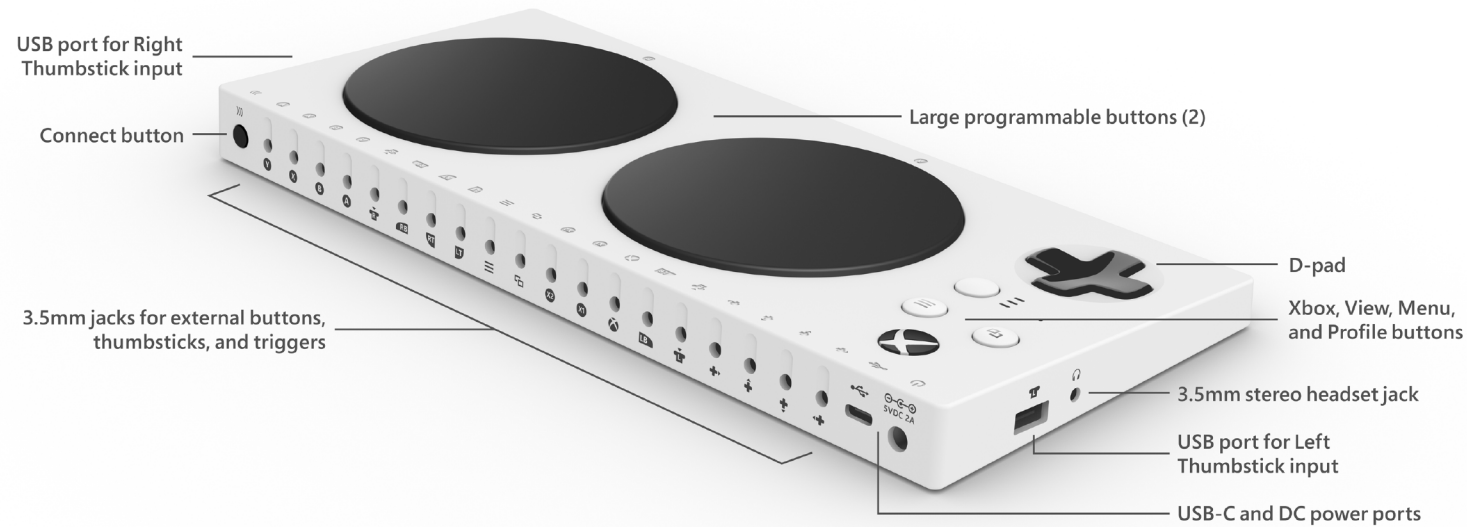
## Setting aside preconceived notions

For many gamers who have mobility limitations in their hands and fingers, our original controller wasn’t suitable. Toward our mission of empowering every person on the planet to achieve more, we looked to our inclusive design principles and added these considerations:

- Some users cannot use two hands to operate the controller.
- Some users cannot use two thumbs and multiple fingers to control the thumbsticks, triggers, and buttons that surround the controller.
- Some users cannot reach all the buttons and operate many of them at the same time.
- Some users cannot hold the controller for an extended period.

## The Xbox Adaptive Controller

In FY18, we made great strides forward in our journey toward making Xbox a place where everyone can have fun. A challenge many disabled gamers faced was that hardware solutions for them were costly and difficult to set up. Our more extensible design now features large programmable buttons and connects to external switches, buttons, joysticks, and mounts, to help make gaming more accessible and provides a customizable experience at a good value. The flexibility of the device and the inputs it supports enable a wide range of use cases and mobility limitations.



### 2018 Ability Summit Innovating for the Future award

This year, the Xbox Adaptive Controller team won an Innovating for the Future Award, presented for “an idea, vision or prototype technology that has the potential to enable people with disabilities around the world.” The 8th Annual Ability Summit brought together the Microsoft disability community, including employees with disabilities, allies, parents, friends, engineers, designers, and other accessibility professionals from many organizations across Microsoft.

