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Business Sustainability: An Analysis of Three Enterprises in Charlotte, North Carolina

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ABSTRACT

Sustainability is defined in varying ways by businesses for reasons such as industry, stakeholder expectations, compliance, and other factors. In this case study, three companies, Domtar, Duke Energy, and Nucor, are examined on their approach to reporting and practicing environmental, social, and economic sustainability. Content analysis was used to identify themes in corporate paid, owned, and earned media. Interviews with facility managers were used to understand how management implements sustainable practices on a facility level. This case study examines in detail how these companies use different language, tools, and systems to progress sustainable development in a globalized economy. Results showed that in earned media, companies were socially and economically analyzed and not environmentally, unless responding to a crisis. In owned media, companies organized their sustainability priorities in a way they believed most represented their company. In sustainability reports, the more complicated the business portfolio, the more complicated it becomes to differentiate data sets. On all three reports, the most under-reported pillar of sustainability was environmental. All three companies have a huge ecological footprint and very general data regarding it is reported.

INTRODUCTION

Sustainability is a concept that recognizes and aims to balance the complex relationships between ecology, economics, and social equity. In today's society most consumers are not informed where product materials are sourced and what conditions products are manufactured in. With technological innovation and the human race experiencing an exponential growth in population, the world is more connected than ever before in history. Yet world trade operates with very little transparency towards environmental impact. Often sustainability is used as a marketing tool calling consumers into action via purchase of an environmentally branded product. Consider how many times you have seen a brand incorporate shades of green and imagery pertaining to nature in an advertisement. This type of marketing is often used on a product that has sustainable elements but also has externalities and unaccounted for consequences on communities and ecosystems around the world.

As of 2015, Charlotte, North Carolina has an estimated population of 809,958 as the

city grew by 2 percent between 2013 and 2014 (Bell, 2015). The Charlotte Observer reported that among the 50 biggest U.S. cities, Charlotte's 10.7 percent growth rate between the 2010 census and 2014 topped all but Austin, Texas and New Orleans, Louisiana. Charlotte is well-known for a pro-business environment. Seven Fortune 500 companies are headquartered in the Charlotte Metro area, along with 9 other companies on the Fortune 1000 list (Charlotte Overview, n.d.). Charlotte Douglas International Airport is the world's sixth most-active airport in terms of takeoffs and landings and the nation's eighth busiest in total passengers (Charlotte Overview, n.d.). Charlotte clearly has a large influence economically and socially, but how invested are they in environmental sustainability?

The purpose of this research is to understand how three enterprises with headquarters in metropolitan Charlotte, NC interpret sustainable development using a case study approach. The companies incorporated into the sample are Domtar, Duke Energy, and Nucor. By using a case study approach, it will examine in detail how companies use different

tools and systems, internally and externally, to progress towards sustainable development in a globalized economy.

Sustainability Defined

Sustainability first became an international concept in 1983 when the United Nations established the World Commission on Environment and Development (WCED), also known as the Brundtland Commission. Their document entitled *Our Common Future* published in 1987 firmly placed sustainable development on the political agenda. The report weaves together social, economic, cultural and environmental issues and global solutions.

As defined by the United Nations, it is the “development which meets the needs of current generations without compromising the ability of future generations to meet their own needs” (“Our Common Future,” n.d.). Sustainability looks to protect human and ecological health, while driving innovation and not compromising our way of life. In the Brundtland Report, the description of sustainability is further elaborated through *The Three Pillars of Sustainability Model*. The three pillars illustrate the environmental, economic, and social elements that create the need and rationale for sustainability. Environmental sustainability is the rates of renewable resource harvest, pollution creation, and non-renewable resource depletion that can be continued indefinitely. Economic sustainability is the ability of an economy to support a defined level of economic production indefinitely. Social sustainability is the ability of a social system, such as a country, government, or city, to function at a defined level of social well-being indefinitely (“Sustainability,” n.d.). Social sustainability becomes an increasingly important issue as population increases. The current world population is 7 billion and is expected to rise to 9 billion by 2050, with many still living on less than \$2.00 a day (“Sustainable Development,” 2011).

