

## Energy Efficiency and Corporate Sustainability

Large corporations are making strong efforts to become more sustainable. Major brands like Google and Walmart have announced they plan to power 100% of their corporate operations with renewable energy. Unilever promises a 50% reduction in GHG emissions from its products, PepsiCo is aiming for a 25% increase in water efficiency, and companies like Apple and Morgan Stanley are defending the Paris Agreement.<sup>1</sup> Energy efficiency is integral to reaching these climate targets.

While the glossy covers of corporate sustainability reports are adorned with massive wind turbines and acres of solar panels, the corporations themselves are using energy efficiency to reach their targets. A survey of sustainability professionals found that 82% of large companies have made efficiency improvements or plan to in the next two years (compared with 51% for renewable projects).<sup>2</sup> This makes intuitive sense; the cleanest and cheapest kilowatt-hour is the one never generated, and 100% renewable use is easier to achieve with less energy demand. Saving energy is one of the most effective ways to reduce pollution and combat climate change.<sup>3</sup>

The reasons behind these sustainability initiatives are numerous. Some companies are interested in reducing their carbon footprint, some in mitigating the business risks related to climate change, and some want to cut their high utility bills. In a global survey of 236 energy and sustainability professionals at companies with \$100 million or more in revenue, 69% cited cost savings as a primary driver of sustainability, and improving the company brand was important to 47%. Mitigating environmental risk was a key driver for 46%.<sup>4</sup>

Sustainability is important for the 500 largest corporations (by revenue) in the United States as well. As illustrated in table 1, nearly half of all Fortune 500 companies have targets for reducing GHG emissions, increasing renewable energy production, or decreasing energy usage.<sup>5</sup> As companies get bigger, those numbers rise: 63% of Fortune 100 companies reported targets in 2016. All in all, over 1,000 companies worldwide have set some type of target.<sup>6</sup> About one-fifth of them have specific goals for energy efficiency, whether they be through transportation, building usage, or water use reduction.<sup>7</sup>

Table 1. Fortune 500 companies' sustainability plans

Fortune 500 bucket	Companies with any sustainability target	Companies with GHG targets	Companies with renewable energy targets	Companies with energy efficiency targets
Fortune 100	63	58	24	17
101-200	57	46	11	12
201-300	44	41	9	7
301-400	32	28	3	7
401-500	44	38	6	8
<b>Total</b>	<b>240</b>	<b>211</b>	<b>53</b>	<b>51</b>

The targets are not mutually exclusive; 63 companies have targets in more than one category. *Source:* See note 5.

As the table shows, sustainability targets in the top 100 are more common than in the lower quintiles, with 63 of the top 100 and only 44 of the bottom 100. Seventeen Fortune 100 companies have specific energy efficiency targets, which is more than any other quintile. Walmart (Forbes #1 overall) has an energy efficiency target to reduce the energy intensity per square foot of its facilities all over the globe by 20% by 2020 (using 2010 as a baseline).

Targets vary a bit by sector as well. Utilities and industrials are more likely to have an energy efficiency target than their peers, and energy-producing companies are less likely than other industries to have targets. Chevron, the highest ranked energy-producing company on the list, has no reported targets. Table 2 shows the number of Fortune 500 companies in each sector with various types of targets.<sup>8</sup>

**Table 2. Targets as a percentage of total**

Business sector	Any sustainability target		GHG target		Renewable energy target		Energy efficiency target		Total in Fortune 500
	Count	% of sector*	Count	% of sector*	Count	% of sector*	Count	% of sector*	
Industrials	45	62%	41	56%	6	8%	11	15%	73
Consumer discretionary	43	42%	33	32%	12	12%	11	11%	102
Consumer staples	33	72%	31	67%	6	13%	4	9%	46
Information technology	29	57%	26	51%	13	25%	6	12%	51
Financials	23	31%	21	28%	5	7%	6	8%	75
Materials	21	66%	20	63%	0	0%	4	13%	32
Health care	19	41%	16	35%	5	11%	4	9%	46
Utilities	17	65%	13	50%	6	23%	5	19%	26
Energy	4	0%	4	11%	0	0%	—	0%	37
Real estate	3	0%	3	60%	0	0%	—	0%	5
Telecommunication services	3	0%	3	43%	0	0%	—	0%	7
Total	240	48%	211	42%	53	11%	51	10%	500

