

Alphabet

Sustainability Bond Impact Report 2022



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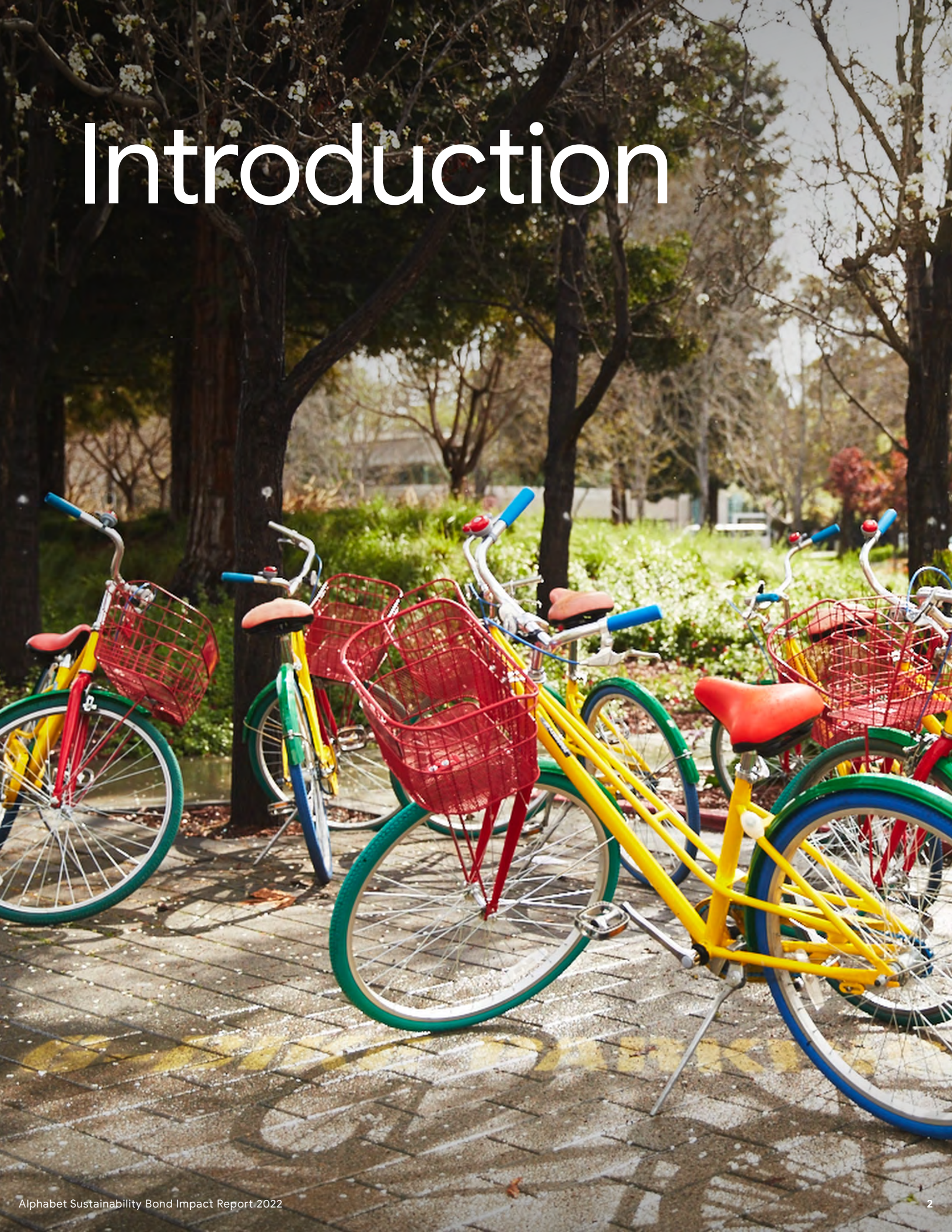
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Introduction



Alphabet has allocated

100%
of the net proceeds
from its \$5.75B
Sustainability Bond.

