So, You've Set Sustainability Goals, Now What? The Growing While Shrinking Paradox

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ABSTRACT

Climate change has emerged as the world's greatest challenge, and pressure is coming from multiple angles for companies to reduce their carbon impact. The integrity of today's brands is on the line, leaving businesses with the choice to either achieve their net-zero commitments or risk their brand reputation. In meeting these goals, companies must understand the paradox of growing while shrinking: growing their business even as they shrink their carbon impact. There is no perfect solution available today. However, there are viable solutions that large, consumer-facing, transport-dependent businesses can implement now and immediately reduce their carbon impact, The growing need for reduction solutions by this market segment, and the world at large, will continue to drive innovation.

Keywords: *renewables, carbon, climate, emissions, biofuels.*

1 GROWING WHILE SHRINKING

Slowing climate change has emerged as the world's greatest challenge and a serious business problem. Energy and resource consumption is necessary for any business operation, exacerbating the difficult task of businesses to grow even as they shrink their carbon footprint.[1] Carbon emissions related to the industry sector have experienced continual growth due to the burning of fossil fuels.[2] In 2019, the transportation industry sector accounted for 23% of total U.S. greenhouse gas emissions, a 2% increase compared to 2014 industry sector emissions.[3] The increase in industry-related emissions directly contradicts current United States reduction targets, such as the 50-52% reduction from 2005 levels in economy-wide net greenhouse gas pollution by 2030.[4] According to the latest Intergovernmental Panel on Climate Change Report, unless there are immediate, rapid and large-scale greenhouse gas emissions reductions, limiting global warming to 1.5°C will be beyond reach.[5]

1.1 Brand Integrity

The government has tried to improve air quality and drive down fossil fuel dependence by enacting policies like the Energy Policy Act of 2005 (now the Renewable Fuel Standard (RFS)) to Biden's recent Clean Energy Standard. As the world stands on the verge of a climate crisis, it is clear that governments alone cannot get global industries to meet net-zero. Industries and economies are now taking accountability for lasting decarbonizing practices.[6] It is up to today's largest and most influential companies to lead the push to a lower carbon future by incorporating solutions that will allow for an immediate reduction in carbon emissions without compromising business operations. A report by the Energy and Climate Intelligence Unit (ECIU) determines that of the world's 2,000 largest public companies, at least one-fifth (21%) now have net-zero commitments, representing annual sales of nearly $14 trillion.[7] Walmart,[8] Pepsi,[9] and Amazon[10] are just a few of the most influential companies with sustainability commitments. However, the path to reach these goals is not clearly defined, and some companies have even increased their emissions after announcing their pledge.[11] In 2019, Amazon unveiled "The Climate Pledge", a progressive commitment to net-zero carbon emissions across the entire business by 2040 and the transition to 100% renewable energy by 2030. However, in 2020, Amazon's carbon emissions sharply rose by 19% despite the decreasing global carbon emissions due to the Covid-19 pandemic.[12] Amazon publicly disclosed their carbon footprint for the first time in 2019 due to internal and external pressures. In Amazon's annual sustainability report, the company stated that its activities emitted the equivalent of 60.64 million metric tons of carbon dioxide in 2020. An increase from 2019 levels when it reported 51.17 million metric tons.[13] Amazon is not alone.

As new policy mandates are introduced, and consumer and investor pressure for carbon disclosure heighten, companies are pressed to identify and execute a plan that will allow for continued growth while simultaneously shrinking their carbon footprint. To take meaningful action toward their net-zero goals and decrease their carbon impact, companies must get to zero, stay at zero, and take back impact.

