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The Cost and Benefits of Measuring Sustainability

Julia R. Sweeney

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ABSTRACT

The cost of not adopting sustainable measures is growing exponentially. The world-wide economic impact of global warming crises affecting trade, supply in products, availability of fossil fuels, and (input) prices for goods and services makes moving towards renewable energy and sustainability more imperative than ever. Discussions and initial commitments to reduce global warming has been an important first step in creating a sustainable future; however, corporations now need enforceable policies and procedures to remain accountable.

KEYWORDS: SUSTAINABILITY, BENEFITS OF GOING GREEN, COST, GOVERNMENT

INTERVENTION

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

I. INTRODUCTION

The concept of sustainability has been prominent for centuries but, recently, it has become an integral part of business operations. Consumers are increasingly (more) conscious of where they spend their dollars, and they are demanding that companies act in sustainable measures. Simply by creating sustainable practices within a business can foster goodwill with consumers.

According to the online Harvard Business School, sustainability in business refers to two main areas: (1) the effect that business has on the environment; and (2) the effect that business has on society. Businesses that incorporate appropriate measures within their strategy in an effort to create a positive impact on the environment and society, can actually drive success (Spiliakos, 2018).

In a report titled Our Common Future (1985) sustainability is defined as “meet[ing] the needs and aspirations of the present without compromising the ability to meet those of the future.” Sustainability encompasses more than the natural environment. It includes a corporation’s strategic development and social equality. These two ideas have merged to become what is now considered corporate social responsibility and “refers to a company’s commitment to practice environmental and social sustainability and to be good stewards of the environment and the social landscapes in which they operate” (McCombs School of Business). This paper describes sustainability methods consumers and businesses have adopted to date while addressing the increased need for global changes around the world.

Over time, sustainability has become a household concept. Excessive media coverage contributes to the understanding of what sustainability is and why we should be concerned

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

about it. Further, there have been worldwide meetings between countries electing to participate in sustainable practices and pledging to reduce carbon emissions and plastic consumption, among other important measures. The Paris Agreement's main aim is to reduce the rise in global temperatures (United Nations Climate Change, n.d.). Further, the Agreement encourages conservation of reservoirs and forests, as well as averting or minimizing extreme global weather events. To date, 189 parties have ratified the convention.

Sustainability encompasses everything from reducing emissions, using alternative fuels, reducing consumption of resources, recycling, composting, and other similar actions and measures. As individuals move away from non-renewable resources like petroleum, oil and gas in their homes and at their businesses, the world is slowly embracing clean energy that is deemed renewable. These renewable forms of energy use resources that are abundant, deriving power from sun, wind, water, geothermal and biomass (Arslan, 2017).

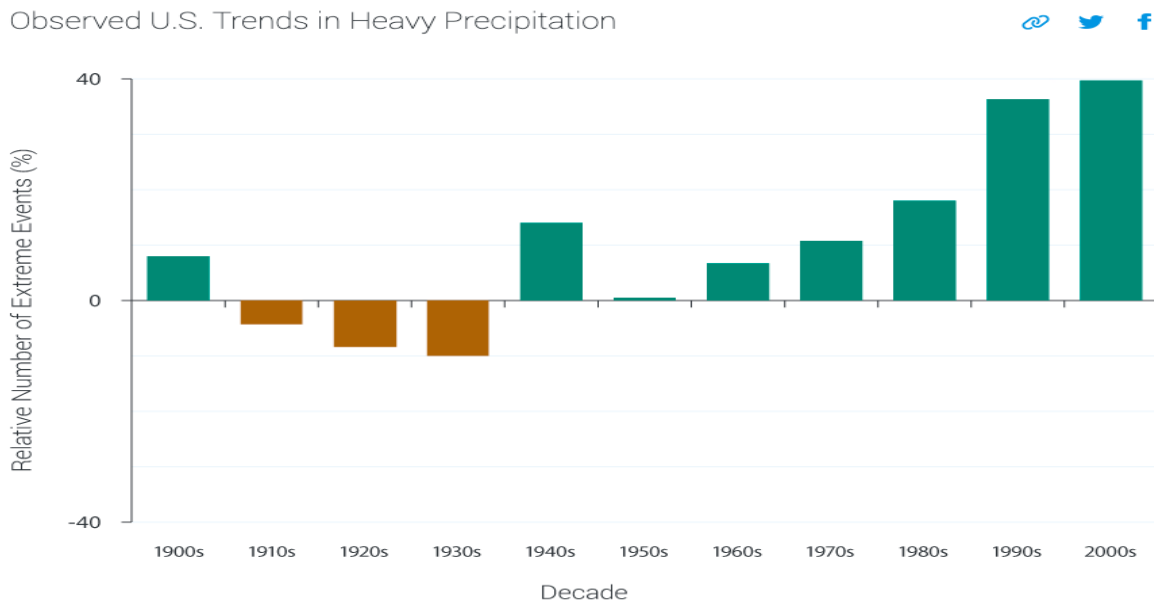
Not only are countries and businesses creating sustainable practices in their products, supply chains and warehouses, consumers are now taking sustainable measures into their own hands. The average consumer knows to avoid buying plastic straws and other single use plastics, and they are choosing to spend more of their hard-earned dollars on products labeled "organic" or "green".