Overview

At Google, operating our business in an environmentally and socially responsible way has been a core value since our founding in 1998. We build our products and services to improve the lives of people all over the world. As part of this, we recognize Google's tremendous responsibility to address some of the most pressing challenges of our time—climate change, housing, racial and economic inequity, and the global COVID-19 pandemic. We've made a number of significant commitments and major investments in these areas.

In August 2020, we issued [\\$5.75 billion in sustainability bonds](#), leading the way with the largest sustainability or green bond issuance by any company in history at the time. The net proceeds funded new and ongoing projects that are environmentally or socially responsible and enable investors to join us in tackling critical issues. We believe that these investments benefit our communities, employees, and stakeholders, and they're an important part of fulfilling Google's mission and goal of creating value over the long term.

Two years later, we are pleased to report that we have fully allocated the net proceeds from our 2020 issuance, supporting our efforts across all eight of our green and social Eligible Project categories. This 2022 report builds on our [2021 Sustainability Bond Impact Report](#) and covers the allocation to Eligible Projects that incurred expenditures or had capital or contractual commitments between January 1, 2019, and December 31, 2021 (the "Reporting Period"). Our report also covers the associated expected sustainability impact of Eligible Projects included in our allocation (see Figure 1).

Our Sustainability Bond helps us operate our business in an environmentally and socially responsible way. Our ultimate goal is to enable everyone—businesses, investors, policymakers, and individuals—to create and live in a more sustainable world. We continue to lead and encourage others to join us in improving the health of our communities and our planet.

ALLOCATION OF NET PROCEEDS AND EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS

Total allocation \$5.69 billion

(100% of net proceeds allocated)

Environmental

ENERGY EFFICIENCY



\$1.02 billion

1.10 PUE

annual average across data center campuses

CLEAN ENERGY



\$1.75 billion

25 million tCO₂e

emissions avoided by renewable energy PPAs

GREEN BUILDINGS



\$2.47 billion

807,000 m²

of LEED Platinum certified office space

CLEAN TRANSPORTATION



\$22 million

4,000 ports

for EV charging

CIRCULAR ECONOMY AND DESIGN



\$8 million

1.42 million kg

of pre-consumer food waste prevented in cafés

Social

AFFORDABLE HOUSING



\$83 million

3,050 units

of conventional affordable housing

COMMITMENT TO RACIAL EQUITY



\$148 million

3,700 loans

to small and medium-sized businesses focused on the Black community

SUPPORT FOR SMALL BUSINESSES AND COVID-19 CRISIS RESPONSE



\$185 million

46,950 loans

to small and medium-sized businesses

Our sustainability approach

We believe that every business has the opportunity and obligation to protect our planet and support the communities where it operates. Sustainability is one of our core values at Google, and we strive to build sustainability into everything we do.

Google's sustainability strategy focuses on three key pillars that span both environmental and social initiatives:

- Accelerating the transition to carbon-free energy and a circular economy
- Empowering everyone with technology
- Benefiting the people and places where we operate

We've been a leader on sustainability and climate change since Google's founding over 20 years ago. These are some of our key achievements over the past two decades:

- **2007:** We became the first major company to become carbon neutral for our operations.
- **2017:** We became the first major company to match 100% of our annual electricity use with renewable energy, which we've achieved for [five consecutive years](#).
- **2020:** We issued \$5.75 billion in sustainability bonds—the largest sustainability or green bond issuance by any company in history at the time.
- **2021:** We [matched 66%](#) of our data center electricity use with regional carbon-free sources, on an hourly basis.

Now we're going even further. By 2030 we aim to achieve [net-zero emissions](#) across all of our operations and value chain, including our consumer hardware products, and to become the first major company to run on [carbon-free energy](#) 24 hours a day, seven days a week, 365 days a year.

