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Cloud Adoption and Corporate Sustainability

By Prem Purushothamraj and Justin Gillespie

EXECUTIVE SUMMARY

Sustainability is a strategic business priority for corporate executives looking to position their businesses for future growth, and to differentiate their brands to attract socially conscious investors and customers. Technological innovation has helped develop new business models that promote sustainable growth and business efficiency, while reducing environmental pollution, and minimizing resource wastage and carbon footprints. Cloud technologies enable organizations to fast-track their sustainability programs to achieve measurable outcomes. The Hackett Group surveyed companies globally to understand their cloud adoption and the overall success of their corporate sustainability initiatives.

Study participants reported that they are currently hosting an average of 55% of their workloads in the cloud, and are planning to migrate up to 75% of their workloads in the next two to three years.

They also reported several positive sustainability outcomes, such as:

- **Reduction in consumption and emissions**
  - 2.8% decrease in energy consumption
  - 5.3% decrease in water consumption
  - 6.4% decrease in greenhouse gas (GHG) emissions

- **Savings from sustainability program efforts**
  - Savings equivalent to 76% of annual sustainability spend, resulting from lower energy and water consumption, and other efficiencies

- **Significant improvements are tied to a well-defined corporate sustainability program. Companies that integrated sustainable growth into their business models reported stronger improvements over others.**
  - 3X savings realized from environmental, social, and governance (ESG) programs
  - 2.3X decrease in GHG emissions
  - 2.1X decrease in water consumption
  - 1.7X greater revenue per employee

ABOUT THE STUDY

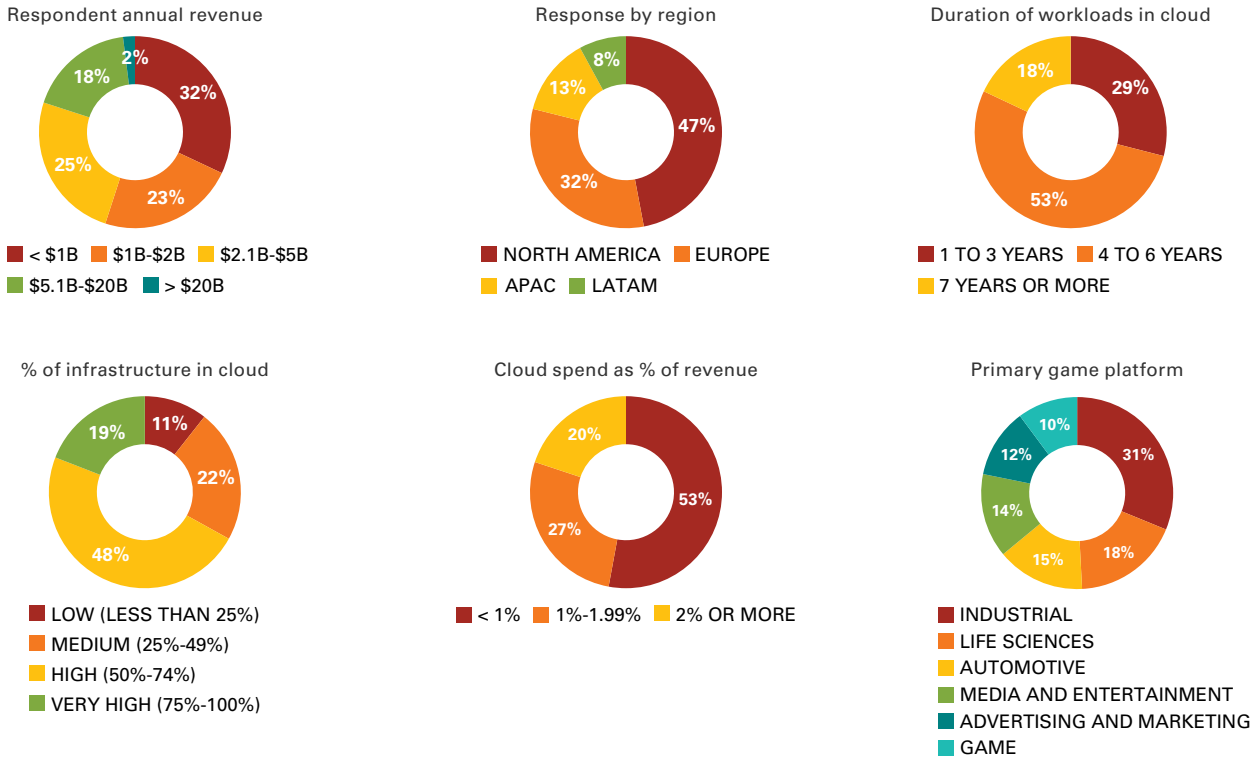
In late 2022, The Hackett Group conducted a global Industry Cloud Study of 600 organizations across multiple industries. Study participants have had cloud-hosted workloads for a minimum of one year. The goal of the research was to assess how a move to the cloud improved operations and business results.