II. COST

The cost of implementing sustainable practices can be higher than traditional fossil fuel counterparts, but the consequences of not adapting are dangerous. The impact that humans have on the environment can be seen around the world - these costs are impacting local cities

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

and countries. Australia has seen recent (heretofore unheard of) droughts and wildfires, the climate has been warming for decades resulting in changes to farmland, hurricanes in the Caribbean, Sub-Saharan African cyclones (Crabb, 2020), increased winter storms throughout North America, heavier droughts in Texas and Oklahoma, and increased rainfall in the Great Plains (Extreme Weather, n.d). From Extreme Weather, Figure 1 illustrates the observed trends in rainfall for the last century and shows the drastic increase in rainfall in the United States. This increase can be directly attributed to global warming.



The vastly different weather patterns that have been linked to climate change are not only causing extreme environmental damage, but health and economic implications as well. Research has shown that the mass outbreak of Zika and Ebola viruses are in relation to climate change, and there is anticipation that the coronavirus may also be linked to the warming of the globe. “Scientists have long warned that climate change could lead to more diseases transmitted by insects as warmer weather allows them to breed faster and live longer” (Henry, 2016). A simple change in one-degree Celsius allows animals more area to roam and can cause

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

a greater chance of infection for the larger population to which they have been exposed. In addition, less resources have human beings and animals competing in much closer quarters allowing for easier transmission of potentially deadly diseases - such as bats which is believed to have caused Ebola (Deese & Klain, 2017).

Our globalized economy is also feeling the effects of the extreme weather localized instances. Harvard Business Review shares that more than \$1.5 trillion dollars globally is at risk because of the continued repercussions of climate change (2017). With markets intertwined, these problems can cause economic effects resulting in risk for economies, markets, and human welfare. Further, if companies do not start integrating sustainable alternatives in their product development, their continued business operations could potentially be at risk. Water scarcity and heat stress can directly impact companies' abilities to produce products, access raw materials, or result in volatile food prices (Scott, 2019). It is no longer enough to simply become a recognized "sustainable" company; it is now necessary to adapt policies and processes, and find certified suppliers to maintain long-term profitability.

"There exist three forms of fossil fuels: coal, oil, and gas, which were part of living prehistoric vegetal and animal life. Now they are being consumed or spent at a rate millions [of] times faster than they were formed" (Castillo-Mussot, Ugalde-Vélez, Montemayor-Aldrete, Lama-García, & Cruz, 2016). These fossil fuels take millions of years to form naturally (McLamb, 2011) but over-consumption of fossil fuels is mandating the introduction of other viable energy alternatives to sustain the rate of global economic progress.

The natural environment is changing daily because of human activity. If businesses want to remain relevant, they have to make a change towards sustainability (Wingard, 2019). Many

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

businesses are monopolizing on the “green initiative” and creating products for consumers that reduce consumption. “Practically any lifestyle product you can think of has a more sustainable alternative,” (Benveniste, 2019) but the cost of these products is out of reach for the average consumer. “Few consumers who report positive attitudes toward eco-friendly products and services follow through with their wallets. In one recent survey, 65% said they want to buy purpose-driven brands that advocate sustainability, yet only about 26% actually do so,” (White, Hardisty & Habib, 2019). This produces another cost to entering the green market and provides another hurdle when tackling sustainability measures. Consumers are not interested in sacrificing quality or low-prices to go “green”, leading to competing metrics for a company to reach. Thus, the trade-off between profitability now and profitability later gets much more complicated resulting in reduced incentives for companies to act in a true sustainable fashion. Some may even label products as sustainable even when that often is not the case.