These three pillars work together to create a sustainable solution to modern problems. Most problem solving efforts toward sustainable practices focus on only one pillar at a time. Agencies and sectors were designed to “divide and conquer” issues, but often issues of

sustainability cross disciplines, regional laws, international laws, etc. For example, the United Nations Environmental Programme (UNEP) and the Environmental Protection Agencies (EPA), focus on the environmental pillar. The World Trade Organization (WTO) and The World Business Council for Sustainable Development (WBCSD) focus mostly on economic growth. The United Nations works to incorporate all three pillars into resolutions, but due to its complex decision making process, shortfall of authority, and scarcity of funding, it has minor impact.

Sustainability uses system thinking as a methodology of solving problems. Economics, biology, and social structures all operate under varying yet interconnected systems. Often issues of sustainability go beyond that of the three pillars and relate to other disciplines and fields. Systems thinking allows problem solvers to be interdisciplinary in finding sustainable solutions to modern issues. Although increasing acceptance of the interdisciplinary nature of the issue of sustainability is a source of encouragement, there is a danger that the prevailing conflicts of views about the environmental crisis, which arise from being locked within the reductionist way of thinking, may harden into inflexible and polarized oppositions (Mebratu, 1998).

Sustainability operates around the Gaia Theory, which generally states that everything in nature, including living and nonliving elements, is interconnected. The Gaia hypothesis has contributed to replacing the image of the “Earth as a machine” with the image of the “Earth as an organism” (Mebratu, 1998). Norwegian philosopher, Arne Naess identified the deeper roots of the environmental crisis in Western culture and, in particular, in the cultural values legitimizing the domination of nature (Braidotti et al. 1994). The contribution of the Gaia theory is to highlight interdependencies within and among the organic and inorganic world and to focus on Gaia-centrism instead of on anthropocentrism, competition, and individualistic aggression, typical of some other biological and social theories (Mebratu, 1998).

Evolution of Sustainability

Our Common Future (1987) was produced through an international collaborative effort and created a political change in sustainable development, but was not the starting point of the conceptual development process of sustainability. Thomas Robert Malthus (1766-1834) is considered the first economist to foresee the limits to growth caused by resource scarcity. According to Malthus's population theory published in his book *Essay on Principle of Population* (1798), the vices and misery that plague society are not due to evil human institutions, but are due to the fertility of the human race (Mebratu, 1998).

In the 1970's, the world began to realize the implications and consequences of the global population, resource exhaustion, corporate concentration, and the corresponding diminution of individual liberties. The 1972 United Nations Conference on Human Environment in Stockholm, which recognized the "importance of environmental management and the use of environmental assessment as a management tool" (DuBose et al. 1995), represents a major step forward in development of the concept of sustainable development. Major issues discussed were the responsibilities of governments and citizens to the protection of natural resources and biodiversity, the reduction of pollution, and the dedication to economic and social development. At the same time the Club of Rome, formed by stakeholders, citizens, and scientists, created a comprehensive report on the state of the natural environment. Terminology like "eco-development" emerged. The first major breakthrough in conceptual insight came from the International Union for the Conservation of Nature (IUCN). IUCN is the world's oldest and largest global environmental organization, with almost 1,300 government and NGO Members and more than 15,000 volunteer experts in 185 countries ("About International," n.d.). Working closely with the World Wildlife Fund for Nature and The United Nations Environment Programme, IUCN formulated the World Conservation Strategy, which was launched internationally in 1980. This was a major attempt to integrate the environment and development concerns into an

umbrella concept of "conservation" (Mebratu, 1998). In the *World Conservation Strategy*, conservation is described as "For if the object of development is to provide for social and economic welfare, the object of conservation is to ensure Earth's capacity to sustain development and to support all life" ("World Conservation," 1980).

This led to the formation of UN World Commission on Environment and Development (WCED), also known as the Brundtland Commission. Their document entitled *Our Common Future* defined sustainable development and the conceptual definition contains two key concepts:

- The concept of "needs," in particular the essential needs of the world's poor, to which overriding priority should be given; and
- The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs ("Our Common Future," n.d.).

The WCED established the three pillar model of sustainability by highlighting the strong relationship between poverty alleviation, environmental improvement, and social equitability through sustainable economic growth. Although the WCED created a consensus on the definition of sustainable development, it remained too broad and every stakeholder interprets it differently in application.