The study uncovered the effects of different cloud strategies on key metrics, and how they changed based on different factors, including:

- Percentage of an organization's workloads in the cloud (cloud saturation)
- Number of years since cloud migration (cloud duration)
- Number of cloud-hosted applications
- Cloud spending as a percentage of revenue

This report focuses on the impact of cloud technologies on corporate sustainability for the 600 organizations **(Fig. 1)**. All numbers in this report are weighted averages.

FIG. 1 Respondents' demographics



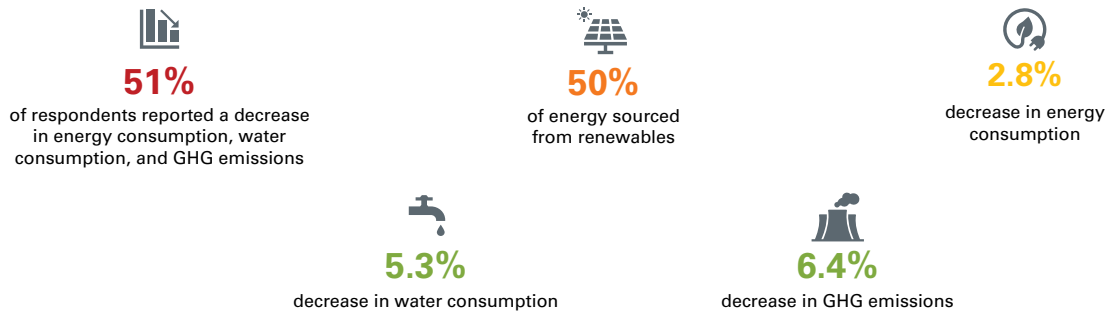
Source: The Hackett Group 2022 Industry Cloud Study

REDUCTION IN CONSUMPTION AND EMISSIONS

In the face of increased government regulations, and pressures from investors and customers, companies are increasingly prioritizing their ESG policies and focusing on sustainable business practices. As a result, there is an increased push to invest in corporate ESG programs and to create measurable impacts. Some of the main goals of corporate ESG policies are to decrease environmental pollution, minimize wastage of natural resources, and to reduce a company's carbon footprint. These are measured based on parameters, such as reduction in energy and water consumption, reduction in GHG emissions, and increased use of renewable energy. GHGs, such as carbon dioxide, methane, nitrous oxide, and fluorinated gases, trap heat in the atmosphere, leading to global warming and climate change. Renewable energy is derived from sources that naturally renew or replenish themselves. Examples include solar energy, hydroelectric energy, wind energy, and geothermal energy.

After cloud adoption, more than 51% of the study respondents reported a decrease in their energy consumption, water consumption, and GHG emissions, resulting from their sustainability initiatives. The average reported across all the respondents was a 2.8% decrease in energy consumption, a 5.3% decrease in water consumption, and a 6.4% decrease in GHG emissions. Study respondents also reported that renewable energy now accounted for 50% of their total energy consumption **(Fig. 2)**. Increased use of renewable energy implies reduced dependence on fossil fuels, such as coal, oil, and gas, which take hundreds of millions of years to form.