“Since the U.S. economy does not regularly impose a price on pollution, shopping in a “green” way is still a matter of consumer (or corporate) choice. That spells trouble in the long term, even in a world where most people are environmentally conscious” (Ivanova, 2019). The environment almost never wins when it comes down to consumers making a trade-off between a higher priced product or more dollars in their pockets (Ginsberg & Bloom, 2004). The immediate costs to implementing sustainability measures essentially act as a preventative measure for businesses, organizations and the government to effectively choose to go “green”. Instead, rather, the focus on sustainability initiatives is transferred to the average person with conversations about and promotions for recycling, composting, and reusing materials. One person who makes a change in their life is a great help, but the masses have to implement

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

change in all facets to truly see a drastic effect on the environment. Without governments intervening and participations in partnership, it is a merry-go-round of who is tasked with creating and implementing meaningful and lasting change.

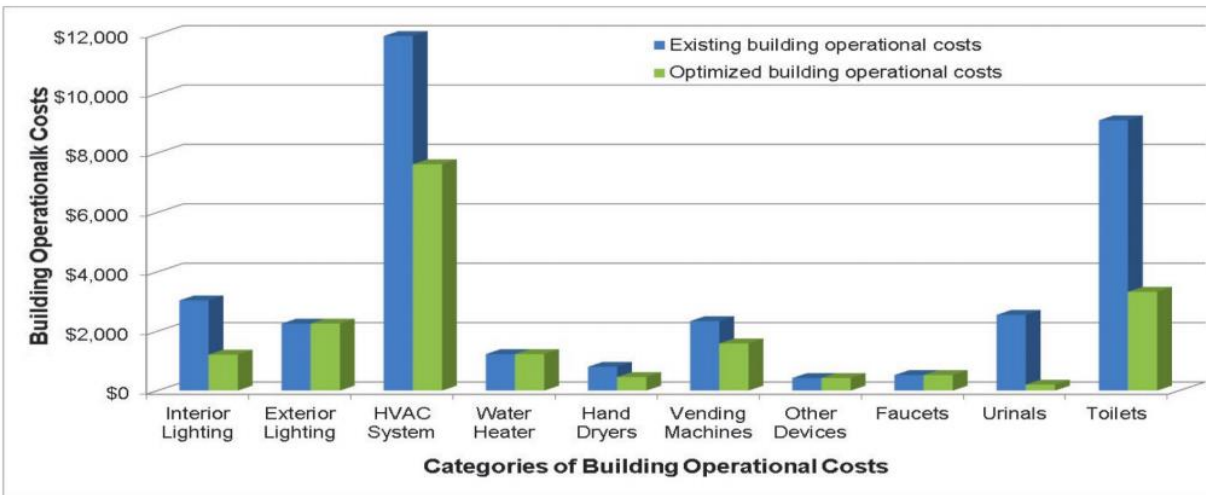
III. BENEFITS

Although cost is a huge factor in moving towards a more sustainable lifestyle, some consumers and businesses are choosing to pay upfront for a long-term profitable decision. The first step is getting beyond the initial change towards a more sustainable business and realizing it will not be the most immediately profitable practice. In fact, looking at how to reduce CO2 emissions may require redesigning the supply chain, an admittedly costly endeavor now, but “businesses are realizing that sustainability could mean avoiding steep costs due to future environmental changes” (UNIBusiness, n.d).

Figure 2 (Abdallah, El-Rayes, & Liu, 2016) illustrates the reduced cost and, thus, the benefits when choosing to integrate “green” and sustainable products during construction. By choosing to add motion sensors, ground source heat pumps, water saving toilets, and solar (PV) power, the yearly cost of the building is drastically reduced. Blue indicates the current operational costs versus green which shows how much can be saved by implementing “green”

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

measures.



Over the past two decades, the cost to implement alternative energies has fallen significantly, and they are now rivaling costs for standard fossil fuels. Hydroelectric power is currently the cheapest source of renewable energy, at an average of \$0.05 per kilowatt hour (kWh), followed by onshore wind, solar photovoltaic (PV), biomass and geothermal energy which usually average below \$0.10/kWh. Offshore wind costs are roughly \$0.13/kWh. All of these costs are in-line with fossil fuel counterparts, which range in price from \$0.05/kWh to more than \$0.10/kWh. The most attractive alternative energy sources include onshore wind and solar power. IRENA, the International Renewable Energy Agency, suggests that these two alternative energies will produce power at a level cheaper than oil or gas, without government help (Dudley, 2019).

An outstanding example of an organization taking steps to implement sustainable practices and the benefits they have received from doing so is the Turtle Mountain Community College located in North Dakota. For the past decade, they have been developing an infrastructure for sustainability that initially resulted in thousands of dollars saved per year.