We've also made a number of social commitments designed to benefit people and places where we operate:

- **2019:** We announced a [\\$1 billion Bay Area housing commitment](#) to support the development of at least 20,000 homes at a range of income levels throughout the region, of which at least 5,000 will be affordable.
- **2020:** We announced [commitments to racial equity](#) focused on building sustainable equity for our Black community, building products for change, helping create economic opportunity, improving education, and supporting racial justice organizations.
- **2020:** We responded to the devastating effects of the COVID-19 global pandemic with an [\\$800+ million commitment](#) to support small and medium-sized businesses (SMBs), health organizations and governments, and frontline health workers.

We continue our work to drive positive social and business impact. In 2022, we launched a \$100 million [Google Career Certificates Fund](#), with the goal of reaching more than 20,000 American workers and the potential to drive \$1 billion in wage gains. We also aim to [grow our spending with diverse suppliers to \\$2.5 billion](#) while expanding our program beyond the United States to include suppliers from historically underrepresented groups around the world.

For more information about our sustainability strategy, see Google's [Sustainability website](#) and [sustainability reports page](#). For more information about our overall corporate responsibility initiatives, see Google's [commitments to significantly improving the lives of as many people as possible](#), along with [sustainability and related information](#). For more information about our business, see the [About Google](#) and [Alphabet Investor Relations](#) websites.

About our Sustainability Bond



Our Sustainability Bond

In August 2020, Alphabet issued \$5.75 billion in sustainability bonds (“2020 Sustainability Bond” or “Sustainability Bond”), composed of three tranches (Table 1). The net proceeds (after deducting underwriting discounts and offering expenses) from this issuance have been fully allocated to expenditures, contractual commitments, and capital commitments in Eligible Projects, as defined in Alphabet’s [Sustainability Bond Framework](#) (“Framework”).¹

Table 1

BOND DETAILS BY NOTES

Notes	Coupon	Issued amount (\$M)	Net proceeds (\$M)
2025 Notes	0.45%	\$1,000	\$996
2030 Notes	1.10%	\$2,250	\$2,235
2050 Notes	2.05%	\$2,500	\$2,457
Total		\$5,750	\$5,688

“Eligible Projects” are investments and expenditures made by us or any of our subsidiaries beginning with the issuance date of the Sustainability Notes, or in the 24 months prior to the issuance of the Sustainability Notes. Each of our Eligible Projects meets one or more of the eight eligibility criteria defined by our Framework, which is aligned with the Green Bond Principles, the Social Bond Principles, and the Sustainability Bond Guidelines. Our green and social Eligible Project categories are described in Table 2.² Notwithstanding our significant work and commitments supporting sustainability through Google.org, no net proceeds were allocated to such activities given their philanthropic nature.

Alphabet is a collection of businesses—the largest of which is Google. As used herein, “Alphabet,” “the company,” “we,” “us,” “our,” and similar terms include Alphabet Inc. and its subsidiaries, unless the context indicates otherwise.

For a detailed overview of our allocation and expected impact by bond, see Table 3 and Table 4 in the [Appendix](#).

Table 2

ELIGIBLE PROJECT CATEGORIES

Green and social eligible project category	Eligibility criteria
<p>Energy efficiency</p> 	Expenditures related to design, construction, operation, and maintenance of energy-efficient facilities and infrastructure
<p>Clean energy</p> 	Expenditures related to the construction, development, acquisition, maintenance, and operation of renewable energy projects that are new to the grid, such as solar, wind, small-scale hydropower generation, geothermal, and biomass
<p>Green buildings</p> 	Expenditures related to design, construction, and improvements of office spaces and surrounding communities
<p>Clean transportation</p> 	Expenditures related to the procurement, maintenance, and operation of electric vehicles (EV), bicycles, and associated infrastructure
<p>Circular economy and design</p> 	Expenditures related to projects that are designed to increase waste diversion from landfill and design out waste
<p>Affordable housing</p> 	Expenditures related to the construction, development, acquisition, and maintenance of affordable housing
<p>Commitment to racial equity</p> 	Expenditures focused on advancing economic opportunity and equity for under-represented communities, including the Black+ community
<p>Support for small businesses and COVID-19 crisis response</p> 	Expenditures related to support for SMBs, including those impacted by COVID-19