FIG. 2 Key sustainability benefits reported by cloud study respondents



Source: The Hackett Group 2022 Industry Cloud Study

Study respondents stated that cloud adoption was critical to achieving their sustainability goals, and migration of on-premises data centers to the cloud helped reduce their annual energy and water usage. On-premises data centers consume vast amounts of energy and emit large quantities of GHGs. According to the U.S. Department of Energy, data centers consume 10 to 50 times the energy per floor space of a typical commercial office building. In addition, data centers use large amounts of water for their cooling systems, dehumidification systems, and facility maintenance. With cloud, organizations can retire their on-premises data centers, and significantly reduce their energy and water consumptions, and GHG emissions. In fact, the study found steady improvements in sustainability measures with increased cloud adoption. Respondents that migrated 10 or more application workloads to the cloud reported a 2.8X decrease in energy consumption, a 1.3X decrease in water consumption, and a 2.2X decrease in GHG emissions, compared to respondents that migrated up to 6 application workloads **(Fig. 3a)**.

Further, the study found that energy consumption decreased with increased cloud saturation (percentage of infrastructure workloads in the cloud). Respondents with 50% or more of their workloads in the cloud reported a 1.3X decrease in energy consumption compared to others **(Fig. 3b)**. This suggests that increased migration of workloads from on-premises infrastructure was a contributing factor to companies' reduction of their carbon footprints.

FIG. 3A Cloud migration and percentage decrease in energy consumption, water consumption, and GHG emissions

Number of application workloads migrated	% decrease in energy consumption	% decrease in water consumption	% decrease in GHG emissions
1 to 6	2.0%	5.0%	4.5%
7 to 9	3.0% (2.8X)	5.4% (1.3X)	9.2% (2.2X)
10 or more	5.5%	6.4%	9.7%
All respondents	**2.8%**	**5.3%**	**6.4%**

Source: The Hackett Group 2022 Industry Cloud Study

FIG. 3B Cloud saturation and decrease in energy consumption

Cloud saturation	% decrease in energy consumption
< 50%	2.4% (1.3X)
50% to 100%	3.1%
All respondents	**2.8%**

Source: The Hackett Group 2022 Industry Cloud Study

Cloud-enabled organizations can directly reduce their resource consumptions and GHG emissions. Additionally, cloud acts as a force multiplier for environmental sustainability. Major cloud service providers have made significant investments in minimizing their energy consumptions and carbon footprints at a global scale. Amazon Web Services, Microsoft Azure, and Google Cloud have all made commitments to sustainability, clean energy, and energy efficiency.[1] Amazon, the parent company of Amazon Web Services, and the world's largest corporate purchaser of renewable energy, is on a path to powering its operations with 100% renewable energy by 2025, five years ahead of its original target of 2030.[2] This is impactful as organizations migrating their workloads to the cloud will not only reduce their carbon footprints directly, but will also boost their environmental sustainability indirectly through their cloud service provider.

ESG SPEND AND SAVINGS

Many organizations across industries are increasing their spend on ESG programs and initiatives, despite corporate budgets being under increased scrutiny. According to a recent study of over 700 businesses worldwide, 70% of companies indicated that their sustainability spending will increase over the next 12 months, with only approximately 2% planning to reduce their sustainability spending.[3] This is not surprising as companies are increasingly prioritizing energy efficiency and reduction of their carbon footprints to execute on the sustainability commitments they have made to their investors and customers. To maintain this level of investment, companies will need to prioritize a structured, program-driven sustainability approach to achieve true value and cost savings.

Study respondents reported spending an average of $7.4 million on their ESG programs and initiatives for every $1 billion in annual revenue. They also reported realizing savings of $5.6 million from their sustainability initiatives for every $1 billion in annual revenue. This amounts to annual savings of approximately $760,000 for every $1 million spent on ESG programs **(Fig. 4)**.

