

ENVS 353

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How the Tech Industry is Going Green

A Closer Look Into Google's Renewable Energy Investment Portfolio

In the past couple of decades the US has seen an expansion of technology companies emerge onto the market. Saying they've emerged is a misnomer, though. Some started off as a simple website, some started off in their parent's garage, but none of them are currently operating at that scale. These companies haven't just emerged from their simple roots they have exploded onto the scene. The US tech giants are some of the largest and most successful companies delivering products and services to not only the US but to the rest of the world.

They dominate markets, create massive hype for their next generation products, and they operate at a global scale. Have you caught on yet that I'm emphasizing their scope of business? Well, I'm glad you have because here's where the water needs to be crystal between us: technology companies operate because there is electricity. Most companies need electricity as well, but some need it far more than others. Technology primarily runs off of electricity so without electricity many of these companies couldn't even be in business. To say they've only emerged, to say they truly need electricity is to say that the baby needs milk. You might be able to find another resource for survival, but we all know which one works best.

There's been a lot of conflict and controversy over energy generation in the recent decades as well. One could argue it's been a public debate since before these tech companies, but ironically enough the issues really popped up right about when the tech revolution was starting back in the '60s. The tech

revolution most people are familiar with, the internet revolution of the '90s and early '20s, is the one we'll focus on more. Just keep in mind these have been issues since before I was even born in the late '80s.

The conflict and controversy is over environmental damage and most specifically atmospheric alteration. I'd call it damage, but really what we're seeing is a changing of composition. This changing of composition may or may not damage us as humans, but the Earth herself can likely tolerate many different sets of compositions. This is usually why you hear the term climate change instead of global warming or any other pejorative term regarding global behavior in relation to its environmental impacts. The reason why there's tension over environmental alteration is because there are known health detriments due to the current state of energy generation.

Energy generation is typically run off of a combustion process akin to the process your car uses for its own energy generation for motion. These combustion engines are widespread and primarily run off of scarce resources such as coal, oil, or natural gas. The reason these fuels are chosen is because we've known about them for a long, long time as civilization has developed, and, for the most part, these resources have been pretty convenient and accessible. The issue with combustion as a process, however, is that it's inefficient. It releases a lot of heat which means energy is lost in the process of harnessing energy, but it also releases byproducts most commonly in the form of gases. When you burn lots of coal, oil, or natural gas through a conventional combustion engine process you release carbon dioxide, amongst other chemicals, into the air – CO₂ as it's known. CO₂ is a relatively harmful chemical compound that humans particularly don't utilize well and can harm our health. On the other side, CO₂ is a common chemical that trees and other plants utilize for their own survival and energy generation of which they release O₂ (oxygen oxide) into the air – something we like to breathe .

Without going into too much more detail the majority of energy generation, and specifically electricity generation for using the outlets in your house or office, is run off these massive energy plants that use combustion engines for burning coal and natural gas for powering the country. Oil is mostly used for automobiles and other types of particular engines. So when I say that these tech companies rely on electricity, and that these tech companies are behemoth entities it should click that they draw a lot of energy for creating and delivering those products and services.

As was mentioned earlier, the issues of bringing environmental damage and alteration to the public forefront have been around since before the internet revolution. Most of these companies knew about how the environment could be impacted by corporate decisions even before they started the companies. Yet with a lot of tech companies that startup they try to run their business cheaply which means neglecting some intrinsic values for greater revenue and profit. Some of these companies have brought back their initial value systems of protecting and preserving the environment while still finding a way to run their business in a profitable manner. Or maybe it's the other way around, but regardless they have drawn up plans for investing in our Earth and subsequently our health and lives as participants on this Earth with the rest of the environmental system.

Not all tech giants have "gone green" by changing up how they receive their energy. Some still utilize the public energy plants which still run primarily off of coal and natural gas which harms the environment more so than alternative options such as solar, wind, and geothermal (as the big three renewable sources). Most of these companies that haven't made the switch yet probably will sometime soon because of two reasons: 1.) People in the US are developing a greater environmental consciousness so those that are aware of a company not "being green" they won't purchase from them which hurts their business. Businesses possess incentives to keeping customers not losing them which should, if enough decline occurs, persuade them to "go green". 2.) Most public utility companies are

also going through the process of “going green” by adding solar, wind, and geothermal energy sources to their energy generation portfolio. A number of these utility companies are switching because they either think it’s the right thing or they see the writing on the wall: alternative energy is the future! However, federal and state policy has started initiating plans for forcing the utility companies to use renewable energy sources; so some hands are forced, and they may not like it yet they’ll understand better as time goes on.

A greater portion of the tech giants have actually made a conscious switch to “going green”. There’s obviously a range of how much certain companies have utilized renewable energy and other energy conserving techniques, however, knowing that some are making the switch is better for mitigating the environmental damage and alteration we’re experiencing. Now, keep in mind, though, that some of these tech companies are “going green” at a minimal expense and scale. They’re maybe using more CFL light bulbs or finally started recycling, but just know that some companies are only using the “going green” label as a marketing scheme to keep environmentally conscious customers. Please make sure to investigate and research your favorite brands and most purchased goods and services on whether or not these companies are truly keeping the Earth in mind while doing business.