\* The % of sector represents the number of Fortune 500 companies in that sector with a sustainability plan divided by the total number of Fortune 500 companies in that sector. For example, 45 industrial companies have a target out of 73 total industrial companies in the Fortune 500, or 62% of that sector. *Source:* See note 5.

The highest adoption rates for energy efficiency targets were among utilities (19%), industrials (15%), and materials (13%). Energy cost savings were ranked as one of the primary drivers for managing energy resources, and are particularly important to utilities, industrials, materials, and IT companies. Branding and customer/shareholder expectations also ranked highly for driving change, which could be behind high adoption rates among the consumer-facing companies like those in the consumer staples and consumer discretionary categories.

Among the Fortune 100 with energy efficiency plans, some have aggressive total-energy use targets and others try to tackle core tenets of their operations. Six of the Fortune 100 have targets of 20% energy use reduction or more by 2020. Bank of America (#26) doubled that goal and will try to reduce its overall energy usage by 40% (using 2010 as a baseline) and get 20% of its commercial real estate portfolio LEED certified by 2020. Other companies targeted specific aspects of their business, like Delta Airlines (#68), which has an airplane fuel efficiency goal of 1.5% annually from 2009 to 2020.

The adoption of energy and emissions targets among Fortune 500 companies has not been rapid, increasing by only 5% from 2013 to 2016, but 44% of corporations that did not have a target stated they were considering adopting one.<sup>9</sup> If true, another 100 or more Fortune 500 companies could be setting targets in the next few years.

### **OVERCOMING BARRIERS TO ENERGY EFFICIENCY ADOPTION**

Although 50% of Fortune 500 companies have developed a corporate sustainability target, there are still barriers to energy efficiency adoption in large corporations. Limited financial resources and unattractive return on investment can be obstacles for engaging in efficiency and sustainability initiatives.<sup>10</sup> Financing solutions for energy improvements have increased in recent years to address this gap. Green bond issuances grew 78% from 2016 to 2017, totaling a new

annual record at \$155.5 billion, and Apple made headlines for the largest green bond by a US corporation: a \$1 billion issuance to fund renewables and energy efficiency.<sup>11</sup> General Electric, #11 on the Fortune 500, is using the Energy Efficiency as a Service (EEaaS) model to finance projects for other large corporations like Walgreens (#19) and Intel (#51).<sup>12</sup> Citigroup (#29) is using the Energy Services Agreement (ESA) model to advance energy efficiency in multiple projects across the United States.<sup>13</sup> ESA and EEaaS models allow companies to avoid upfront costs and pay only for realized savings, solving crucial financing and return on investment pain points for large businesses.<sup>14</sup> With additional financing options, sustainability adoption may become a more attractive endeavor.

Another barrier to adoption is a lack of coordination between departments at corporations and a lack of knowledge about sustainability solutions. While some companies have chief sustainability officers (CSOs), those c-suite executives are only successful if they are empowered with a budget and a directive. Some CSOs report they get very little time with the CEO, have limited knowledge of how they can engage with other departments, and a small budget and staff to work with.<sup>15</sup> However that may change as businesses begin to treat environmental targets as important risk mitigation strategies, aligning these targets with the work of the chief financial officer. A recent report from Deloitte suggests that sustainability risks and business risks are becoming indistinguishable, and the CFO should be leading advocacy in sustainable business practices and reporting.<sup>16</sup> The involvement of CFOs may address some of the operational issues in setting and achieving sustainability goals.

The amount of engagement in sustainability by these large corporations is encouraging. The Fortune 500 amassed \$12 trillion in revenue in 2017.<sup>17</sup> If Walmart were a country, it would be the 10th largest in revenue in the world, just smaller than Canada and larger than Australia and India.<sup>18</sup> The sheer enormity of these organizations means their efforts will have a profound impact on energy savings. Once those targets are in place, energy efficiency will be the way to reach them.