## Inclusive packaging design

The team took things a step further when they designed the packaging of Adaptive Controller. The box can be opened and unpacked with just one hand, making it one of the most accessible packages ever made for a consumer device. The external shipping box for this device features a loop that enables “unzipping” the packaging with one finger. Further, the inner box can be opened without any sharp tools. [See the video about the Xbox Adaptive Controller packaging.](#)

Learn more through this [short video](#) at our Accessibility site at [www.microsoft.com/en-us/accessibility](http://www.microsoft.com/en-us/accessibility). For more information about our designs based on feedback from the accessibility community, see [www.xbox.com](http://www.xbox.com).

# Making our devices secure

Within Microsoft Surface and Windows, we care deeply about maintaining the security of devices, software, and data privacy throughout the life cycle of the device. In FY18, we invested in several key areas to empower people to use our devices securely.

## Automatic Surface firmware and driver updates

On Surface devices, the firmware is exposed to the Windows operating system as a driver that is visible in Device Manager. This configuration helps to ensure security because it allows a Surface device firmware to be automatically updated along with all drivers through Windows Update or Intune Management, providing a seamless, automatic experience to receive the latest firmware and driver updates.

As easy as it is to keep Surface device drivers and firmware up to date automatically with Windows Update, it is sometimes necessary to download and install updates manually, such as during a Windows deployment. For any situation where it becomes necessary to install drivers and firmware separately from Windows Update, we provide the files available for download at the Microsoft Download Center. Learn more about Surface firmware and driver updates at [docs.microsoft.com/en-us/surface/update](https://docs.microsoft.com/en-us/surface/update).

## Windows security enabled by default

Current and future generations of Surface devices, starting with Surface Pro 4, Surface Book, and Surface Studio, use a unique [Unified Extensible Firmware Interface](#) (UEFI) engineered by Microsoft specifically for these devices. This allows us to not only harden our UEFI firmware against common attacks that are found but it also allows us to deploy the most advanced Windows device security features, such as [Secure Boot](#) and [System Guard](#), which help to ensure a secure path between the time when the device is booted up and when Windows loads. Additionally, Surface devices ship with a [TPM 2.0](#) solution that is compliant with the [FIPS 140-2 Standard](#) and validated by the [Computer Security Resource Center](#) (CSRC) of the [National Institute of Standards and Technology](#) (NIST).

## Biometrics capabilities for increased security

We support biometric login through [Windows Hello](#) to give users a solution that is more secure than a simple password.

## Organizational-level device management for enhanced security

[Microsoft Surface Enterprise Management Mode](#) (SEMM) is a feature of Surface devices with Surface UEFI that allows organizations to secure and manage firmware settings in large numbers of devices. With SEMM, information technology (IT) professionals can prepare configurations of UEFI settings and install them on a Surface device. In addition to the ability to configure UEFI settings, SEMM also uses a certificate to protect the configuration from unauthorized tampering or removal.

# 9

## End-of-Life Management

Electrical and electronic equipment, batteries, and packaging

Global end-of-life programs for devices, batteries, and packaging

Supplier conformance standards



Recycling electrical and electronic equipment (EEE), batteries, and packaging at the end of their useful lives is a key phase of our end-to-end sustainability strategy. We are committed to ensuring that useful materials in our products are recovered, recycled, and kept out of landfills at the end of their useful lives. Our mobile Surface and Xbox devices are 95 to 99 percent recyclable. We also recognize that the most important end-of-life management strategy is to build long-lived, high-quality products.

## Electrical and electronic equipment, batteries, and packaging

Devices has a dedicated team that manages the complexity of the return and recycle phase of EEE, batteries, and packaging by partnering with collection schemes and Microsoft-contracted asset recovery and recycling partners and working with retail stores and our OEM partners to enable our customers to return and recycle our devices, batteries, and packaging.

Microsoft also gives new life to refurbished electronic devices through the [Refurbished PC program](#). Our Microsoft Authorized Refurbisher partners provide professionally refurbished computers preinstalled with genuine Microsoft software for use at home, in commercial businesses, or at nonprofit organizations. The combined efforts of a network of organizations and members of the Refurbished PC program brings affordable access to technology through favorable pricing on Windows and reuse of EEE that may otherwise be discarded. Where the EEE may not be reused, the Refurbished PC network assists with making appropriate asset disposal decisions.