These savings were realized through lower energy and water consumption, retiring of on-premises data centers, and improved infrastructure utilization and efficiency. In addition to realizing cost savings, companies can improve their reputations and brand values, and attract socially conscious investors and customers by investing in ESG initiatives.

FIG. 4 ESG annual spend and return metrics

Source: The Hackett Group 2022 Industry Cloud Study

The Hackett Group study identified that organizations with higher ESG spend were able to achieve higher savings from their ESG programs. Organizations that spent $10 million or more on ESG for every $1 billion in annual revenue, realized 17X the amount of ESG savings, compared to organizations that spent less. This indicates that organizations that made larger investments in their ESG programs were able to realize better savings. A higher level of ESG spend enables organizations to execute broad, enterprisewide, operational transformation to reduce wastage, optimize resource consumption, and realize efficiencies **(Fig. 5)**.

FIG. 5 ESG spend and savings per $1 billion of revenue

ESG spend per $1B of revenue	ESG savings per $1B of revenue
< $10M	$1.5M
$10M or more	$25.2M (17X)
All respondents	**$5.6M**

Source: The Hackett Group 2022 Industry Cloud Study

[1]Amazon Web Services, Microsoft, Google
[2]Amazon Web Services
[3]Honeywell Environmental Sustainability Index, Q1 2023

The study also found that organizations that spent $10 million or more on ESG, for every $1 billion in annual revenue, realized a 2.4X decrease in energy consumption and a 1.4X decrease in water consumption, compared to organizations that spent less (Fig. 6).

FIG. 6 ESG spend, and percentage decrease in energy and water consumptions

ESG spend per $1B of revenue	% decrease in energy consumption	% decrease in water consumption
< $10M	2.3%	5.0%
$10M or more	5.4% (2.4X)	7.1% (1.4X)
All respondents	**2.8%**	**5.3%**

Source: The Hackett Group 2022 Industry Cloud Study

Further, the study identified a relationship between organizations' level of cloud adoption and their ESG spending. Study respondents that had hosted workloads in the cloud longer or migrated more application workloads to the cloud reported higher ESG spending and savings. Organizations that migrated 10 or more application workloads to the cloud reported 1.3X the ESG spend, and 2.1X in ESG savings, compared to organizations that migrated six or fewer application workloads. Similarly, organizations that reported hosting their application workloads in the cloud for six or more years reported 1.1X the ESG spend, and 2.2X in ESG savings, compared to other organizations. In both scenarios, the savings resulting from ESG spend increased at a higher rate than the increase in ESG spend (Fig. 7a and Fig. 7b). Cloud adoption is a critical part of ESG programs, and companies that prioritize increased cloud adoption make larger strides in their sustainability efforts, evidenced by higher ESG spend and higher savings from ESG initiatives.

FIG. 7A Cloud migration, ESG spend, and ESG savings

Number of application workloads migrated	ESG spend per $1B of revenue	ESG savings per $1B of revenue
1 to 6	$7.2M	$4.6M
7 to 9	$6.5M (1.3X)	$5.2M (2.1X)
10 or more	$9.4M	$9.6M
All respondents	**$7.4M**	**$5.6M**

Source: The Hackett Group 2022 Industry Cloud Study

Fig. 7B Cloud duration, ESG spend, and ESG savings

Cloud duration (years)	ESG spend per $1B of revenue	ESG savings per $1B of revenue
1 to 5	$7.1M (1.1X)	$4.0M (2.2X)
6 or more	$7.8M	$8.8M
All respondents	**$7.4M**	**$5.6M**

Source: The Hackett Group 2022 Industry Cloud Study

ESG PROGRAM MATURITY

While corporate sustainability initiatives drive environmental and social improvements, they can also be very beneficial to an organization's business success. ESG metrics are typically used to understand how committed an organization is to its sustainability goals, but they can also be an indicator of a company's business value and bottom-line performance. Companies with a stronger focus on ESG performance can significantly improve their brands' recognition with their customers and investors, and differentiate themselves in highly competitive markets. A structured and programmatic approach to achieving sustainability goals can drive product and process innovation, and improve operational efficiencies by reducing waste, and driving down costs. With proper management of ESG programs, companies can effectively position themselves for long-term success. The disruption to the automobile industry by the unforeseen success of electric vehicles (EVs) is an example of how sustainable innovation can propel an organization's bottom line, while driving long-term environmental benefits.