The United Nations Conference on Environmental Development (UNCED), also known as the Earth Summit and Rio Conference, was held in Rio de Janeiro in June 1992. Delegates of the Earth Summit established the Commission on Sustainable Development (CSD) and Agenda 21. Agenda 21 is the voluntarily implemented action plan of the United Nations with regard to sustainable development ("AGENDA 21," n.d.). In 2013, the CSD was replaced by the High-level Political Forum on Sustainable Development (HLPF) that meets every year as a part of the ECOSOC meetings, and every fourth year as a part of the General Assembly meetings

“General Assembly,” 2015). The HLPF provides political leadership and recommendations for sustainable development.

Business and Sustainability

Business is the study of the production and distribution of goods and services with the individual functioning as an autonomous, rational, and self-interested actor (Repko, Szostak, Buchberger, 2014). Sustainability of business is when a business has minimal negative impact on the global or local environment, society, government, and economy. The World Business Council for Sustainable Development (WBCSD) is a CEO-led, global advocacy association of some 200 international companies dealing exclusively with business and sustainable development. As stated in the charter of WBCSD, “Business leaders are committed to sustainable development, to meeting the needs of the present without compromising the welfare of future generations. This concept recognizes that economic growth and environmental protection are inextricably linked, and that the quality of present and future life rests on meeting basic human needs without destroying the environment upon which all life depends” (Schmidheiny, 1992).

The law of unintended consequences states that decisions often have unanticipated – or unintended consequences (Acarglu, 2013). In business this is called an externality, which is the cost or benefit that affects a party who did not choose to incur that cost or benefit. An example of this is air pollution effects on citizens from burning fossil fuels at a nearby plant. Business sustainability aims to eliminate unanticipated consequences, unintended consequences, and externalities.

There are numerous business models that aim to encompass environmental concerns, and more broadly incorporate social responsibility. These business models vary across industry, market, and regions. It is important to note what kind of business model is present in regards to sustainability to access its functionality. At the most basic level there is voluntary reporting on environmental and sustainability performance. Reporting standards continue to be an issue, but a consensus is slowly emerging to use the Sustainability

Reporting Guidelines issued by the Global Reporting Initiative (GRI) standards (Strasser, 2011). A second option is companies joining voluntary performance standards programs. Participants in these programs make a commitment to improve their environmental efforts by one or more specific metrics. As a third option, companies create internal company-initiated management systems called Environmental Management Systems (EMS) that are designed to organize and implement a company’s environmental protection efforts and move its environmental performance to government compliance and beyond. Lastly, there is negotiated compliance with legislative or regulatory environmental protection programs, where compliance is commanded by public authorities.

Sustainability in the United States

In the United States, the most notable agencies that control environmental regulations are the Environmental Protection Agency, the Food and Drug Administration, U.S. Fish and Wildlife Service, National Park Service, United States Forestry Service, Federal Trade Commission, and the Bureau of Land Management. Important environmental laws include the Clean Air Act (CAA), the Clean Water Act (CWA), and the Safe Drinking Water Act (SDWA).

The Clean Air Act established technology-based emission standards for specific industry categories (SICs). These standards specify the technology and the emission limits that are allowed for pollutants discharged to the air. Companies must adhere to this methodology to calculate air pollution emissions. The Clean Water Act is enforced by the U.S. Environmental Protection Agency (EPA) and established standards that specify the technology used and limits of toxicity that should be in wastewater prior to disposal in a water body. The Safe Drinking Water Act is enforced by the EPA and the Food and Drug Administration and it ensures clean water that is safe for human consumption. The SDWA has four categories of standards that water suppliers must meet. The categories are physical, chemical, microbiological, and radiological (“Environmental Law,” n.d.).

In a document entitled *Guides for the Use of Environmental Marketing Claims: Final Rule*, the Federal Trade Commission explains the requirements of marketers when sharing environmental claims to consumers (Title 16: Commercial Practices, 2012). The document expresses its weaknesses by stating it is not within its authority to set environmental policy. It also supports its general language with ‘more detailed guidance could quickly become obsolete given the rapidly changing nature of this market and consumers.’ If enforcement action is needed, the Commission must prove that the challenged act or practice is unfair or deceptive in violation of Section 5 of the FTC Act.

