



Creating a responsible supply chain

Our progress through 2016

Doing more across our supply chain

When I joined Google in 2010, most of our products and services lived online, where our biggest sustainability challenge was finding clean sources of energy to power our data centers.

Today, we rely on more than 400 suppliers on five continents to manufacture hardware for products such as our data center equipment, Google Home, Chromecast, and the Pixel/Pixel XL phones. Sustainability at Google is ingrained in everything we do.

Googlers love to dig in and find better ways of doing things. So we're applying the lessons learned in improving the social and environmental performance of our own operations into our work with suppliers around the world.

In this report, you'll read about how we're setting expectations for fair treatment and safe working conditions at our supplier facilities and how we're holding suppliers accountable for their performance. You'll get a glimpse at how we're identifying the sources of greatest environmental impact in our supply chain so that we can help suppliers reduce greenhouse gas (GHG) emissions and manage resources more efficiently. And you'll see the goals we've established to help accelerate our progress in building a more responsible and sustainable supply chain.

Together, these efforts are making a real difference in the lives of the people who make our devices and in the communities where they work and live.

We've done a lot already, but we know there's much more to be done. We also know that energy, ingenuity, drive, and passion can go a long way. So while we're proud to report on our progress, we're committed to doing even more in the coming years. Let's get to it.

Jim Miller

Vice President, Worldwide Operations
Google

Our growing supply chain

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Google and our parent company, Alphabet, have been evolving our Responsible Supply Chain Program along with our hardware business for the past few years. This is our first comprehensive report on the strides we've made to improve our social and environmental performance while building stronger relationships in our supply chain.

We work with more than 400 hardware manufacturing suppliers ("suppliers") worldwide to manufacture our hardware components, devices, and related products. These include consumer devices such as Google Home, Chromecast, and Pixel/Pixel XL phones, and the Nest Learning Thermostat. Our growing supplier base also plays a key role in supporting our data centers and many of our services.

Our supply chain spans several manufacturing models that range from licensing software with minimum hardware specifications to contracting directly with manufacturers that build products designed by us. As our hardware portfolio expands, we are continually working with suppliers to ensure they operate in a way that supports our values and requirements.

Our Responsible Supply Chain Program involves Google employees and workers employed by our suppliers in more than 20 countries. The data in this report reflects the progress of our Responsible Supply Chain Program through December 2016, unless otherwise specified.

Why we do what we do

We want people to feel good about using our products, and we want to feel good about them too. So we consider not only the usefulness of our products but also the social and environmental impact of how they are made. Our goals include:

- **Ethical and fair treatment for workers.** We expect that all workers in our supply chain receive just and fair treatment.
- **Safe and healthy workplaces.** We believe everyone involved in making our products should work in an environment with high health and safety standards. This includes everything from preventing on-the-job injuries to improving workplace conditions and employees' well-being.
- **A smaller environmental footprint.** Google's responsibility to protect the environment goes beyond our own operations. We're working with suppliers to help them use resources more efficiently and reduce their overall impact.

OUR SUPPLIERS AROUND THE WORLD



A responsible supply chain isn't just the right thing to do—it's also good for our business. Working with trustworthy, reliable suppliers helps us deliver our products without interruption. We believe well-managed suppliers are also more efficient, saving money in areas such as materials and energy use.

How do we make this happen?

Managing our supply chain ethically and responsibly starts with setting clear expectations for suppliers and looking for ways to help these companies improve their practices. Our approach relies on gathering and sharing as much insight as possible—on what's working, where there are problems, and what needs to be done to meet our expectations for suppliers.

Our approach

Four major components help us mitigate risk and promote better results across our supply chain:

Our Supplier Code of Conduct

We have detailed standards and expectations for companies doing business with us.

Supplier assessments

We gauge how close suppliers are to meeting our standards, identify potential risks, and address concerns.

Environmental sustainability

We work with our suppliers to assess the environmental impacts of their operations and encourage them to reduce potential negative impacts, such as GHG emissions.

Capability building

We offer programs that enable our suppliers to develop stronger social and environmental capabilities.