Project selection and reporting

A committee consisting of representatives from Alphabet's Sustainability, Treasury, and Finance teams evaluated a broad array of projects from across the company to identify Eligible Projects. The final allocation of net proceeds to Eligible Projects was reviewed and approved by Google's Chief Sustainability Officer. Projects were selected based on the following factors:

- Consistency with eligibility criteria
- Alignment with our sustainability strategy
- Magnitude of environmental or social impact
- Ability to track and audit project expenditures, contractual commitments, and/or capital commitments

To ensure transparency and alignment with our Framework, we committed to reporting annually on which projects have been funded from the bonds' net proceeds and their expected sustainability impact. Information contained in this Sustainability Bond Impact Report is not incorporated in, and is not part of, any report or filing we make with the U.S. Securities and Exchange Commission.

We've received an [Independent Accountants' Report](#) providing assurance of management's assertion of our full allocation of net proceeds to Eligible Projects.

A photograph of a server room with rows of server racks. The racks are filled with server units, many of which have colorful indicator lights (blue, green, orange) glowing. The room is dimly lit with a strong blue ambient light. The text "Featured projects and impact" is overlaid in white on the upper left portion of the image.

Featured projects and impact

Overview

In this section, we report on the allocation of net proceeds in fiscal year 2021, as well as the cumulative total allocation for our Sustainability Bond in the Reporting Period, for each of our eight Project Categories. For more detail on our allocation and expected impact by report year and bond tranche, see Tables 3 and 4 in the [Appendix](#).

Energy efficiency

For more than a decade, we've worked to make Google data centers some of the most efficient in the world by optimizing our use of energy, water, and materials.

In 2021, we allocated net proceeds from our Sustainability Bond to two additional data center campuses—in [Quilicura, Chile](#), and [Changhua County, Taiwan](#)—as well as to our data center campuses in St. Ghislain, Belgium, and Hamina, Finland, which had previously received an allocation. This brings our cumulative total allocation to \$1.02 billion in capital expenditures related to the expansion and improvement of energy-efficient facilities and infrastructure at four data centers across three continents. The average annual power usage effectiveness (PUE) in 2021 across these four data center campuses was 1.10, compared with the industry average of 1.57³—meaning that these data centers use, on average, about six times less overhead energy.

Clean energy

At Google, we've made it a top priority to become more energy efficient and to match 100% of the annual electricity consumption of our global operations with purchases of renewable energy.

In 2021, we allocated net proceeds from our Sustainability Bond to three additional renewable energy power purchase agreements (PPAs) as well as other projects that had previously received an allocation. One of the three additional projects that received an allocation in 2021 is a [first-of-its-kind agreement in Europe](#) with ENGIE, a large European utility, to help ensure that our operations in Germany will run on nearly 80% carbon-free energy on an hourly basis. This brings our cumulative total allocation to \$1.75 billion in expenditures and contractual commitments to purchase electricity from renewable energy sources. This includes a total of 45 PPAs across three continents with a combined capacity of approximately 5.3 gigawatts. These are all long-term projects new to the grid that meet our [criteria of additionality](#). We estimate that these renewable energy PPAs combined will avoid nearly 25 million metric tons of carbon dioxide equivalent (tCO₂e) emissions.

Green buildings

Our sustainability priorities for workspaces are guided by Google's company-wide sustainability values and are applied everywhere we operate—from our Bay Area headquarters to our offices and data centers in over 190 cities spanning nearly 60 countries.

In 2021, we allocated net proceeds from our Sustainability Bond to seven new building projects, including [King's Cross in London](#) and [Arnulfpost in Munich](#), as well as other projects that had previously received an allocation. This brings our cumulative total allocation to \$2.47 billion in capital expenditures related to the design, construction, and improvement of 14 green buildings. These buildings total nearly 807,000 square meters (8.7 million square feet) and are on track to achieve LEED Platinum certification.