Some of the key findings on environmental media laws set by the Federal Trade Commission include (Federal Trade Commission):

- Advises marketers to have competent and reliable scientific evidence to support their carbon claims, including using appropriate accounting methods to ensure they are properly quantifying emission reductions and not selling those reductions more than once.
- Marketers should accompany seals or certifications with clear and prominent language that effectively conveys that the certification or seal refers only to specific and limited benefits. This may be particularly challenging with certifications based on comprehensive, multi-attribute standards.
- Advises marketers to avoid making unqualified renewable energy claims based on energy derived from fossil fuels. It clarifies that marketers may make such claims if they purchase renewable energy certificates (“RECs”) to match their energy use.
- Advises marketers to distinguish between benefits of product, package, and service. Unless it is clear from the context, an environmental marketing claim should specify whether it refers to the product, the product’s packaging, a

service, or just to a portion of the product, package, or service.

This document was created to ensure consumers have access to complete information when purchasing products.

State of North Carolina Sustainability Initiatives

North Carolina State laws on environmentalism are organized into Air Quality, Coastal Management, Energy, Mineral, and Land Resources, Marine Fisheries, Waste Management, and Water Resources. These laws are found in the North Carolina Environmental Policy Act of 1971.

North Carolina has 14 coal-fired power plants regulated under the National Pollutant Discharge Elimination System, which governs wastewater discharges to surface waters. A coal-fired generating facility turns water into steam, which in turn drives turbine generators to produce electricity. More than a third of North Carolina's net electricity generation—38.7% in 2014—comes from coal shipped by rail and truck, primarily from West Virginia, Kentucky, and Pennsylvania (“U.S. Energy Information,” 2015). The Dixie Pipeline transports propane, butane, and ethane from Texas, Louisiana, and Mississippi to customers throughout the Southeast and ends in Apex, North Carolina. Of the 737 public and private-access biodiesel fueling stations nationwide, more than 18% are in North Carolina (“U.S. Energy Information,” 2015). In 2014, 6.6% of North Carolina’s utility-scale net electricity generation came from renewable energy resources; all of the generation came from conventional hydroelectric power, biomass, and solar energy (“U.S. Energy Information,” 2015).

North Carolina’s leading industries are aerospace, automotive and heavy machinery, biotechnology and pharmaceuticals, information technology, and finance (“Key Industries,” n.d.). North Carolina is home to 27 Fortune 1000 companies, including Duke Energy, Lowe's, and Bank of America (Charlotte Overview, n.d.).

North Carolina's agricultural industry, including food, fiber and forestry, contributes \$78 billion to the state's economy, accounts for more than 17 percent of the state's income, and employs 16 percent of the work force. The state ranks seventh nationally in farm profits with a

net farm income of over \$3.3 billion (“North Carolina Ag,” n.d.).

Popular conservation topics are banning or having local authority over fracking on North Carolina shores, protecting pollinators such as bees, and finding ways to use sustainable energy. In recent news, North Carolina-based Duke Energy was ordered to close coal-ash pits at eight locations by 2019 and at 25 locations by 2024 by the North Carolina Department of Environmental Quality. Duke has been under pressure to address the way it stores coal waste from power generators after its 2014 ash spill into the Dan River (“Introduction to,” 2014).

City of Charlotte and Sustainability

Charlotte is home to Duke Energy, the nation’s largest electric power holding company. It provides energy to more than 7 million residential, commercial and industrial customers in the U.S. using a combination of nuclear, coal-fired and hydroelectric facilities. Natural gas is available from Charlotte-based Piedmont Natural Gas. Charlotte Water receives water from the Catawba River, whose headwaters are in the Appalachian Mountains. Here, dams created a series of lakes, including Mountain Island Lake, Charlotte’s main supply. Charlotte draws less than 3 percent of the lake’s content daily (Charlotte Overview, n.d.).

The Government of Mecklenburg County tracks its performance in reducing its environmental impact using an aggregated measure called the “Environmental Leadership Index.” Mecklenburg County’s Environmental Leadership Index Score reflects four different areas. “Thirty-five percent of the score comes from emission reduction results, which includes energy use and fleet emissions. Thirty-five percent comes from resource conservation results, which includes recycling, land protection, and purchasing. Fifteen percent comes from commitment, which includes employee engagement and department integration. Fifteen percent comes from stewardship enhancement, which includes new and innovative practices and continuous improvement” (“Mecklenburg County: Goals,” 2014). In 2014, Mecklenburg County successfully reduced both electrical and fuel use. The County also began resetting the recycling

baseline based on new policy regarding waste reduction & recycling, and continued to follow environmentally preferable purchasing habits. The County did report on a decline in employee engagement with fewer public transit riders, environmental volunteering, and environmental education participation (“Mecklenburg County: Goals,” 2014).