Our Supplier Code of Conduct

COMBATING CHILD LABOR

The international nonprofit [Pact](#) has been working for more than 10 years in the Democratic Republic of the Congo's (DRC) mining communities to address systemic changes needed to improve the lives of small-scale miners and their families on a range of issues, including child labor. In 2016, Google began supporting Pact's work to reduce child mining in the tin and cobalt industries in the DRC by addressing root causes and providing other options for families.

We created the [Google Supplier Code of Conduct](#) to articulate our social and environmental goals, including the protection of workers and the environment. It builds upon Google's core values and beliefs as well as our internal [employee Code of Conduct](#), safety standards, environmental standards, and contract requirements. The Supplier Code of Conduct is built into our contract templates.

It is intended to align with established international guidelines and industry best practices, including the Electronic Industry Citizenship Coalition Code of Conduct, United Nations Guiding Principles on Business and Human Rights, and United Nations Universal Declaration of Human Rights.

The Supplier Code of Conduct sets detailed requirements in five key areas:

Labor

Our expectations are simple: Workers should be treated with dignity and respect. This means they have the right to choose to work and get paid in keeping with applicable wage laws. Our Supplier Code of Conduct prohibits the use of child labor; guards against harsh, inhumane treatment such as sexual harassment or verbal abuse; and requires suppliers to prevent discrimination based on race, age, gender, religious affiliation, or sexual orientation. We also support freedom of association and collective bargaining and expect all our suppliers' workers to be employed in compliance with applicable immigration and labor laws.

Health and safety

Suppliers are expected to maintain safe and healthy workplaces and to implement OHSAS 18001 or an equivalent management system to identify and resolve related issues. For instance, our Supplier Code of Conduct directs suppliers to minimize the impact of potential emergency situations and safety hazards—such as fires—by enacting safe procedures, preventative maintenance, and emergency plans and training. This health and safety commitment also applies to employees' on-site living conditions.

Environmental

We expect suppliers to minimize the environmental impact of their operations and take actions that help preserve community health and safety. This includes responsibly managing hazardous substances, reducing carbon dioxide and other air emissions, and taking steps to use fewer raw materials and reduce the use of energy, water, and other resources.

In much the same way that we adhere to environmental standards in operating our workplaces and data centers, we expect our suppliers to develop an Environmental Management System that complies with ISO 14001 or a similar standard. We also encourage suppliers to set goals for improving their environmental sustainability performance and report on their progress.

Ethics

We expect suppliers to uphold the highest ethical standards. This includes not engaging—directly or indirectly—in bribery, corruption, or embezzlement; complying with fair business, advertising, and competition laws; and training their employees in ethical practices.

We encourage companies to disclose information about their business activities, financial situation, and performance in line with regulations and industry practices. We also expect our suppliers to protect intellectual property and information privacy in their operations. In addition, our Supplier Code of Conduct expects them to maintain processes that allow workers to raise concerns without fear of retaliation.

Management systems

Once a company agrees to abide by our Supplier Code of Conduct, we still need a way to verify that our expectations are consistently being met. Suppliers are expected to have a system for ensuring measurable conformance with our Supplier Code of Conduct as well as all applicable laws, regulations, and customer requirements. We ask our suppliers to evaluate their operations, and we also perform our own due diligence to understand risks in our supply chain and work with suppliers to address any issues that we find.

Supplier assessments

We follow a multistep process for evaluating our suppliers. Performing regular assessments helps us address potential issues early on, ideally before they develop into problems, and support our suppliers in taking corrective actions.

Self-assessments

Whenever we select a new supplier, we ask the company to complete a detailed self-assessment. The company's responses help us see how closely it already adheres to our Supplier Code of Conduct.

Many of our suppliers already have strong programs to address our requirements. When a self-assessment indicates a supplier does not meet our expectations, we follow up to ensure the supplier develops programs to address our concerns.

Risk assessments

Along with having suppliers evaluate their operations, we perform our own due diligence to understand current and potential risks in our supply chain. Together, these steps allow us to address issues directly and work with suppliers to mitigate them quickly.

Our extensive Supplier Risk Assessment process evaluates social, environmental, and ethical risks of working with individual suppliers or groups of suppliers. The results give our supplier managers insight to help make better-informed sourcing decisions and to proactively manage their supplier relationships.