ACEEE has written three case studies on corporations that are leaders in incorporating energy efficiency in their sustainability planning. These companies have discovered there is a business case for energy efficiency and are using it to increase sales and decrease energy usage.

## Endnotes

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- 7 The World Wildlife Fund, Ceres, Calvert, and CDP teamed up to collect information about whether a Fortune 500 company had targets for GHGs, renewables, or energy efficiency. Table 1 shows some of the results of that study. It should be noted that companies often implement renewable and efficiency measures to achieve their GHG targets, even if they do not set specific targets for these types of measures. For instance, JPMorgan implemented 31 different GHG reduction projects, 30 of which were energy efficiency projects, but did not set a stand-alone energy efficiency target and so is not included in the count of companies with energy efficiency targets in table 1. WWF et al., "Power Forward 3.0" (2017).
- 8 Some combined renewable and efficiency targets are only counted as GHG targets, as they are used as a marker for GHG reductions and are neither a renewable nor an efficiency target.
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## JPMorgan Chase

JPMorgan Chase (JPM), the largest US bank and second largest in the world, is a leader in sustainability. JPM created a framework for environmental and social goals in 2005, self-reported on efforts to reduce greenhouse gas emissions in 2007, and underwent a whole building retrofit of its corporate office at 270 Park Avenue in New York in 2012.<sup>1</sup> The corporate office achieved LEED Platinum status and was, at the time, the largest renovation project ever to receive LEED's highest award. Two years later, JPM helped write the Green Bond Principles to bring transparency and authenticity to an important clean energy financing tool.<sup>2</sup> It has also committed to financing \$200 billion in clean energy by 2025.<sup>3</sup>

In 2016 and 2017, JPM announced ambitious plans to reduce the multinational bank's carbon footprint. As part of the bank's larger effort to reduce GHG emissions by 50% and go 100% renewable by 2020, JPM teamed up with GE Current to reduce the environmental impact of the 75 million square feet of bank branches it owns.<sup>4</sup> In the collaboration with GE, JPM aims to undergo the largest single-order LED installation effort in history, implementing LED lighting retrofits at 4,500 branches.<sup>5</sup> The project has already covered 2,500 branches and the installation of 1.4 million LED light bulbs.<sup>6</sup> According to JPM's reporting to the Climate Disclosure Project (CDP), the LED retrofitting done in 2017 will save 4,478 metric tons of carbon dioxide equivalents (CO<sub>2</sub>e).<sup>7</sup> In order to better track and manage all of these updates, GE and JPM are also installing building management systems (BMS) in 4,400 branches, which will help optimize lighting and HVAC systems, reducing energy consumption by 15% and water consumption by 20%.<sup>8</sup> In 2017, BMS optimization was responsible for savings of 1,091 metric tons of CO<sub>2</sub>e. Additionally, JPM will add thermal energy blankets above the ceiling tiles in more than 1,700 retail branches.<sup>9</sup> Table 1 shows JPM's top five carbon-reducing initiatives in 2017, all of which involve energy efficiency improvements.

**Table 1. JPMorgan's five highest carbon-reducing initiatives in 2017**

Activity	Estimated annual CO <sub>2</sub> e savings (metric tons CO <sub>2</sub> e)	Payback period	Estimated lifetime
Lighting improvements	4,478	4-10 years	6-10 years
Computer room air handler retrofit and variable frequency drive installation	2,941	4-10 years	6-10 years
Steam pressure reducing valve upgrade	2,472	1-3 years	16-20 years
Variable frequency drive installation on condenser and chilled water pumps and computer room air conditioning units	2,129	4-10 years	16-20 years
Uninterruptible power supply system shut down or optimization	1,660	<1 year	16-20 years

Source: See note 7.