2 GET TO ZERO

2.1 Identifying Roadblocks

Companies are facing societal pressure to know the source of their emissions and to take action to mitigate their impact, but many lack a visible path on how to reach net-

zero. This can be seen through the current situation in the Inland Empire region, east of Los Angeles, which covers more than 27,000 square miles of Riverside and San Bernardino Counties.[14] After the 2008 recession, the local government began to invest in warehouse construction to create a distribution hub. As of 2020, the area held a concentration of 711 big-box distribution center buildings, up from 681 the year prior.[15] The distribution centers rely on large diesel fleets, which have been historically difficult to decarbonize.[16] These distribution centers have been credited with causing air degradation in the surrounding area..[17]

Diesel exhaust particles are the primary cause of toxic particle accumulation in towns and cities that lead to acute respiratory irritation. The complete combustion of diesel fuel produces water and carbon dioxide. Incomplete combustion, which is common with older (pre-2007) technology diesel engines, gives rise to the formation of various gases, liquids and solid particles. Additionally, diesel engines produce greater amount of NOx and aldehydes than petrol engines, contributing to air quality degradation. As a result, many of the communities that neighbor these warehouses are now facing respiratory-related illnesses and higher levels of unemployment. And with the growth of the Inland Empire region comes the paradox for businesses in the area to shrink their harmful footprint even as they grow. Pressure to make lasting change has increased from the surrounding community, and the press is taking notice.[18]

The new generation of consumers are taking notice of issues like these as well. Ninety-three percent of generation Z believes brands must take a stand on environmental issues.[19] As 40% of the United States consumer population and with more than $140 billion in spending power, this generation holds a significant influence.[20] So, the integrity of a brand and the leaders who lead those brands are on the line. When a company makes a net-zero commitment, they cannot go backward or they face losing integrity in the eyes of its stakeholders and consumers.[21]

2.2 Quantifying Carbon

A logical first step for a company to get to zero is understanding how far above zero that company currently rests. Managing emissions lies in determining current company-wide environmental impact and reporting carbon emissions on an annual basis. Successfully quantifying emissions can prove challenging, considering emissions are associated with nearly every business operation (direct energy use, energy purchases, and emissions related to the value chain).[22] There are Scope 1, Scope 2, and Scope 3 emissions a company must consider.[23] Specifically, assessing Scope 3, or indirect emissions, in the value chain can prevent some of the worst impacts of climate change while also leading to substantial business benefits.[24] Despite the challenges of addressing indirect emissions, companies can respond to the increasing investor, customer, and societal pressure while mitigating value chain risk and driving innovation.[25] Continual assessment and reporting are a necessity to quantify and report company-wide emissions successfully. As environmental, social, and governance (ESG) initiatives become incorporated into the corporate structure, big consulting houses are establishing new ESG services and data analytics firms are launching new offerings to deliver the emissions statistics corporates must in clude in annual reports.[26] However, expert guidance without data and data without expert guidance leads to an incomplete solution. The sustainability leads responsible for their company's net-zero commitments need real-time data on carbon use and reductions and a trusted advisor to help make them make improvements every single day. Without a complete solution, corporates are getting increasingly further behind on their net-zero commitments.

2.3. Achieving Goals and Targets

Determining current emission levels will prove valuable for establishing targets and goals, an increasingly important task considering companies worldwide are pledging net-zero commitments. Once a company makes a net-zero pledge, they must then set interim targets along with a related timeline, that allows for them to begin taking the necessary steps needed to achieve these goals. Achieving such targets can be a lofty task. For this reason, innovative, cost-effective solutions that do not significantly compromise existing operations remain a crucial component in moving toward sustainable operations. However, simply announcing a net-zero pledge is not enough to drive impactful change, as these commitments must be backed by action and measurable progress. Many commitments made by large corporations thus far have been driven by the fear of brand damage or the potential of receiving public scrutiny. Once a company publicly states their net-zero commitment, they cannot go backwards on their pledge, or they face losing brand trust and loyalty.

Currently, there are two main ways to reach net-zero: buying offsets or reducing carbon emissions in a company's direct operations. Carbon offsets are an accessible temporary solution to compensate for a company's emissions, however, the challenge with offsets is that the responsibility of reduction lies with an outside party, hindering the behavioral change a company needs to make for impactful reductions.[27] If a company only purchases offsets to meet a minimum requirement, there is no incentive to make sustainable changes to its operations.[28]

There are several options available to assist companies in decreasing their carbon emissions:

- The use of electric vehicles
- Purchasing carbon offsets
- Switching to renewable energy sources, and
- The transition to low-carbon fuel solutions.[29]

The transition to low-carbon fuel solutions is one option that allows for an immediate reduction in GHG emissions.