Organizations need a well-defined ESG program with active governance to achieve their stated ESG goals and to derive business value. The study asked respondents to rank the maturity level of their organization's ESG program on a scale of 0 to 5, based on how well-defined and structured it was (Fig. 8). A score of 0 represents that there was no ESG program in place, while a score of 5 represents that sustainability was well-integrated into the organization's culture and business model.

FIG. 8 ESG program maturity scale description

ESG program maturity scale description	
0 = Not applicable	No ESG program/initiatives are in place
1 = Informal	Ad hoc or informal approach to ESG; relying on quick fixes and managing issues as they arise
2 = Compliance	Formal process exists and is managed in silos across the business; focus is on compliance with regulations; primarily seen as a cost driver
3 = Efficiency	Companywide process with a focus on establishing and governing to standards; focus is on driving cost savings
4 = Brand enhancement	Strategic and well-established companywide process with strong governance; focus is on enhancing company's brand and/or image
5 = Create value	ESG is embedded in the company's culture and business "DNA," focus is on increasing value for the community and environment beyond business economics

Source: The Hackett Group 2022 Industry Cloud Study

The study found that organizations that view sustainability as a core part of their brand or part of their business "DNA" were able to achieve better sustainability performance outcomes, compared to organizations with a more informal or less structured approach to sustainability. The study highlighted that organizations with higher levels of ESG program maturity invested more in their ESG programs, were more successful in reducing their carbon footprints, and realized higher savings annually. This is very insightful for corporate leadership as several organizations still struggle in the justification of business cases for their ESG programs, and have to tackle the perception of ESG programs as being a cost driver rather than a business value driver and a core differentiator.

The study found that respondents that rated the maturity of their ESG program highly also reported stronger performance on several ESG measures. For example, respondents that ranked in the highest ESG program maturity rating of 5 reported 2.5X greater sustainability spend and 3.0X greater sustainability savings, compared to respondents with an ESG program maturity rating of 2 or lower **(Fig. 9)**.

In addition to realizing higher ESG savings, study respondents with more mature ESG programs reported larger reductions in resource usage. Specifically, organizations with more mature ESG programs reported a 2.1X decrease in water consumption and a 2.3X decrease in GHG emissions, compared to respondents with an ESG program maturity rating of 2 or lower **(Fig. 10)**.

FIG. 9 ESG program maturity rating, spend, and savings

ESG program maturity (0 to 5 scale)	ESG spend per $1B of revenue	ESG savings per $1B of revenue
0 to 2	$5.5M	$3.3M
3 to 4	$5.9M 2.5X	$5.0M 3.0X
5	$13.6M	$10.0M
All respondents	**$7.4M**	**$5.6M**

Source: The Hackett Group 2022 Industry Cloud Study

FIG. 10 ESG program maturity rating, and percentage decrease in water consumption and GHG emissions

ESG program maturity (0 to 5 scale)	% decrease in water consumption	% decrease in GHG emissions
0 to 2	4.1%	4.2%
3 to 4	4.8% 2.1X	6.3% 2.3X
5	8.4%	9.7%
All respondents	**5.3%**	**6.4%**

Source: The Hackett Group 2022 Industry Cloud Study

The success of an organization's ESG program does not have to come at the cost of business performance. While many companies still view their investment in ESG initiatives as cost drivers to ensure compliance with environmental regulation, the study identified that companies that viewed their ESG programs as fundamental to their brand value, company culture, and business DNA achieved higher revenue per employee. Specifically, organizations with more mature ESG programs reported 1.7X greater revenue per employee, compared to respondents with ESG program maturity rating of a 2 or lower **(Fig. 11)**.