Clean transportation

To mitigate carbon emissions and take cars off the road, we're setting ambitious goals for helping Googlers transition to shuttles, carpooling, public transit, biking, and walking. There's also a growing number of EVs in our Google-owned and -operated commuter program fleet, and we provide EV charging stations for personal vehicles.

In 2021, we allocated net proceeds from our Sustainability Bond to one new EV charging infrastructure project, as well as other projects that had previously received an allocation. This brings our cumulative total allocation to \$22 million in expenditures and contractual commitments related to five clean transportation projects, such as initiatives related to the electrification of Google fleet vehicles, investment in our EV charging stations, and expenditures related to our bike programs. This allocation supported the operation of nearly 4,000 EV charging ports in the United States and Canada.

Circular economy and design

We're committed to [maximizing the reuse](#) of finite resources across our operations, products, and supply chains and to enabling others to do the same. We're applying our [circular economy principles](#) to design out waste, keep products and materials in use, and promote healthy materials and safe chemistry.

In 2021, we allocated net proceeds from our Sustainability Bond to one new project related to waste reduction efforts as well as to other projects that had previously received an allocation. This brings our cumulative total allocation to \$8 million in expenditures related to seven circular economy and design projects. This includes a software system that we use in our kitchens to [track](#) and [reduce](#) pre-consumer food waste. Since 2019, this software system has helped Google prevent over 1.4 million kilograms (3.1 million pounds) of food going into the waste stream.

Affordable housing

As Google grows—whether it's in our hometown of Mountain View, in San Francisco, or in our future developments in San José and Sunnyvale—we're investing in developing housing that meets the needs of these communities.

In 2021, we allocated net proceeds from our Sustainability Bond to loans supporting two new affordable housing projects—[Block 15](#) and [BRIDGE Housing](#). This brings our cumulative total allocation to \$83 million in contractual commitments to a total of 21 affordable housing projects. We expect our allocation will catalyze the development of approximately 3,050 affordable units.

Commitment to racial equity

Our [racial equity work](#) is an important part of our company-wide [commitment](#) to diversity, equity, and inclusion.

In 2021, we allocated net proceeds from our Sustainability Bond to nine new projects that advance economic opportunity for the Black community, including investment in Black-led capital firms, start-ups, and organizations supporting Black entrepreneurs and investment firms, as well as other projects that previously received an allocation. This brings our cumulative total allocation to \$148 million across 15 racial equity initiatives. These efforts include contributions to organizations supporting Black business owners such as [Opportunity Finance Network \(OFN\)](#), and support for Black creators and artists through the [#YouTubeBlack Voices Fund](#). We expect that our OFN capital commitment will result in approximately 3,700 loans closed to SMBs focused on the Black community.

Support for small businesses and COVID-19 crisis response

Small businesses are the backbone of the global economy and at the core of many of Google's tools, services, and products. So when the COVID-19 pandemic hit in 2020, we announced a [\\$200 million investment fund](#) as part of our \$800+ million commitment to support SMBs, health organizations, governments, and health workers on the frontlines.

In 2021, we allocated net proceeds from our Sustainability Bond to four new projects that finance loans to small businesses, including long-term partnerships with lending institutions such as [Kiva](#), the [European Investment Fund](#), the [Small Industries Development Bank of India](#), and the [Ogen Group](#). This brings our cumulative total allocation to \$185 million in contractual commitments that finance loans to small businesses. We expect our capital commitment will result in approximately 46,950 loans closed to SMBs.

Appendix

Allocation by bond

Table 3 provides an overview of our allocation of net proceeds from our 2020 Sustainability Bond by bond tranche as of December 31, 2021. We've received an [Independent Accountants' Report](#) providing assurance of management's assertion that \$5.688 billion in net proceeds (see Table 1) was allocated to Eligible Projects. We have made this allocation of net proceeds on a pro rata basis from the 2025 Notes, 2030 Notes, and 2050 Notes. Amounts allocated are rounded to the nearest million.