When performing a Supplier Risk Assessment, we look at a variety of factors, such as:

- **Country-level risks:** Are certain countries at higher risk for water scarcity, corruption, or child labor?
- **Product-specific risks:** Do suppliers use chemically intensive manufacturing processes? How physically demanding is the work involved in creating our products?
- **Supplier fines or convictions:** Has the supplier been fined previously for violations related to human rights, the environment, or corruption?
- **Google's supplier-engagement efforts:** Has the supplier submitted a self-assessment? Have we previously audited the supplier? If problems were found, has the supplier taken steps to resolve them?
- **Supplier relationship:** How strategic is the supplier to our business? Is it the sole source of specific materials or services? Do we have influence over the design of the product or the selection of the components?

3,500

DURING ON-SITE AUDITS, APPROXIMATELY 3,500 WORKERS WERE INTERVIEWED FACE-TO-FACE; 890 WORKERS PARTICIPATED IN TABLET-BASED SURVEYS.

WE LISTEN AND LEARN

The people who are most closely involved in manufacturing our products also can provide some of the most valuable insights into what's working and what needs to improve. Along with conducting face-to-face interviews, we've created a Sustainability Worker Survey Initiative to promote even greater transparency. Workers participate anonymously to share their concerns as well as satisfaction in areas that include workplace conditions, management communication, and working hours. We analyze and correlate the survey results to identify risks and areas for improvement. These findings also help our suppliers improve worker relations with management and reduce employee turnover.

On-site audits

We regularly perform third-party, independent audits at our suppliers' facilities to determine whether they are meeting our standards and to help them identify and resolve issues. Visiting these sites in person gives us a chance to hear directly from workers and emerge with a thorough assessment of factory conditions.

Our audits also provide valuable opportunities to raise suppliers' awareness of their social and environmental responsibilities, promote accountability, and encourage greater transparency.

The audits include in-depth factory, facility, and dormitory tours; management meetings; on-site worker interviews; and document and record reviews. Although we seek to audit as many of our suppliers as we can, we prioritize suppliers identified as high risk, our contract manufacturers, and original equipment manufacturers.

Highlights from our supplier site-assessment program

- Conducted 130 audits involving 94 suppliers in 12 countries
- Audited factories representing 36 different types of suppliers—including contract manufacturers, original equipment manufacturing suppliers, and a wide range of commodities suppliers
- Interviewed approximately 3,500 workers face-to-face; 890 workers participated in tablet-based surveys
- Completed 70% of Corrective Action Plans (CAPs); 30% are on track for completion

What do we do when we find a problem?

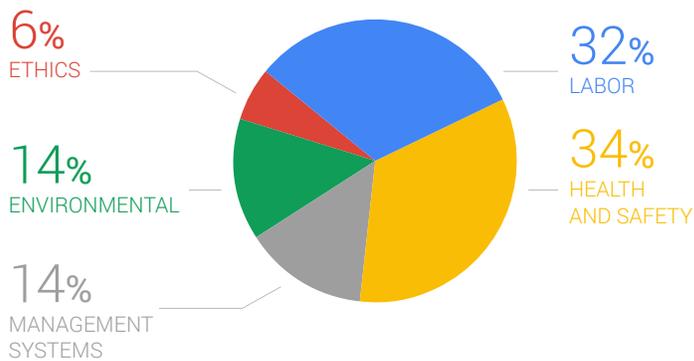
When we find that a supplier is not conforming to our expectations, it's a serious issue. In such cases, we expect the supplier to provide a CAP that outlines the root cause of the finding, how and when that company will resolve the issue, and what steps will be taken to prevent it from reoccurring. We determine whether the plan is acceptable based on the severity and category of the nonconformance in addition to the effort and time required to resolve the issue.

We expect suppliers to demonstrate improvements in order to continue working with us. Our goal is to resolve the most severe issues immediately. We expect all other findings to be resolved as quickly as is practical in accordance with our guidelines specifying the closure requirements.

Once a CAP is approved, the supplier is expected to provide evidence of effective implementation and to commit to improving over time, which may require follow-up verification. When the supplier can demonstrate that it has successfully implemented the approved CAP, we change the plan's status to "closed."

Nonconformances by category

These percentages illustrate the types of findings from all 130 audits conducted as of December 2016.