The Division of Nature Preserves and Natural Resources is responsible for the protection and conservation of Mecklenburg County’s parks designated as Nature Preserves. Land Use & Environmental Services Agency (LUESA) is an organization providing many key services that contribute to a high standard of quality of life for Mecklenburg County residents. LUESA’s role ranges from enforcing building and zoning codes to managing water and air resources for future generations (“About Mecklenburg,” n.d.). The City of Charlotte’s Community Investment Plan (CIP) is a long-range investment program designed to meet the needs of the growing community. The CIP encompasses investments in roads, housing diversity, neighborhoods, storm water projects, transit, water and sewer projects, the airport, and government facilities (“Community Investment,” n.d.).

There are many nonprofit organizations dedicated to keeping Charlotte sustainable. The Charlotte Chamber GreenWorks Council fosters sustainable practices within the local business community by connecting Charlotte Chamber members (“GreenWorks,” n.d.). Sustain Charlotte is a nonprofit organization founded in 2010 that has quickly become the city’s voice on sustainable development (“Mission,” n.d.). There is also Envision Charlotte, which is a public private plus collaborative that leads Charlotte’s progress as a global Smart City through innovations that strengthen economic competitiveness, environmental sustainability and positive community impacts (“What We’re All About,” n.d.). Envision Charlotte’s board of directors includes representatives from Duke Energy, Wells Fargo, Geosyntec, and Bank of America.

Business Environment in Charlotte

Charlotte is a major financial, distribution, and transportation region.

Businesses range from multinational to microbusinesses. Mecklenburg County is the headquarters to seven Fortune 500 companies. Nine Fortune 1000 companies are headquartered in the Charlotte metro area. Charlotte is home to 48 companies with more than \$1 billion sales annually (Charlotte Overview, n.d.). Bank of America grew Charlotte into the second-largest financial center in the United States. Charlotte is also home to a branch of the Federal Reserve Bank of Richmond. The 16-county Charlotte region is by far the largest manufacturing center in North Carolina, accounting for a full third of the state's 10,300 manufacturing firms (Charlotte Overview, n.d.).

Charlotte is also home to the Charlotte Douglas International Airport (CLT), which is the sixth most-active airport in terms of takeoffs and landings. CLT also offers both domestic freight and international airfreight services from 70 freight forwarders, customhouse brokers and professional international service providers. Interstate 77 passes through Charlotte, connecting Miami to Cleveland, and Interstate 85 connects Atlanta, GA to Washington, DC. More than 500 trucks and transportation arrangement firms operate in the city. Most of the nation's largest trucking companies have facilities here (Charlotte Overview, n.d.).

RESEARCH QUESTIONS

This study focuses on the following research questions investigating varying definitions of sustainability in three different enterprises with headquarters in the Charlotte, North Carolina region using a case study approach. The probes are as follows:

1. What environmental, social, and economic issues do businesses in the region consider important to report on in their annual company sustainability report (Global Reporting Initiative: Sustainability Reporting Guidelines)?
2. How do businesses in Charlotte discuss sustainability through paid, owned, and earned media?
3. How do businesses in Charlotte perform sustainable practices through management or leadership systems?

4. How far reaching are the effects of these businesses sustainability practices socially and environmentally?

METHODOLOGY

In order to organize and collect a variety of information on each enterprise's approach to sustainability, a case study methodology was used. According to Meyer (2001), a case study is "a detailed investigation of one or more organizations, or groups within organizations, with a view to providing an analysis of the context and processes involved in the phenomenon under study." While there are no specific standards or requirements in this method, it needs to be both rigorous and structured to allow "tailoring the design and data collection procedures to the research questions" (Meyer, 2001, p. 329/31). One major feature of case study methodology is that different methods are combined with the purpose of illuminating a case from different angles: to triangulate by combining methodologies (Johansson, 2003, p. 3). A case study explores many different facets of a phenomenon using multiple sources, including documents, archives, records, and observations (Baxter, 2008) and can offer unique insights beyond other research techniques.