Table 3

ALLOCATION BY BOND ACROSS GREEN AND SOCIAL ELIGIBLE PROJECT CATEGORIES

Eligible project categories	Allocated amount (\$M)						Cumulative total
	2025 NOTES		2030 NOTES		2050 NOTES		
Reporting year	2021	2022	2021	2022	2021	2022	
Energy efficiency	\$112	\$66	\$252	\$148	\$277	\$163	\$1,018
Clean energy	\$224	\$83	\$502	\$187	\$552	\$205	\$1,753
Green buildings	\$218	\$215	\$490	\$481	\$538	\$529	\$2,471
Clean transportation	\$3	\$1	\$6	\$3	\$6	\$3	\$22
Circular economy and design	\$1	\$1	\$2	\$1	\$2	\$1	\$8
Affordable housing	\$12	\$2	\$27	\$5	\$30	\$7	\$83
Commitment to racial equity	\$14	\$12	\$32	\$26	\$35	\$29	\$148
Support for small businesses and COVID-19 crisis response	\$23	\$9	\$52	\$21	\$58 ⁴	\$22	\$185
TOTAL ALLOCATION OF NET PROCEEDS	\$607	\$389	\$1,363	\$872	\$1,498	\$959	\$5,688
<i>Net proceeds allocated by tranche (%)</i>	<i>61%</i>	<i>39%</i>	<i>61%</i>	<i>39%</i>	<i>61%</i>	<i>39%</i>	<i>100%</i>

Impact by bond

Table 4 provides an overview of the expected environmental and social impacts of Eligible Projects by 2020 Sustainability Bond tranche. Impact metrics for the 2025 Notes, 2030 Notes, and 2050 Notes are derived from the allocation of net proceeds provided in Table 3.

Table 4

EXPECTED IMPACT BY BOND ACROSS GREEN AND SOCIAL ELIGIBLE PROJECT CATEGORIES

Eligible project categories		Impact metric(s)	Expected impact						
Reporting year	Unit	2025 NOTES		2030 NOTES		2050 NOTES		Cumulative total	
		2021	2022 (Cumulative)	2021	2022 (Cumulative)	2021	2022 (Cumulative)		
Energy efficiency	Average annual PUE at data center campuses ⁵	PUE	1.09	1.10	1.09	1.10	1.09	1.10	1.10
Clean energy	Emissions expected to be avoided by renewable energy PPAs ⁶	tCO ₂ e	2,607,500	4,343,500	5,851,500	9,746,000	6,433,000	10,714,000	24,803,500
Green buildings	Office space expected to achieve LEED Platinum certification ⁷	m ²	73,000	141,000	163,000	317,000	179,000	349,000	807,000
Clean transportation	EV charging ports ⁸	Ports	600	700	1,400	1,600	1,600	1,700	4,000
Circular economy and design	Pre-consumer food waste prevented in cafés ^{9,10}	kg	198,500	248,500	445,500	558,000	490,000	613,500	1,420,000
Affordable housing	Conventional affordable housing units ¹¹	Units	300	550	700	1,200	800	1,300	3,050
Commitment to racial equity	Loans expected to close to SMBs focused on the Black community ¹²	Loans	470	650	1,060	1,450	1,170	1,600	3,700
Support for small businesses and COVID-19 crisis response	Loans expected to close to SMBs ¹³	Loans	2,350	8,200	5,300	18,450	5,850	20,300	46,950

Endnotes

1. Alphabet's 2020 Sustainability Bond Framework is aligned with the Green Bond Principles, dated June 2018, the Social Bond Principles, dated June 2020, and the Sustainability Bond Guidelines, dated June 2018, as administered by the International Capital Market Association.
2. Consistent with Appendix A in our [Independent Accountants' Report](#), please see the following notes that apply to our eligibility criteria:

Note 1: For power purchase agreements executed during the Reporting Period, proceeds are considered allocated upon contract execution. The Allocated Amount is calculated as the net present value of future cash flows based on estimated annual production in megawatts and power price over the contract term. For power purchase agreements executed prior to the Reporting Period, proceeds are considered allocated for services received during the Reporting Period, based on the amount invoiced.