AREAS FOR IMPROVEMENT

Our on-site audits uncovered a range of areas for improvement that we're now actively addressing. The most common audit findings—14.8% of all our findings—were related to excessive overtime. Here are some of the most common nonconformance issues and our subsequent actions.

14.8%

EXCESSIVE WORKING HOURS

Some suppliers have not met our Supplier Code of Conduct expectation that workers work no more than what is allowed by local laws or 60 hours per week, whichever is lower, and receive at least one day off for each six days worked. We expect these suppliers to provide a timeline for conformance and to demonstrate that they are managing work hours and rest days as required.

11.1%

INADEQUATE EMERGENCY RESPONSE

Although our audits showed most suppliers are becoming more aware of fire hazards, we observed inadequate practices at some supplier facilities, such as blocked exit routes, unclear exit signs, no evacuation drills, and incomplete inspection of fire alarms and suppression systems. We expect suppliers to promptly correct such issues.

8.5%

OCCUPATIONAL SAFETY HAZARDS

We identified suppliers that are not adequately controlling work hazards through engineering design or operation and maintenance procedures. We're working with these suppliers to improve their management systems and controls with clear accountability.

6.6%

IMPROPER MANAGEMENT OF HAZARDOUS SUBSTANCES OR WASTE

All suppliers that use hazardous chemicals in their operations are expected to ensure safe handling, movement, storage, use, recycling, and disposal. This includes proper labeling or segregation of chemicals. We also expect suppliers to have secondary containment measures in place to prevent potential chemical leaks.

Environmental sustainability

90%

OUR GOALS FOR 2017 INCLUDE ENSURING THAT 90% OF OUR SUPPLIERS ARE REPORTING GHG EMISSIONS REDUCTION TARGETS (COMPARED WITH ~80% TO DATE).

Google has worked hard to cut the environmental impact of our buildings, operations, products, and services. We're putting a similar effort into improving the environmental performance of our suppliers.

Reducing the environmental impact of our supply chain

We track data on our suppliers' efforts—spanning air emissions, solid waste and wastewater treatment, hazardous materials management, and resource efficiency—and help them find ways to improve.

As we continue to expand our data reporting, we're learning more about the full environmental impact of our supply chain—including where our efforts can have the most influence on our suppliers' environmental performance.

Read more about Google's own environmental sustainability efforts—in our workplaces and data centers—in the [Google Environmental Report](#).

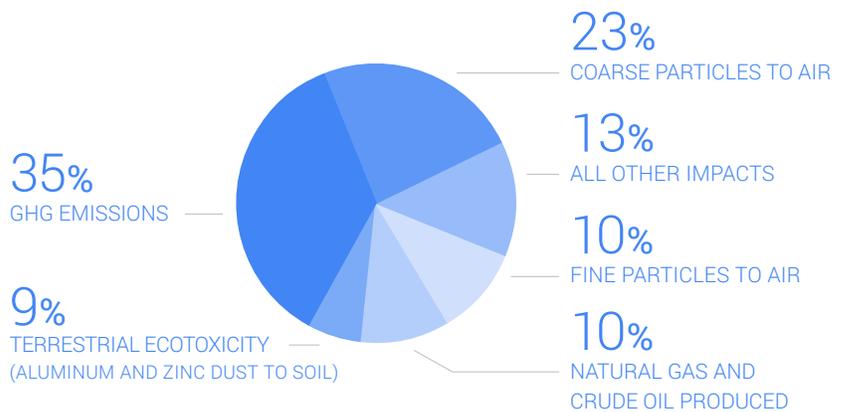
WE'RE ONLY AS GOOD AS OUR DATA

We are working to increase the primary data included in our environmental footprint. Currently, the data we get from suppliers about their Scope 1 and 2 emissions is of high quality. However, our modeling of upstream impacts is based on lifecycle assessment databases that use global averages to estimate impacts, which creates a higher degree of uncertainty. We use the estimated impacts to shape our strategy and identify focus areas across our products and suppliers.