Major energy efficiency measures undertaken by JPM in 2017 included a retrofit of computer room air handlers, installation of variable frequency drives, and steam pressure reducing valve upgrades totaling 5,413 metric tons of CO<sub>2</sub>e. As is shown in table 1, some of the paybacks for these measures are short, even less than 1 year, but some are as long as 10 years. Low ROI or long payback periods are often cited as reasons corporations do not undertake more energy efficiency measures

### *THE BUSINESS CASE FOR SUSTAINABILITY*

While JPM reports its results in CO<sub>2</sub>e reduction, it states in its report to CDP that climate change will not have a major material impact on its products. Rather, JPM is invested in clean technology because of its building energy costs, the potential it sees in the profitability of clean technology investments, and the influence of its stakeholders. JPM owns and operates thousands of branches across the United States, totaling millions of square feet of commercial real estate. JPM also operates a global real estate group and is heavily invested in commercial real estate as an owner, operator, builder, and tenant. Energy use is an enormous expense for commercial real estate, and potential savings in existing US building stock reach billions of dollars.<sup>10</sup> Additionally, JPM's stakeholders have made clear that they see value in addressing climate change. In its report to CDP, JPM states that its 22,000 corporate and investor clients are aware of climate change and if JPM does not address its own carbon footprint, it could damage the company.<sup>11</sup> As a consumer-facing brand, JPM considers this to be an issue that could affect its perception in the marketplace. JPM also states that its clients and investors are interested in investing in clean energy technologies and, as a forward-thinking company, it would be bad business to miss what may potentially be a major investment opportunity. For this reason, JPM has decided to drive \$200 billion in clean financing by 2025.<sup>12</sup>

### *KEY TAKEAWAYS*

- ▶ Consult with or use other organizations to manage projects.
- ▶ Consider retrofits with both short-term and long-term paybacks.
- ▶ Understand the role of public perception.

### *ENDNOTES*

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**H&M**

Hennes & Mauritz AB (H&M) is a multinational clothing and retail corporation based in Sweden with operations in 64 markets on six continents. With 1,826 factories and 4,351 stores globally, it has a large supply chain and significant real estate holdings. H&M has come under scrutiny for being part of the “fast fashion” industry, one that sells trendy, cheaply made goods that will end up in a landfill after a few wears.<sup>1</sup> Despite, or perhaps in response to, the criticism, H&M has developed a set of comprehensive sustainability goals and regularly reports on progress. The company has released a sustainability report every year for the past 16 years using Global Reporting Initiative standards.<sup>2</sup> H&M is also involved in the EP100, a business collaborative that has pledged to double the economic output per unit of energy consumed.<sup>3</sup> Only 13 other organizations share this goal, and H&M plans to accomplish it by 2030.

However doubling energy productivity is not H&M's only energy efficiency goal. H&M plans to have each new store in 2030 be 40% more efficient than its current stores, enroll 20% of its factories in an energy efficiency program by 2018 (and 100% by 2025), and equip 100% of stores, offices, and warehouses with water efficient equipment over the next two years.<sup>4</sup> H&M is in the early stages of the process with goals that are years away, but it has reported incremental progress in recent years.

In 2017, H&M was able to reduce year-over-year energy intensity across all its stores by 2.7%.<sup>5</sup> Through energy efficiency programs in its supply chain, the company was able to save 98 million kWh.<sup>6</sup> This was partially due to work done in the supply chain by Sweden Textile Water Initiative, which included educating suppliers' workforce in reusing water as well as investments in insulation of yarn dyeing and drying machines.<sup>7</sup> The company made significant progress on its goal to install water efficient equipment in its stores, from 24% of facilities in 2014 to 51% in 2016.<sup>8</sup> In 2017, H&M reported to the Climate Disclosure Project (CDP) that it spent nearly \$1 million on energy efficiency improvements and over \$6 million on solar panels for data centers over the past year.<sup>9</sup> Table 1 summarizes the corporation's efforts.