### Our philosophy on individual and extended producer responsibility

Collection and recycling of Waste Electrical and Electronic Equipment (WEEE), batteries, and packaging are often organized with other manufacturers through collective arrangements. Recycling may be delegated to a Producer Responsibility Organization (PRO).

Wherever enacted WEEE, battery, and packaging legislation is in place and PROs are not available, Microsoft supports Individual Producer Responsibility (IPR) as a strategy to comply with our regulatory obligations.

Microsoft supports incorporating end-of-life recycling costs into the cost of new products to encourage producers to find innovative ways to design more sustainable products that can be easily disassembled, reused, or recycled.

# Global end-of-life programs for devices, batteries, and packaging

Microsoft follows several strategies for addressing consumer electronic waste.

## Regulatory recycling programs

Microsoft is a member of 151 recycling schemes or PROs worldwide, covering WEEE, batteries, and packaging. PROs play a significant role in promoting sustainable production through the efficient recycling of vast quantities of materials and creating awareness of sustainable disposal options among consumers. PROs act exclusively on behalf of their member companies to collect and recycle WEEE, batteries, and packaging in an environmentally sound manner and operate in full compliance with all applicable laws and regulations.

## Voluntary recycling programs

Microsoft offers several types of free, voluntary recycling programs for WEEE, batteries, and packaging. These voluntary programs are provided to make recycling easier and convenient for our customers. For example, in the US we support a mail-back program. For more information on how to recycle WEEE, batteries, or packaging free of charge, visit our [Devices recycling website](#).

## Voluntary recycling at Microsoft Stores

Microsoft Stores offer trade-in and recycling of Microsoft and non-Microsoft branded electronic devices turned in by consumers at select locations. Learn more at [www.microsoft.com/en-us/store/locations/recycle](http://www.microsoft.com/en-us/store/locations/recycle).

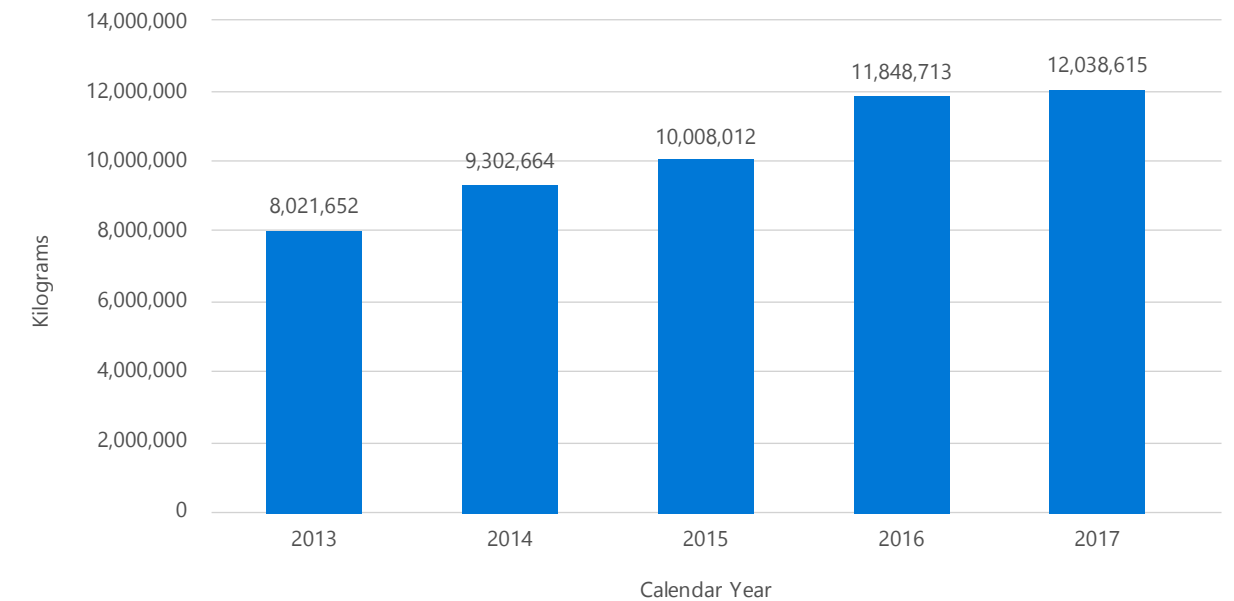
## Voluntary recycling initiatives in Africa