However, the biggest and most profitable tech companies have “gone green”, though, in a legitimate manner. In fact, the EPA has lists of the companies and how much energy they use is from renewable resources. Of the top 100 companies in the US that made the EPA’s list for green energy use 13 were companies: (1) Intel, (2) Microsoft, (10) Apple, (12) Cisco, (24) Dell, (31) Sprint, (32) EMC, (60) Sony Corp. of America, (69) Motorola, (73) Datapipe, (79) Adobe, (83) AMD, (92) Nokia. The number 10 company in the US for renewable/green energy power use is Apple at 537,393,667 kWh which is 85% of their total electricity use; Microsoft, the number 2 at a staggering 1,935,551,000 kWh which is more than 82% of Apple’s use but only 80% of their total energy consumption; and the best company in the

US for renewable energy consumption is Intel which uses 3,100,850,000 kWh – 38% more than the #2 – at 100% of their total energy consumption. Isn't that amazing? Most people wouldn't think that a large company such as Intel, Microsoft, or Apple could power their entire operations at over 80% with renewable energy. The best part is that they've utilizing consulting companies assisting them in achieving these goals, and they're diversifying their energy portfolios with not just a single renewable source. These top three tech giants all take advantage of solar, wind, small-hydro, biomass, and even biogas.

Now, by this point you might be thinking to yourself, "Hey, but I thought this paper was about Google?" You're thinking that because literally Google, one of the most visible tech companies in the US, didn't even make the list. Google is listed at #73 on the Fortune 500 list yet can't seem to find the way to power more of itself by renewable energy. Intel is number #51 on the list and found a way to do so at 100% of its energy consumption. Sprint, #91 on the Fortune 500 list and #31 on the EPA's green power list, power its company with 176,004,981 kWh of renewable energy (which is only 5% of its total energy consumption but alludes to the size of Sprint comparatively). So why hasn't Google made the switch?

Actually, Google has made the switch, but they're doing so in a much different manner with a different approach. As of 2012, Google has been powering their data centers 35% with renewable energy. Google's data centers also only require roughly 50% of average power consumption when compared to other data centers around the globe make that 35% of renewable energy go a lot farther. Now, the different approach is that they're not just investing money on "going green" for their company they're also investing money on renewable energy projects around the US and the globe to help power other people. Currently Google has assisted in funding 14 renewable energy projects with over \$1 billion of their money. Most of their projects are in collaboration with other investment firms such as KKR or Recurrent Energy but they're still using their company money to help power the world with renewables.

They've funded projects in Texas, Iowa, Oregon, California, obscure yet relevant locations like the Mojave Desert and in the Atlantic Ocean, and even in other countries and continents such as Germany and South Africa.

All of this is fascinating and exciting news since powering the US and the world with renewable energy will help lessen the environmental damage and alteration which are causing problems all over the globe. However, it's interesting to break down why Google might want to invest in energy projects around the globe, even around the US, when it's not directly helping Google become "more green". It's been mentioned already that electricity is a big deal for these tech companies. Without it they wouldn't exist. With more of it they could potentially receive more business.

Google's major revenue source is online advertising on their extremely popular, essentially the #1, search engine. Their algorithm can bring you to anywhere on the internet just by typing in a few keywords. You could be directed to a website just down the street to help you order a pizza, or you could be directed to a website that has information on the breakout of disease in South Africa ... oh wait a tick! Did it click for you, as well?

Google's search engine is the most powerful and most used in the world. Selling ad space is dependent upon people using their search engine. The more searches the more ad space and more revenue for Google. With more people using the internet, and more than likely using Google, that means more searches! Google indirectly benefits if more people have electricity, and subsequently have a computer with internet access. In today's world, even in developing countries, internet access is becoming a rapidly growing priority so it's fair to say that powering the globe means gaining internet access to more users.

Now it would be unfair to assume that this is the primary reason Google is investing in renewable power generation around the US and the globe. Yet that's how businesses work – they have

to consider the bottom line which is revenue and profit. Companies could, and in fact some do, consider the triple or quadruple bottom line which adds in aspects and factors such as environmental impacts. These sorts of factors can affect companies longevity, customer base, and perhaps their own conscience if neglected which is why plenty of them choose renewable energy sources for power consumption and other “going green” techniques.

All of this begs the question, though: Should we truly care about their motives if their actions are displaying some degree of environmental consciousness? After all, switching to renewable sources of energy is a huge step in the right direction and greatly benefits the environment. If those companies make more money by powering the impoverished parts of the world in a sustainable way should we consider them greedy? It’s an interesting topic, and one I hope you ponder. The morality of business choices is subject to plenty of perspectives and rightly so yet it’s hard to not give a company like Google a lot of credit for empowering the lives of people, for bettering the environment, and providing an incredible service to those who need it.

I think I’ll applaud their efforts.