2.4 The Use of Biofuels

Low-carbon fuels offer an immediate solution that is consistent with both GHG reduction goals and pollution reduction.[30] These fuels, consisting of renewable diesel, biodiesel, and sustainable aviation fuel (SAF), generate significantly less greenhouse gas emissions than fossil-based fuels and have other favorable environmental aspects including, biodegradability in the environment.[31] Biofuels hold an important role for company's seeking to lessen their carbon impact by diversifying energy sources. Biofuels are drop-in fuels, meaning they function similar to fossil-based fuels and can be used in existing infrastructure without any modifications.[32] Low-carbon fuels, therefore, offer a practical solution for companies that rely on large fleets but are far from electrification or other renewables that require infrastructure change.[33]

Though electric vehicles (EVs) play an integral role in diversifying clean energy strategies, it can be difficult for businesses to integrate EVs on a large-scale due to the significant upfront investment associated with the cost of this technology.[34] While state and local policy encourage the use of battery-electric and hybrid vehicles, increased reliance on battery and electric technology may strain the electrical grid, at least in the near and medium term.[35]

Low-carbon fuels have also demonstrated lower carbon emissions compared to other energy sources, including electric vehicles. As **Figure 1** indicates, several renewable biofuel feedstock sources, such as used cooking oil, sugarcane, and corn oil, have low carbon intensities in California. In contrast, the California electric grid's carbon intensity is 81.5 gCO2e/MJ, when used to power an EV is the equivalent of 24 gCO2e/MJ as shown in Figure 2.[36] However, as Figure 3 shows, the California grid has about half the carbon intensity of the U.S. average. Biofuels serve as an immediate carbon reduction solution, and may also result in lower GHG than an electric vehicle (depending on the local electric grid carbon intensity). These characteristics are leading many business operations and fleets to adopt sustainable biofuels as part of the mix of solutions that will decrease greenhouse gas emissions.

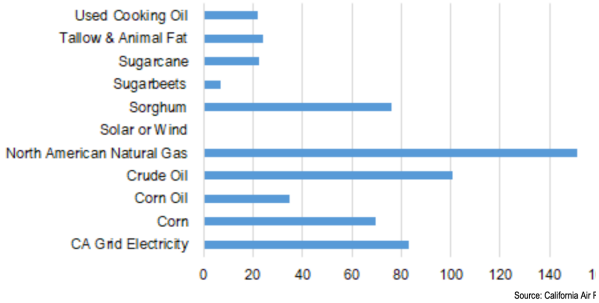

Figure 1: [37] Certified Max Carbon Intensity (gCO2e/MJ).[38] Low-carbon fuels offer the solution needed now, as the green energy industry continues to innovate to increasingly better solutions.

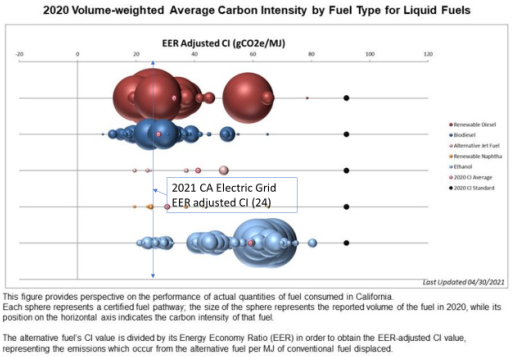

Figure 2:[39] 2020 California Volume-Weighted Average Carbon Intensity (CI) by Fuel Type For Liquid Fuels vs CA Electric Grid CI

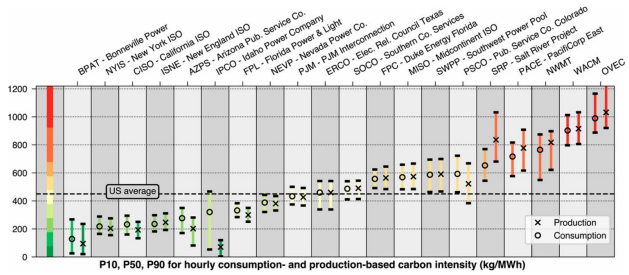

Figure 3:[40] Regional Power Grid Carbon Intensity

3 STAY AT ZERO

3.1 The Push for Disclosure

At present, the push for corporations to actively disclose carbon emissions and clean energy strategies is becoming increasingly prevalent, as companies are motivated by market forces, external accountability standards, and shareholder pressure to divulge this information. Although this initiative is mainly coming from the private sector, policymakers are quickly recognizing the value and advantage associated with carbon disclosure and starting to implement framework that mandates company disclosure of this information.[41] Disclosure of emissions is another step in holding companies accountable to take immediate action. When a company makes a net-zero commitment, it cannot go backward or it loses integrity.[42]