Microsoft is a founding participant to the E-Waste Solutions Alliance for Africa (Alliance). The Alliance is a proactive industry working group aligned toward sustainability leadership and solving the e-waste challenge in Africa. The Alliance, which started in 2011 following the First Eko E-Waste conference in Nigeria, is working together with several African governments to make this a reality. The Alliance's goal is to facilitate the development of practical solutions for the collection, recovery, and recycling of WEEE.

## Greater recycling volumes

We are working globally to make recycling options more accessible to our customers. In 2017, Devices collected and recycled more than 12 million kilograms of WEEE and batteries through its global end-of-life programs for devices, batteries, and packaging. Since 2006, Devices has recycled more than 81 million kilograms of WEEE and batteries.

Worldwide consumer recycling volumes of devices and batteries by Microsoft



# Supplier conformance standards

The asset recovery and recycling partners directly contracted by Microsoft must meet our specifications as stated in the [Supplier Conformance Standards for End-of-Life Management of Electrical and Electronic Equipment and Waste Materials](#). This includes, but is not limited to:

- Maintaining all necessary certifications, including but not limited to R2, RIOS, and e-Steward, or the equivalent.
- Obtaining, holding, and maintaining valid accreditations of the following:
  - › ISO 14001 Environmental Management
  - › ISO 9001 Quality Management
  - › OHSAS 18001 Health and Safety Management
- Complying with all applicable international and national laws, including laws pertaining to the transboundary movement of hazardous waste (e.g., Basel Treaty), U.S. Export Administration Regulations, and the International Traffic in Arms Regulations.
- Selecting and auditing subcontractors that process materials to the Microsoft requirements.

## Microsoft global material recovery of end-of-life electronics and batteries

As part of Microsoft’s commitment to the environment and end-to-end sustainability strategy, we track from start to finish the disposition of our branded electronics and batteries, which are managed by our contracted Asset Recovery and Recycling partners. This provides full visibility and transparency of our end-of-life process related to WEEE and batteries.

Recovered Material	Recovered From	Primary Processing	Final Processing	Location of Final Processor	Market End-Uses
Copper, Gold, Silver, Palladium, Tin	Circuit boards, CPU, RAM chips	Dismantled or shredded	Metal extraction	Canada, Japan, Belgium, Sweden, Germany	Base metals, remelt alloys, and precious metals sold globally as commodities
Aluminum	Hard drives, screen frames, CPU heat sinks	Dismantled, separated, and shredded	Smelting	USA, China, Belgium, Germany	Sold globally as commodity
Steel	Device hinges, rails, frames	Dismantled, separated, and shredded	Smelting	USA, China, Germany	Secondary steel sold globally as commodity
Copper	Cables and wires, CPU heat sinks	Separated	Smelting	Japan, Belgium, China	Sold globally as commodity

Electrical and electronic equipment, batteries, and packaging Global end-of-life programs for devices, batteries, and packaging **Supplier conformance standards**