Case study methodology also has limitations. The concept of case is not well defined and remains a subject of debate. The case may be a relatively bounded object or a process; it may be theoretical, empirical, or both (Ragin & Becker 1992). At a minimum, a case is a phenomenon specific to time and space. The constraint of looking at a phenomenon at a certain time and space makes the results less generalizable, but provides an objective and concise view of a certain case within the phenomena. Because methodology requirements are not specific in a case study, it offers opportunity for improper or incomplete research or "loose design" that may not capture all essential aspects of the phenomenon (Meyer, 2001). Alternatively, nonspecific methodology requirements also allow researchers to tailor their design to the context of their case with qualitative and quantitative methods that cover important aspects of the case.

The case study approach was chosen for this research because of the nature of the research questions. Sustainability, as mentioned previously, uses systems thinking to find common ground between the three pillars: economics, society, and the environment. These pillars, applied to a specific case, then break down further into smaller and more manageable sub-systems such as local governments, communities, biomes, etc. Case study methodology allows the researcher to look at each system as a perspective of the research question. In this study, each enterprise has a different approach to how it discusses and practices sustainability.

Sample Selection

As mentioned earlier, the three companies selected for the study are all Fortune 500 companies, with defined sustainability initiatives, and have headquarters in the greater Charlotte region.

Domtar is a leading provider of a wide variety of fiber-based products including communication, specialty and packaging papers, market pulp and absorbent hygiene products. Domtar has approximately 9,850 employees serving more than 50 countries around the world. Domtar's annual sales are approximately \$5.3 billion and its common stock is traded on the New York and Toronto Stock Exchanges (Domtar, 2015). Domtar's principal executive office is in Fort Mill, South Carolina.

Nucor Corporation is the largest steel producer in the United States and is the largest "mini-mill" steelmaker. Nucor is North America's largest recycler of any material and recycled 16.9 million tons of scrap in 2015 (Form 10-K, 2015). In 2015, the company produced and sold over 25 million tons of steel (Nucor, 2015).

Duke Energy is the largest electric power holding company in the United States, supplying and delivering energy to approximately 7.4 million U.S. customers. Duke Energy has approximately 52,700 megawatts of electric generating capacity in the Carolinas, the Midwest and Florida – and natural gas distribution services in Ohio and Kentucky. Duke Energy has \$121 billion in assets (Duke Energy, 2015).

Data Sources

Multiple data sources (both secondary and primary) can be utilized in case study analysis. For this study, company materials as well as depth interviews provide the data for analysis. Company materials were content analyzed and included copies of corporate sustainability reports for the selected companies, as well as content delivered through their paid (e.g. placed advertising/promotion), owned (e.g. company website, social media and blogs) and earned media (e.g. media and social media coverage by others). Paid, owned, and earned media content was collected by daily keyword searches operationalized through Google Alerts and Social Mention. Depth interviews were conducted with facility managers and designated spokespersons from each enterprise. These interviews were conducted to understand how management on a facility level practice and encourage sustainability.

Data Analysis Process

Text in each company's most recently published corporate sustainability report were first coded into the three pillars of sustainability: environmental, social, and economic. Next the report was coded again for discussion of the following topics: 1.) Air quality, 2.) Biodiversity, 3.) Climate change, 4.) Energy affordability and reliability, 5.) Employee well-being, 6.) Customer Satisfaction, 7.) Water quality and availability, 8.) Trusted certification programs or partnerships, 8.) Charity, 9.) Research/Education 10.) Materials for production. Media content collected over the duration of one month was copied chronologically into a single Word file for ease of electronic analysis with similar keywords entered in Word's "find" function.

Data collection and analysis for the primary interviews was as follows. Before each interview, respondents gave their informed consent. A script (see appendix A) was used for consistency across interviews. The first set of questions inquired about general job responsibilities and the respondent's personal journey within the company. The second set of questions asked about the facility he or she operates and how it practices sustainability. The third set of questions asked company specific

sustainability questions pulled directly from each company's most recent sustainability report. These questions were used to understand how management operationally retains and implements corporate beliefs of sustainability in their facility.

1. What environmental, social, and economic issues do businesses in the region consider important to report on in their annual company sustainability report (Global Reporting Initiative: Sustainability Reporting Guidelines)?
2. How do businesses in Charlotte discuss sustainability through paid, owned, and earned media?
3. How do businesses in Charlotte perform sustainable practices through management or leadership systems?
4. How far reaching are the effects of these businesses' sustainability practices socially and environmentally?