**Table 1. 2016 implementations reported to CDP**

Activity	Estimated annual CO <sub>2</sub> e savings (metric tonnes CO <sub>2</sub> e)	Payback period	Estimated lifetime
Lighting (LED lamps)	5,000	<1 year	Ongoing
Energy efficiency program (Better Mills Initiative) For tier 1 and 2 suppliers	26,724	4-10 years	Ongoing
Bangladesh PaCT energy efficiency program for tier 1 suppliers	5,843	1-3 years	Ongoing
Purchase of GoO and RECs to increase percentage of renewable energy consumed, covering 78% of company operations and cutting emissions by 56% compared to 2015	NA	NA	NA

Source: See note 9.

H&M is also engaging and monitoring its transport partners, working together to ensure the most optimal routes, track energy usage, and push for more efficient trucking and delivery systems. The company determined that transportation represented 43% of its emissions and pledged that 100% of its partners in this sector were following some type of sustainability protocol.<sup>10</sup> In the United States, H&M is working with the Environmental Protection Agency to improve supply chain and freight efficiency through the SmartWay program.<sup>11</sup>

Soon after joining EP100, H&M decided to tackle LED conversions, an effective way to improve energy performance. The Better Mill Initiative, a collaborative project including H&M and other fashion retailers, helped mills in China coordinate and share best practices as well as identify and undertake efficiency improvements.<sup>12</sup> PaCT, led by the International Finance Corporation, H&M, and 12 other global apparel brands, promotes sustainability best practices in factories and finances resource efficiency projects in Bangladesh.<sup>13</sup> H&M estimates Better Mill and PaCT will reduce emissions by over 32,000 metric tons of CO<sub>2</sub>e. By engaging with these third-party programs, H&M overcomes a barrier to the adoption of energy efficiency frequently cited by large corporations, particularly those operating globally: a lack of institutional knowledge about efficiency.<sup>14</sup>

H&M has also incorporated sustainability targets into compensation packages. H&M evaluates senior level employees, including the CEO, on achieving sustainability goals, therefore aligning incentives with sustainability targets.

### ***THE BUSINESS CASE FOR SUSTAINABILITY***

At the heart of its strategy, H&M says that securing its own supply chain and managing resources is smart business. H&M reasons that eventually, it will be under resource constraints because we are using more of the planet's resources than the planet can create. This is why it is promoting clothing recycling and ensuring that the corporation is as efficient as possible with resources like water. H&M states that it wants to decouple revenue growth from resource use. Additionally, H&M is a consumer brand and it realizes that how it is perceived has an impact on sales. H&M specifically states in its reporting that, "as awareness and sensitivity around climate change issues grows, there is a risk that if a company's commitment and/or performance in addressing climate change is perceived as lacking, it could have adverse effects on company reputation, and potentially sales and employee attraction/retention patterns."<sup>15</sup> This knowledge likely drives CEO engagement and its extensive sustainability reporting.

### ***KEY TAKEAWAYS***

- ▶ **Involve supply chain partners and build a coalition of other companies in the industry that share similar supply chain goals.**
- ▶ **Hold c-suite accountable for sustainability goals in concrete ways, like tying goals to compensation packages.**
- ▶ **Invest in low-hanging EE measures first, but do not limit EE activities to these measures.**



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## Energy Efficiency and Corporate Sustainability

### International Business Machines

Technology companies are more likely than other industries to be involved in sustainability, as energy is a common and costly input and their customers routinely want the most efficient product.<sup>1</sup> By one estimate, if the information technology industry were a country, it would be the third largest GHG emitter on earth behind the United States and China.<sup>2</sup> International Business Machines (IBM) has had formalized sustainability plans in place since 1973 and was the first corporation ever to receive the ENERGY STAR® Excellence in Corporate Commitment Award.<sup>3</sup> By incorporating energy efficiency into its own practices, IBM saves tens of millions of dollars and tens of thousands of metric tons of CO<sub>2</sub>e.<sup>4</sup>

IBM has set three goals related to energy consumption:

- ▶ Reduce or avoid energy use totaling 3.5% of that year's total energy consumption, every year (which it exceeded by over 50% in 2016)
- ▶ Get to 20% renewable energy by 2020
- ▶ Reduce CO<sub>2</sub> emissions 35% by 2020 using 2005 as a baseline<sup>5</sup>

IBM is able to accurately measure progress toward its specific targets because it monitors energy consumption data on 90% of its space (and 98% of its total consumption).