Note 2: For capital or contractual commitments including investment funds or venture capital investments, proceeds are considered allocated upon contract execution based on the agreed upon amount within the contract.

Note 3: For all other expenditures, the Allocated Amount is calculated as the amount invoiced during the reporting period.
3. According to the [Uptime Institute's 2021 Data Center Survey](#), the global average PUE of respondents' largest data centers was around 1.57.
4. The reported 2021 allocation to the 2050 Notes of the Support for small businesses and COVID-19 crisis response project category has been adjusted due to rounding.
5. Since we expect that the construction of new or expanded facilities on data center campuses will support the maintenance or improvement of the campus-wide PUE, we've reported the impact metric as the average annual PUE in 2020 and 2021 for the campuses that received allocation in those years.
6. For agreements signed prior to 2019, emissions avoided by renewable energy PPAs are estimated by multiplying the actual renewable energy generated (in megawatt-hours) in 2019, 2020, and 2021 by location-based GHG emission factors for each respective grid region. For agreements signed during 2019, 2020, and 2021, emissions avoided by renewable energy PPAs are estimated by multiplying the expected renewable energy generation (in megawatt-hours) by location-based GHG emission factors for each respective grid region over the expected lifetime of each PPA, considering projected year-over-year changes in emission factors due to grid decarbonization. U.S. emission factors were sourced from the U.S. Environmental Protection Agency's eGRID (Emissions & Generation Resource Integrated Database; 2020 data). Emission factors for all other countries were sourced from the International Energy Agency's Emissions Factors 2021. Reported emissions are rounded to the nearest 500.
7. Square meters of Leadership in Energy and Environmental Design (LEED) Platinum certified office space are estimated by adding the expected gross square meters of the 14 green building projects for which we plan to ultimately pursue LEED Platinum certification once complete. Reported square meters are rounded to the nearest thousand.
8. Number of EV charging ports is calculated by summing the number of EV ports at our offices in the United States and Canada as of December 31, 2021. Bond proceeds were allocated to installations of EV charging ports as well as operating costs in the Reporting Period. Reported ports are rounded to the nearest hundred.
9. Pre-consumer food waste prevented in cafés is estimated by summing the difference between each café's change in food waste weight compared with its baseline, set prior to implementing food waste reduction and behavior modification tools, for all Google offices participating in the Leanpath program combined. Reported kilograms are rounded to the nearest 500.
10. In 2019, we were able to track and report pre-consumer food waste prevention for the entire year. In 2020, pre-consumer food waste prevented in our cafés was tracked only from January to March due to limited café operations during the global pandemic. In 2021, we continued to experience limited café operations due to the global pandemic. Pre-consumer food waste prevented in our cafés in 2020 has been reflected in our 2022 cumulative impact metric.
11. Affordable housing units enabled are estimated by summing the number of units expected from affordable housing projects with loans under contract as of December 31, 2021. The expected number of units enabled may be reduced by up to 365 units to reflect a change in scope for one of the affordable housing projects financed by Google, which may reduce the 2021 expected impact and 2022 cumulative expected impact figures for the Affordable Housing category. Expected units are rounded to the nearest 50.
12. Loans to SMBs focused on the Black community are estimated by dividing our total amount committed to OFN for small businesses focused on the Black community by the average loan size as of December 31, 2021. Loans are rounded to the nearest 10.
13. Loans to SMBs are estimated by dividing the total amount committed to each respective investment partnership by the average loan size for that partnership as of December 31, 2021. Loans are rounded to the nearest 50.

Alphabet

Alphabet Sustainability Bond Impact Report 2022
August 2022

On the cover:

A dragonscale solar panel rooftop emerges amidst trees
at our Charleston East campus (Photo: Iwan Baan)

Introduction:

Bright, colorful Gbikes parked on a Google campus

About our Sustainability Bond:

Norther Offshore wind farm in Belgium (92 MW for Google)

Featured projects and impact:

A row of servers in our St. Ghislain, Belgium, data center