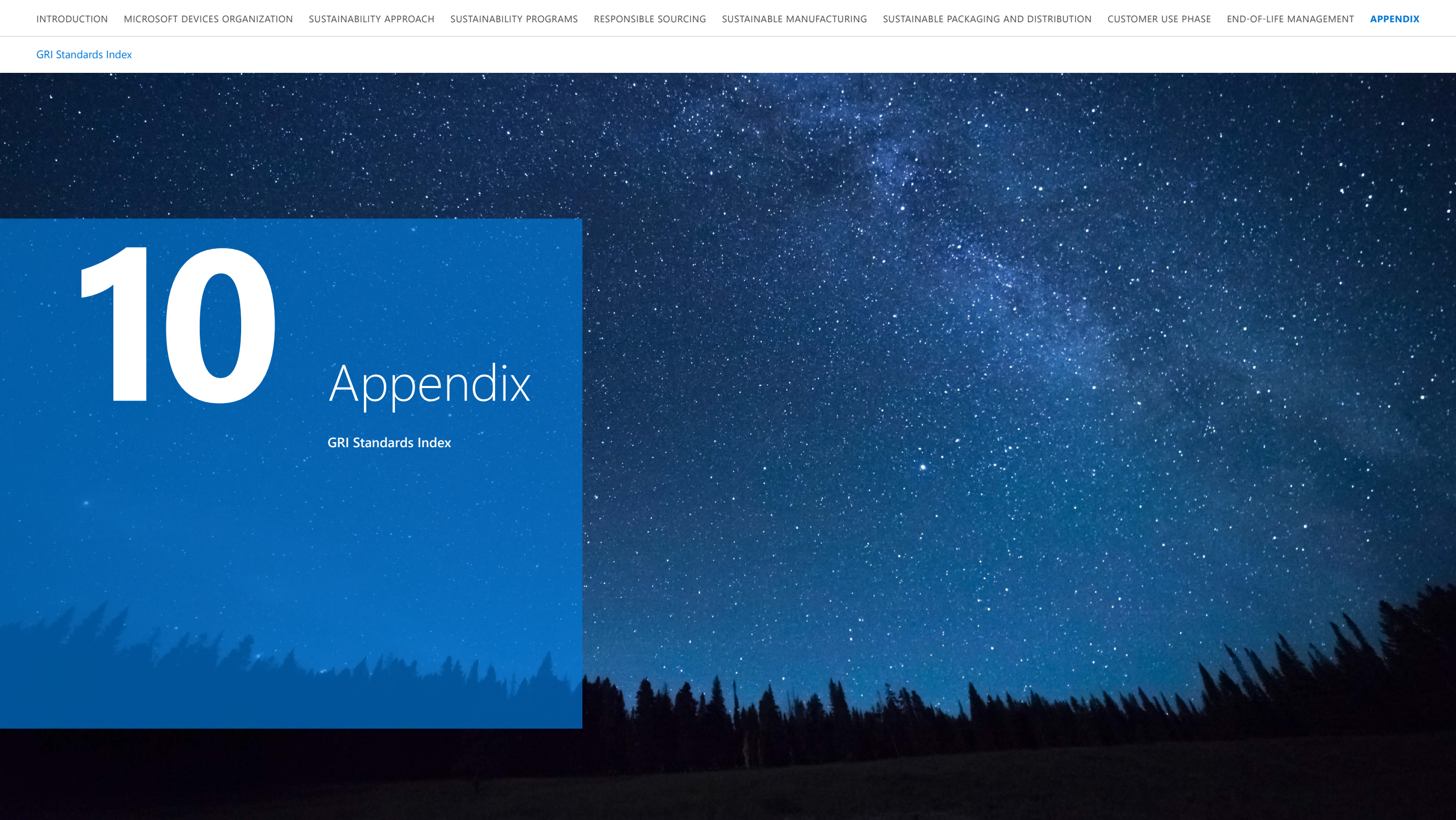
Recovered Material	Recovered From	Primary Processing	Final Processing	Location of Final Processor	Market End-Uses
Plastics (ABS, PE et al.)	Device chassis/cases and covers, device-integrated keyboards, peripherals, accessories	Dismantled, separated, pelletized	Recyclables plastics sorted according to resin type	Canada, Singapore, Australia, Hong Kong	Sold globally as commodity; mixed with virgin plastic it is used to make new plastic parts and products
			Non-recyclable plastics processed for energy recovery	USA, Belgium, UK	Energy recovery
Lithium, Cobalt, Nickel	Lithium-ion batteries contained in devices, accessories, and peripherals	Removed from electronics	Smelting or chemical extraction of materials (pyrometallurgical treatment)	USA, Canada, South Korea, China, Australia, Netherlands, France, Germany, Poland	Incorporated into remelt alloys sold globally as a commodity; extracted metals sold back into battery manufacturing