Identifying sources of environmental impact

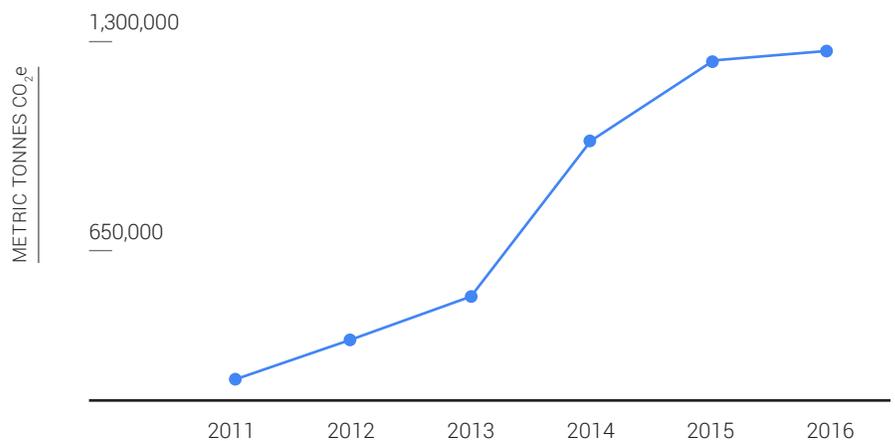
When we began our Responsible Supply Chain Program, we conducted a lifecycle assessment of our hardware supply chain using a combined model of economic input-output analysis and primary data from our suppliers. We did this in order to identify the key environmental impacts¹ in our supply chain and to inform our overall strategy. This assessment formed the basis of our strategy for working with suppliers to reduce GHG emissions and other air emissions.

SOURCES OF ENVIRONMENTAL IMPACT¹



SCOPE 3 GHG EMISSIONS²

This chart shows our reported Scope 3 GHG emissions over the past six years.



1. Based on our 2014 lifecycle assessment data. "Environmental impact" is based on estimates of how each emission and use of a natural resource impacts GDP through impacts to human health, ecosystem quality, resource availability, and climate change. This methodology was used to compare the relative impact between contributing risk factors and not as an absolute measure.
 2. Our reported Scope 3 emissions are indirect emissions from other sources in our value chain, including business travel, employee commuting, data center construction, hardware manufacturing, and transportation.

Capability building

70+

IN 2016, MORE THAN 70 SUPPLIER COMPANIES PARTICIPATED IN ANTI-FORCED-LABOR WORKSHOPS IN MALAYSIA, SINGAPORE, AND TAIWAN.

CAPs are just one means for us to help suppliers address issues and improve their practices. We also work with companies throughout our supply chain to improve their capabilities. For example, our Responsible Supply Chain team provides in-person training as well as e-learning courses on topics related to our Supplier Code of Conduct criteria, other regulatory standards, and industry best practices.

As part of our broad-based efforts to combat modern slavery, we joined with several other information and communications technology companies in 2016 to co-host six anti-forced-labor workshops in Malaysia, Singapore, and Taiwan. Human Resources and Compliance staff members from more than 70 supplier companies attended these sessions to learn how to identify and address forced- and bonded-labor risks, create more responsible recruitment processes, and improve related management practices.

LEARN MORE: [Read our 2016 Modern Slavery Statement.](#)

Our team also provides training for suppliers on how to comply with Google's conflict minerals policy, improve fire safety protocols, and address environmental sustainability issues. We plan to extend these training programs to more suppliers and add new topics in the coming year.

SPOTLIGHT

Responsible sourcing of conflict minerals

As is true of virtually all consumer electronics, many Google products contain tantalum, tin, tungsten, and gold—commonly referred to as “3TG” metals—that originate in mines around the world. 3TG metals are also termed “conflict minerals” because much of the world’s supply is sourced from the Democratic Republic of the Congo and adjoining countries (collectively, the “covered countries”), where there has been a decades-long civil war. This conflict has been exacerbated by various groups fighting to control mines and transit routes used in the trade of these minerals.

Regulation

In the United States, the Dodd-Frank Wall Street Reform and Consumer Protection Act requires public companies to file annual reports with the U.S. Securities and Exchange Commission disclosing whether or not they are using 3TG metals originating from the covered countries. A potential, but unintended, consequence of the Dodd-Frank Act is a widespread withdrawal from trade with the covered countries by U.S. companies.

We believe it is essential to establish validated, conflict-free sources of 3TG metals within the covered countries so these minerals can be procured in a way that protects human rights and contributes to economic development in the region. We recognize the need to work with industry groups and other organizations to achieve conflict-free sourcing. Organizations we have supported include the Conflict-Free Sourcing Initiative, the Public-Private

Alliance for Responsible Minerals Trade, and Solutions for Hope.