IBM also works to ensure that its products are efficient as well. IBM plans to get two-thirds of its new server products certified by ENERGY STAR® and have at least one storage product certified in each of three ENERGY STAR® storage categories.<sup>6</sup>

IBM does a lot of cloud computing work, and data centers have emissions comparable to the airline industry.<sup>7</sup> Currently, IBM is collaborating with Range International Information group to build what will be the fourth-largest data center in the world in terms of energy usage, requiring 150 MW.<sup>8</sup> Because of the large footprint of its data centers, IBM has implemented several measures focused on this area to reach its efficiency goals, as shown in table 1.<sup>9</sup>

Table 1. Energy efficiency projects reported to CDP in 2017

Activity	Estimated annual CO <sub>2</sub> e savings (metric tons CO <sub>2</sub> e)	Annual monetary savings (\$USD)	Payback period	Estimated lifetime
Air flow balancing, temperature adjustments, and virtualization and consolidation of server and storage assets for data centers	43,000	11 million	1-3 years	3-5 years
Equipment upgrades, control systems, and system operation calibrating for HVAC and lighting	15,000	3.7 million	1-3 years	Ongoing

Activity	Estimated annual CO <sub>2</sub> e savings (metric tons CO <sub>2</sub> e)	Annual monetary savings (\$USD)	Payback period	Estimated lifetime
Real-time energy use management and building system recommissioning in central utility plant systems	10,000	2.6 million	1-3 years	Ongoing
Real-time energy use management and building management systems for IBM campuses	5,000	1.4 million	1-3 years	3-5 years
Energy efficiency projects and power management in its cafeterias, printer systems, and workstations	3,000	0.8 million	1-3 years	3-5 years

Source: See note 9.

Targeting efficiency in data centers saves IBM \$11 million per year, with a relatively short payback period. IBM is also utilizing energy efficiency in other facilities, expecting to save \$1.4 million using building management systems. To date, IBM has installed building management systems on 27 campuses and 155 buildings. IBM requires that any location using more than 2,000 MWh/year must use a set of IBM-created best practices checklists and create an energy conservation plan. In 2016, those requirements led to more than 2,000 energy conservation projects at 500 locations resulting in savings of over \$17 million.<sup>10</sup> It is also notable that IBM tracks the dollar savings of each of these endeavors.

IBM also focuses on developing tools and products to help others measure and reduce energy costs, and engages with government agencies in the United States, the European Union, and China to support efficiency requirements and to provide data and testing. Companies like BlocPower have collaborated with IBM staff and used IBM's Watson and cloud-based data science tools to identify key energy usage data in buildings. The resulting product has been used to spur retrofits in 500 buildings in New York City.<sup>11</sup>

IBM is also very involved in setting and promoting energy efficiency legislation and developing best practices. In 1992, IBM became a member of the US Environmental Protection Agency's (EPA) ENERGY STAR® computer program and helped develop the first standards for the personal computer.<sup>12</sup> IBM has also assisted the EPA and agencies in the European Union and China in developing efficiency practices for servers using the Server Efficiency Rating Tool (SERT).<sup>13</sup>

### ***THE BUSINESS CASE FOR SUSTAINABILITY***

IBM's business is selling sustainability services and solutions. One of its core businesses, data storage, is an energy-intensive product. On one occasion, providing a more-efficient product reduced its client's energy usage by 55%.<sup>14</sup> IBM's Building Management Center product allows its clients to better monitor energy usage as well, resulting in energy savings of 5-15%.<sup>15</sup>

### ***KEY TAKEAWAYS***

- ▶ **Precise measurements allow for precise targets.**
- ▶ **Collaborate with others.**
- ▶ **Engage agencies and governments to enact policies benefitting sustainability.**

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