# 10

## Appendix

GRI Standards Index



# GRI Standards Index

For Microsoft Corporate Global Reporting Initiative disclosures, see our Corporate Social Responsibility website at [www.microsoft.com/en-us/about/corporate-responsibility/gri-index](http://www.microsoft.com/en-us/about/corporate-responsibility/gri-index).

**GRI STANDARDS DISCLOSURE: 102-55**

## Microsoft Devices organization GRI disclosures














Key: General disclosures Environmental Social

GRI Standard	Disclosure Title	Microsoft Devices FY18 Sustainability Report Section	Disclosure	SDG Indicator Mapping
<b>General disclosures</b>				
102-1	Name of the organization	Microsoft Devices organization	See the <a href="#">Microsoft Devices organization section</a> of the Microsoft Devices FY18 sustainability report.	
102-2	Activities, brands, products, and services	Microsoft Devices organization	See the <a href="#">Microsoft Devices organization section</a> of the Microsoft Devices FY18 sustainability report.	
102-3	Location of headquarters	Microsoft Devices organization	See the <a href="#">Microsoft Devices organization section</a> of the Microsoft Devices FY18 sustainability report.	
102-4	Location of operations	Microsoft Devices organization	See the <a href="#">Microsoft Devices organization section</a> of the Microsoft Devices FY18 sustainability report.	
102-6	Markets served		See the Microsoft Annual Report at <a href="http://www.microsoft.com/en-us/Investor/annual-reports.aspx">www.microsoft.com/en-us/Investor/annual-reports.aspx</a> .	
102-9	Supply chain	Microsoft Devices organization	See the map of production supplier locations on our Microsoft Responsible Sourcing site at <a href="http://www.microsoft.com/en-us/responsible-sourcing/default.aspx">www.microsoft.com/en-us/responsible-sourcing/default.aspx</a>	
102-10	Significant changes to the organization and its supply chain	Microsoft Devices organization	See the <a href="#">Microsoft Devices organization section</a> of the Microsoft Devices FY18 sustainability report.	






**GRI Standards Index**

GRI Standard	Disclosure Title	Microsoft Devices FY18 Sustainability Report Section	Disclosure	SDG Indicator Mapping
102-11	Precautionary Principle or approach	Substance management	See the <a href="#">Substance management section</a> of the Microsoft Devices FY18 sustainability report.. Per United Nations in Principle 15 of “The Rio Declaration on Environment and Development,” where there are threats of serious or irreversible damage, lack of full scientific certainty is not used as a reason for postponing listing a material as restricted to prevent environmental degradation.	
102-12	External initiatives	Our sustainability approach	See the <a href="#">Our sustainability approach section</a> of the Microsoft Devices FY18 sustainability report.	
102-13	Membership of associations	Stakeholder partnerships	See the <a href="#">Stakeholder partnerships section</a> of the Microsoft Devices FY18 sustainability report.	
102-14	Statement from senior decision-maker	Letter from Panos Panay	See the <a href="#">Introduction section</a> of the Microsoft Devices FY18 sustainability report.	
102-16	Values, principles, standards, and norms of behavior	Our sustainability approach	See the <a href="#">Our sustainability approach section</a> of the Microsoft Devices FY18 sustainability report.	
102-18	Governance structure	Microsoft Devices organization	See the <a href="#">Microsoft Devices organization section</a> of the Microsoft Devices FY18 sustainability report.	
102-40	List of stakeholder groups	Stakeholder partnerships	See the <a href="#">Stakeholder section</a> of the Microsoft Devices FY18 sustainability report.	
102-42	Identifying and selecting stakeholders	Our stakeholders	See the <a href="#">Stakeholder section</a> of the Microsoft Devices FY18 sustainability report.	
102-43	Approach to stakeholder engagement	Our stakeholders	See the <a href="#">Stakeholder section</a> of the Microsoft Devices FY18 sustainability report.	
102-44	Key topics and concerns raised	Communications with stakeholders	See the <a href="#">Stakeholder section</a> of the Microsoft Devices FY18 sustainability report.	
102-45	Entities included in the consolidated financial statements	GRI Index	See the Microsoft Annual Report at <a href="http://www.microsoft.com/en-us/Investor/annual-reports.aspx">www.microsoft.com/en-us/Investor/annual-reports.aspx</a> .	
102-46	Defining report content and topic boundaries	Microsoft Devices organization		
102-47	List of material topics	Materiality assessment	See the <a href="#">SCS materiality matrix</a> of the Microsoft Devices FY18 sustainability report.	
102-50	Reporting period	Report title	Microsoft fiscal year 2018	