3.2 The Benefits of Incorporating Sustainability Metrics

Incorporating sustainability metrics into the company framework will inherently lead to immense value creation, such as facilitating growth, securing a new customer and investor base, reducing overall costs, and optimizing

investment and capital expenditures.[43] For this reason, companies are beginning to adopt ESG metrics into their company framework. Although measuring, updating, and implementing improvements will likely require higher initial costs, the long-term benefits associated with these improvements can lead to significant company improvements.[44] Consumers are becoming increasingly conscious of their carbon footprint and, therefore, actively making informed purchasing decisions and favoring companies willing to disclose carbon data. Investors, too, are actively seeking companies that align with their core values especially climate change efforts.[45] Because markets are actively changing, companies must constantly adapt to account for new and changing demand and market forces.

Transparency and the ability to verify and quantify carbon use and reduction will be critical for companies as they progress toward their net-zero goals. With real-time progress data, companies can quickly assess shortcomings and tune their operations, so they stay on track or make improvements to speed their timeline. Without this level of operational insight, ineffective reduction methods may go unnoticed.

4 TAKE BACK IMPACT

4.1 The Monetary and Community Benefits of CO2 Reduction

The use of biofuels presents many benefits to the community especially regarding improved air quality and public health. Biofuels are clean burning, with no sulfur and less soot generating hydrocarbon compounds found in conventional fossil fuels. On average, biofuels reduce:

- CO2 by up to 80%
- Oxides of Nitrogen (NOx) by up to 10%
- Particulate matter (PM) by up to 35% and,
- Oxides of sulfur (SOx) by up to 100% relative to fossil-based fuels.[46]

Such solutions can largely benefit regions plagued by poor air quality and respiratory illness, such as Inland Empire. Many of the warehouses in the region rely on diesel powered fleets allowing for a seamless transition to biofuels and an immediate reduction in GHG emissions.[47]

Biofuels are safer than petroleum fuels because they biodegrade more rapidly than petroleum-based fuels. In the case of a spill, biodiesel in its pure, unblended form causes far less damage to the environment than petroleum. The flashpoint for biodiesel, for example, is higher than 130°C, compared to about 52°C for petroleum diesel.[48] For this reason, biofuels are safer to handle, store, and transport.[49]

Biofuels are produced using a variety of biomass-based feedstocks: used cooking oil, soybeans, and waste animal fats, to name a few. As a result, biofuel production relies on and supports rural farmers throughout the United States. Increasing biofuel production has substantially benefited rural America through job and value creation. As of 2021, the biodiesel industry supports more than 60,000 American jobs, with this number consistently increasing as the industry experiences growth.[50] Biofuels present economic benefits in manufacturing, service, transportation, and agriculture, all while reducing GHG emissions.

4.2 IKEA Case Study

IKEA serves as a strong example of a company that grew its business while incorporating sustainability metrics into its company framework, thus reducing its carbon emissions. IKEA assessed their value chain for points where their carbon footprint could be decreased and took steps to do so.[51] Currently, the carbon footprint of IKEA is about 0.1 percent of the global emission of carbon. However, the company addresses the need for change and is currently transforming its business operations by examining its entire value chain and looking for opportunities for improvement.[52]

CONCLUSION

While there is no perfect solution today that aligns business growth with carbon reduction, several available solutions that can start companies in driving down the road toward their net-zero goals. The key to the shrinking while growing paradox lies in getting to zero, staying at zero, and reducing impact. Net-zero will be a competitive differentiator for companies serious about climate change. The pressure for companies to remain committed to their net-zero goals is a driving factor in solution innovation, market, and price. The pressure will be unrelenting, and brand integrity and, with it, business success, will continue to be on the line until leaders can verify and quantify that they got to zero, stayed at zero, and took back impact.

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