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

Now, they produce more energy than they consume (Davis, 2019). The entire complex is heated and cooled by geothermal energy that is monitored by thermostat sensors. In 2008, they added a wind turbine to campus. Next, they tackled the mechanical system which resulted in a decrease of \$3 to \$1 per square foot to heat and cool their campus. They invested in LED lighting and are now exploring the addition of solar panels.

Transitioning to renewable energy sources is more than just financially sound, it is economically sound. The renewable energy sphere has vastly contributed to an increase in the number of jobs around the world. From CleanTechnica, more than 10 million people are employed globally in renewable energy sources with solar power accounting for over 3 million people. In fact, renewable energy requires more labor than traditional energy sources while remaining cheaper for the end consumer (2018).

The economic benefits go even further, stimulating the global economy. Estimates anticipate that moving toward more renewable resources can impact GDP by 1.1% or \$1.3 trillion annually (Richardson, 2018). IRENA, states “for fossil fuel importers, the switch to a greater share of renewables has potentially favourable trade implications stemming from the ripple effects on their economies” meaning that renewable sources are not as susceptible to huge swings in costs due to trade patterns (2016).

Another benefit to implementing renewable sustainability measures includes the advancement of human welfare. Millions of people around the globe live in poor conditions. Providing low-cost access to renewable electricity will benefit lives for the better (Richardson, 2018). Implementing solar panels in Africa or wind turbines on rural farms around the globe would create jobs, thereby encouraging a great reduction in poverty. Reducing dependence on

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

fossil fuels would also decrease societal costs to our nation. By eliminating the use of coal there would be a vast decrease in public health damages from NO_x, SO₂, and mercury emissions, as well as lowering fatalities in coal mines (Tyler, 2011). This Harvard study conservatively estimates these costs total \$500 billion a year in the United States alone. Imagine the benefits that would be felt around the world if fossil fuel use was eliminated.

Adopting sustainable practices globally has more than ecological effects. Studies prove they have excellent economic and social effects as well. The benefits of moving to a more sustainable future vastly outweigh the costs associated with implementing sustainable practices.

IV. IMPLICATIONS / FUTURE RESEARCH

One of the major implications of sustainability is the lack of a clear definition of what becoming sustainable actually means. The lack of communication also prevents true accountability and consistent standards across businesses and nations (Frazee, 2019). Knowing that sustainability is important has been realized but, moving forward, governments need to become involved in creating a true measure of sustainability in businesses.

Spotlight on Sustainable Development monitors the progress the world has taken in its approach to achieving sustainability. Unfortunately, “four years after the adoption of the 2030 Agenda the world is off-track to achieve the Sustainable Development Goals (SDGs). Most governments have failed to turn the transformational vision of the 2030 Agenda into real transformational policies” (2019). The 2030 Agenda and the Paris Agreement are similar in their approach to mandating a universal policy change to reduce global warming, but governments

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

now must step up and reorganize policies and procedures to track true sustainable measures in businesses and in their own government operations. The *Spotlight on Sustainable Development* also highlights that some regression has actually occurred due to recent economic problems that have affected the global economy. Governments are stepping in to help the economy which can be at the cost of the environment, and the people.

Another issue is determining the impact of sustainability. Altering operations by changing supply chain tactics or even moving to a more expensive raw material is a costly input that may not pay off until years later. Determining how to measure initial costs and long-term profitability is essential to the continued adoption of better practices.

No less important, truly adopting a sustainability mindset is ultimately the practice of encouraging reduced consumption. Companies should aim to create better, longer-lasting products that can be repaired or recycled into something with a similar value. However, this major tenet of sustainability effectively reduces long-term profitability for any company, something they may be reluctant to embrace. Therefore, rallying behind true sustainability means companies will need to pivot from just producing products, to also repairing, refinishing and refurbishing products at a lower price. Ultimately, consumers should have a well-made product that lasts for years, reduces the cost of use, and can be efficiently refurbished or even restored.

V. CONCLUSION

In conclusion, the world has taken some major steps to reduce the human impact on the globe. However, more work is needed. The cost of insufficient action has become more

THE COST AND BENEFITS OF MEASURING SUSTAINABILITY

apparent in recent years with the increase of droughts, fires, hurricanes, outbreaks, and so much more. As consumers are becoming more aware of sustainable products, businesses are adapting to fit the bill. However, it is now up to governments to become more involved by creating policies to prove that companies and people are actively participating and affecting climate change.

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