**GRI Standards Index**

GRI Standard	Disclosure Title	Microsoft Devices FY18 Sustainability Report Section	Disclosure	SDG Indicator Mapping
102-51	Date of most recent report	GRI Index	October 2017	
102-52	Reporting cycle	GRI Index	Annual	
102-53	Contact point for questions regarding the report	GRI Index	For Devices design/environmental questions, contact <a href="mailto:askect@microsoft.com">askect@microsoft.com</a> . For supply chain social and environmental questions, contact <a href="mailto:sea_t@microsoft.com">sea_t@microsoft.com</a> . For general questions, contact <a href="mailto:stakeholderinquiries@microsoft.com">stakeholderinquiries@microsoft.com</a> .	
102-55	GRI content index	GRI Index		
<b>Materials</b>				
301-2	Recycled input materials used	Devices' sustainability programs follow our value stream	Link to <a href="#">eco-profiles</a> . No recycling input materials used in our devices. Significant recycled materials used in packaging.	 
<b>Energy</b>				
302-5	Reductions in energy requirements of products and services	Energy efficiency	See the <a href="#">Energy efficiency section</a> of this report and our product energy efficiency page: <a href="http://www.microsoft.com/en-us/legal/compliance/energy">www.microsoft.com/en-us/legal/compliance/energy</a> .	  
<b>Water</b>				
303-1	Water withdrawal by source	Water	<a href="#">Link to CDP</a>	 
303-2	Water sources significantly affected by withdrawal of water	Water	<a href="#">Link to CDP</a>	 
303-3	Water recycled and reused	Water	<a href="#">Link to CDP</a>	   









**GRI Standards Index**

GRI Standard	Disclosure Title	Microsoft Devices FY18 Sustainability Report Section	Disclosure	SDG Indicator Mapping
<b>Emissions</b>				
305-3	Other indirect (Scope 3) GHG emissions	Greenhouse gases (GHGs)	See our <a href="#">Data Factsheet Environmental Sustainability</a> (PDF) and <a href="#">Microsoft CDP</a> reporting.	
305-4	GHG emissions intensity	Greenhouse gases (GHGs)	See our <a href="#">Data Factsheet Environmental Sustainability</a> (PDF) and <a href="#">Microsoft CDP</a> reporting.	
305-5	Reduction of GHG emissions	Greenhouse gases (GHGs)	See our <a href="#">Data Factsheet Environmental Sustainability</a> (PDF) and <a href="#">Microsoft CDP</a> reporting.	
305-6	Emissions of ozone-depleting substances (ODS)	Greenhouse gases (GHGs)	No production, imports, or exports of ozone-depleting substance from Devices. See our <a href="#">Data Factsheet Environmental Sustainability</a> (PDF) and <a href="#">Microsoft CDP</a> reporting.	
<b>Effluents and waste</b>				
306-1	Water discharge by quality and destination	Water	<a href="#">Microsoft CDP</a> reporting	