FIG. 11 ESG program maturity rating and revenue per employee

ESG program maturity (0 to 5 scale)	Revenue per employee (in 000's)	
0 to 2	$434	
3 to 4	$462	1.7X
5	$736	
All respondents	**$509**	

Source: The Hackett Group 2022 Industry Cloud Study

Cloud adoption is foundational to an organizations' ESG strategy. Through migration of workloads to the cloud, organizations can accomplish their ESG goals by partnering with cloud providers, using a structured and program-driven approach that prioritizes measurable value-driven outcomes. Organizations in this study that reported having more mature ESG programs also reported higher cloud spend, as they view the shift to cloud-hosted capabilities as fundamentally aligned with their ESG strategy and goals, and enabling of their digital transformation and technology modernization. Study respondents with a higher ESG program maturity reported 1.9X greater cloud spend, compared to respondents with an ESG program maturity rating of 2 or lower **(Fig. 12)**.

FIG. 12 ESG program maturity rating and cloud spend as a percentage of revenue

ESG program maturity (0 to 5 scale)	Cloud spend as a % of revenue	
0 to 2	1.4%	
3 to 4	1.5%	1.9X
5	2.7%	
All respondents	**1.7%**	

Source: The Hackett Group 2022 Industry Cloud Study

RECOMMENDATIONS

As investors and customers are increasing focus on companies' ESG policies, it is important for corporate executives to realize long-term value and success through their investments in sustainable development and growth.

To achieve this, organizations should evaluate and implement these strategies:

- Prioritize cloud adoption as a critical part of your ESG strategy to achieve both short- and long-term benefits
  - Cloud enables companies to expand their operations and customer base, while reducing their carbon footprints.
  - Companies can take advantage of large-scale energy efficiencies achieved by cloud providers and, as a result, reduce both their direct and indirect carbon footprints.
  - Study respondents that migrated more application workloads to the cloud reported 2.1X greater savings resulting from ESG spend, compared to organizations that migrated fewer application workloads. Similarly, respondents that reported longer durations in the cloud reported 2.2X greater savings resulting from ESG spend, compared to others.
- Invest in your organization's ESG program to ensure sustainable development and growth, along with stronger business performance
  - Define your organizations' ESG strategy and goals clearly, and establish a comprehensive process to manage and govern ESG initiatives. Organizations that established comprehensive ESG programs with strong management and embedded its functioning into their corporate culture, achieved significantly higher savings and better outcomes.
  - Identify and adopt measurable key performance indicators (KPIs) to track ESG performance regularly, and to take corrective action in a timely manner.

About the Advisors

PREM PURUSHOTHAMRAJ

Senior Director, Technology Benchmarking and Advisory

Mr. Purushothamraj works with leaders across industries to help them realize business value from their investments in digital transformation. He has over 16 years of management consulting and technology transformation experience, and has managed delivery of digital transformation programs across functional teams. He has hands-on experience in delivering current-state assessments and transformation efforts for technology organizations to improve their overall performance, and execution of their digital strategies.

JUSTIN GILLESPIE

Principal & Chief Data Scientist – Digital Enablement Practice

In addition to his work with The Hackett Group, Mr. Gillespie is a faculty member of the Security Executive Council. Previously, he was Principal and Global Practice Leader for The Hackett Group's Analytics and Data Management Practice. Prior roles included Vice President of Business Intelligence at OSI Consulting and Principal Systems Consultant at Brio Technology. Mr. Gillespie also founded 1Answer Solutions, an analytics and business intelligence services provider.

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The Hackett Group
1000 Abernathy Road NE
Suite 1400
Atlanta, GA 30328

T. +1 770 225 3600
T. 1 888 842 2538 (toll-free)
W. www.thehackettgroup.com

London
20 St Dunstan's Hill,
London,
EC3R 8HL, UK

T. +44 20 7398 9100

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