Compliance

We expect our suppliers to source only from conflict-free smelters, such as those that are compliant with Conflict-Free Smelter Program (CFSP) assessment protocols, and work with suppliers to achieve conflict-free sourcing. Our [Conflict Minerals Policy](#) directs suppliers to perform due diligence on the source and chain of custody of minerals used to manufacture products for Google.

Progress

Although we have reason to believe a portion of 3TG metals used in our products originated from the covered countries, we have not identified any instances of sourcing that directly or indirectly supported conflict in the region. Our 2016 assessments found that 80% of reported smelters are considered conflict-free based on the CFSP website, compared with 75% in 2015. We have also identified 14 smelters that are active in the CFSP audit process, bringing the total number of compliant and active smelters to 260, or 85% of reported smelters. We are working with CFSP, smelters, and our suppliers to ensure that all smelters are compliant.

We are also working with industry groups and our suppliers to better understand and assess human rights issues related to the mining and trade of other minerals such as cobalt and copper. We’re also assessing potential issues with minerals of concern that originate in other parts of the world.

85%

TO DATE, 80% OF REPORTED SMELTERS ARE COMPLIANT WITH CFSP ASSESSMENT PROTOCOLS, AND ANOTHER 5% ARE ACTIVE IN THE AUDIT PROCESS.

OTHER MINERALS OF CONCERN

In addition to 3TG minerals from the covered countries, other minerals such as copper and cobalt are linked to human rights abuses in various parts of the world. We are working with our suppliers and industry organizations to better understand the origins of these materials and how we can ensure that our products are made responsibly at every step of the supply chain—starting with the mine of origin.

What's next?

CURIOUS TO LEARN MORE?

Visit our [investor relations website](#) for more details about sustainability and corporate responsibility at Google.

We know there's much more opportunity to expand our Responsible Supply Chain Program and improve our efforts. As part of our commitment to continually improve, we expect to publish periodic updates of our supply chain performance data and reports about the progress of our broad-based Responsible Supply Chain Program.

We are also committed to learning from our past experiences and collaborating with others in our industry to identify new best practices and to decide where to focus our sustainability resources in the future.

2017 Responsible Supply Chain Program goals

We're setting goals—for our own operations and those of our suppliers—to help accelerate our progress in building a more responsible and sustainable supply chain.

Supplier engagement and capability development

- Maintain suppliers' commitment to our Supplier Code of Conduct and perform risk assessments for all suppliers
- Conduct on-site assessments for suppliers identified as high risk and for contract manufacturers
- Conduct worker surveys at 10 additional supplier factories to increase transparency and identify opportunities for improvement in the areas most important to workers

- Extend the e-learning program as a key pillar of our suppliers' CAP resolution process and for use with all factory audit leads prior to conducting audits
- Continue reinforcing anti-human trafficking training for suppliers in areas identified as high risk to ensure 100% of factory sites have received this training
- Work with companies across the electronics industry to develop stronger alignment on a list of manufacturing chemicals of concern

Conflict-free and responsible sourcing of minerals

- Continue to work toward ensuring that our suppliers source only from smelters that are compliant with the CFSP assessment protocols
- Continue engaging with cross-industry groups to expand conflict-free and responsible sourcing options through initiatives such as smelter audits and materials chain of custody verification
- Drive collaboration activities with external stakeholders to better understand child labor in the cobalt and conflict minerals supply chains; develop strategies to eliminate these practices completely
- Continue conflict minerals training for new suppliers and for suppliers that are not using 100% compliant smelters

Environmental sustainability

- Work toward ensuring that 90% of suppliers are reporting GHG emissions reduction targets (compared with ~80% to date)
- Complete 10 additional energy-efficiency audits at supplier factories and develop programs globally that support suppliers to further adopt energy management systems such as ISO 50001
- Establish a baseline of renewable energy use among our largest suppliers as measured by supplier spend
- Calculate the carbon footprint associated with manufacturing our products throughout their lifecycle, and work to increase the proportion of suppliers providing data to 90% of our supplier spend (compared with ~75% to date)