**GRI Standards Index**

GRI Standard	Disclosure Title	Microsoft Devices FY18 Sustainability Report Section	Disclosure	SDG Indicator Mapping
<b>Environmental Compliance</b>				
307-1	Non-compliance with environmental laws and regulations	Our compliance model	Zero noncompliance with environmental laws and regulations.	
<b>Supplier environmental assessment</b>				
308-1	New suppliers that were screened using environmental criteria	Sustainable manufacturing and SEA impact	Our Social and Environmental Accountability (SEA) supplier onboarding checklist, factory onboarding checklist, and new factory audits all contain environmental requirements. Environmental questions include use of Microsoft restricted and banned substances, including ozone-depleting substances.	
308-2	Negative environmental impacts in the supply chain and actions taken	Sustainable manufacturing and SEA impact	Sustainable manufacturing and SEA impact had zero critical and serious non-conformities (NCs), but 106 major NCs were found in SEA audit from Devices. Sixty-one from Devices had been closed. The rest of them are in the process of corrective action.	
<b>Social topics</b>				
403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	Environmental Health and Safety (EHS) during design and Factory worker occupational safety and health	In FY18, the rates for injury, occupational diseases, lost days, and absentees for the total work force and independent contractors working at Microsoft Devices sites were not tracked. The types of workplace injuries experienced by Microsoft Devices employees in FY18 were 41.67% slips, trips, or falls; 25% ergonomically related; 16.67% ergonomics; 8.33 % lifting or moving item; and 8.33% vehicle/pedestrian impact. The Microsoft Devices organization had zero occupational-related workplace fatalities for employees and contractors working on-site. Microsoft utilizes the US Occupational Safety and Health Administration's (OSHA) system for recording and reporting injury statistics.	
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Sustainable manufacturing and SEA impact	Zero critical and serious but one major nonconformity found in E+D SEA audit and had been closed.	
408-1	Operations and suppliers at significant risk for incidents of child labor	Sustainable manufacturing and SEA impact	Zero critical and two serious NCs of child labor avoidance; five major nonconformity of young workers found in E+D SEA audit. The two serious child labor avoidance NCs and four of the young workers major NCs had been closed. The remaining young worker nonconformity is still in the process of corrective action.	

**GRI Standards Index**

GRI Standard	Disclosure Title	Microsoft Devices FY18 Sustainability Report Section	Disclosure	SDG Indicator Mapping
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Sustainable manufacturing and SEA impact	There were zero critical and serious NCs but 24 major NCs from Devices found in SEA audit. Fourteen from Devices were closed. The rest of the major NCs are in the process of corrective action.	
412-2	Employee training on human rights policies or procedures	Sustainable manufacturing and SEA impact	Aggregate internal employee training related to ensuring SEA conformance specifically covering human rights policies or procedures totaled 28 hours in FY18, covering 142 employees trained.	
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	Strategies for prevention of human trafficking and forced labor in the supply chain and Sustainable modes of fulfillment and logistics	In FY18, 100% of Microsoft supplier contracts executed contained Supplier Code of Conduct and SEA specifications or substantial equivalence.	
414-1	New suppliers that were screened using social criteria	Sustainable manufacturing	In FY18, 100% of new suppliers were screened using social criteria.	  
414-2	Negative social impacts in the supply chain and actions taken	Sustainable manufacturing and SEA impact	There were zero critical and 73 serious labor and ethics NCs. 100% of them were escalated to management and stakeholders. 73% were closed.	  
416-2	Incidents of noncompliance concerning the health and safety impacts of products and services	Our compliance model	Microsoft has not been identified as being in noncompliance with regulations.	
417-1	Requirements for product and service information and labeling	Our compliance model	We provide this information in a number of ways, including product manual, information sheets accompanying products, the Microsoft.com website, and labels on packaging materials. For more information on packaging compliance, see our Microsoft.com packaging compliance page at <a href="http://www.microsoft.com/en-us/legal/compliance/packaging">www.microsoft.com/en-us/legal/compliance/packaging</a> .	