RESULTS

Duke Energy

Duke Energy has facilities in North America, South America, and Saudi Arabia. The energy industry is constantly evolving to meet customer expectations, public policy, and changing technology. In Duke Energy's earned media, social welfare was notably significant but this could occur because of the nature of the service the company provides and also because of the time frame. The coal ash spill at Duke Energy's Dan River Steam Station remained a primary topic of earned media throughout the study. On February 2, 2014, officials estimate up to 39,000 tons of coal ash spilled from Duke Energy's Dan River Steam Station into the Dan River in Eden, N.C., about 80 miles upstream from the Kerr Reservoir. This ended in a huge clean-up and a \$6-million-dollar settlement with the EPA for violating the clean water act. This also led to a long chain of closing of coal ash ponds. Political issues were also a focus of earned media because of Mayor Pat McCrory of Charlotte-Mecklenburg County being a former employee of 29 years for Duke Energy. Duke Energy also faced a backlash by the public on development in suburban areas in earned media. Duke Energy had significantly more discussion

on both Google Alerts and Social Mention. This could be because Duke Energy supplies services to both the residential and business sectors. Duke Energy's 2015 sustainability report focused on meeting customer demands and employee safety. Duke Energy provides 24 million people with an important service every day. The company also has education and research initiatives that support business-self interest. Duke Energy consumed 79 billion gallons of non-replaceable water, 32.6 million tons of coal, 44.1 million gallons of oil and spilled 3,425 gallons of oil in 2015. Duke Energy's sustainability report emphasized their desire to evolve with consumer expectations. Consumer demand could be the driving factor in evolving renewable energy sources. The environmental consequences range depend on the type of facility that is located in an area. Duke Energy's sustainability report only referred to biodiversity twice. The two claims are that they actively protect eagles in wind turbines and remove vegetation with herbicides approved by the EPA. The amount of environmental reporting in their owned media is alarmingly obsolete.

Domtar

The paper and pulp industry is also in transition with society's increase in reliance on technology. Paper is still in high demand for hygienic purposes, but paper is in less demand for educational purposes. Domtar reported having 9,850 employees in 2016. Domtar has many human resource initiatives aimed at keeping employees safe. Logging, mulching, and cleaning fibers to create paper can be very hazardous, but with new technology Domtar has worked to make the process as hands-off as possible. Domtar also faces the challenges of having a large percentage of their employees reaching retirement age.

Domtar generally creates paper and pulp in a closed system and returns 90% of water taken to its original source. Also Domtar creates a substantial amount of energy from using biomass energy from unusable bark and other excess. Despite this, Domtar reported 5.64 million tons of greenhouse gas emission in 2015. Domtar primarily uses softwood or coniferous trees. A facility manager stated,

"How I think about it is trees are a crop and are being replanted just like corn. I think of it as a crop where we harvest it in the most sustainable way we can and try to create the most value we can out of that fiber. It's a sustainable crop." The facility manager also stated that he/she could not speak intelligently about the corporate partnership with the World Wildlife Fund or the Rainforest Alliance.

Nucor

In regards to employee safety and pollution, the steel industry has significantly changed in the past 50 years. Nucor has unique opportunities for employees like the "NuYou" program that tracks at risk employees to help them make good healthcare decisions. Nucor also hosts preventative Health Fairs. In its earned media, Nucor was recognized for social contributions in volunteering and community impact. Safety was the most socially reported topic in Nucor's sustainability report. Upon interviewing, a facility manager's dedication to safety was repeatedly mentioned, showing corporate values in practice at a facility level.

Nucor is the largest recycler of scrap metal in the western hemisphere. Nucor also repurposes externalities to be used for other purposes in other industries. One example is using Plant Tuff Silicon Fertilizer or lime "slag" in agriculture. There was no earned media regarding Nucor's environmental impact. A Nucor manager stated "There was a philosophy, that's not shared in our company anymore, that the EPA is an overbearing government facility and it's better rather than telling them what we are doing to let them find out. We cleaned all that up and put pollution monitoring technology on our plant. That was a different mindset, and a different time. We want to get better, make more, cost less. In order to build and buy new things you need to get permits." Although the motive behind environmental compliance is economic, it signifies the importance of government programs that use incentives for business compliance to environmental goals. The Nucor environmental facility manager also stated "Federal (Environmental Protection Agency) has never come since I've worked here (hired in 2011). State comes at least annually."

DISCUSSION

A very apparent result in regards to earned and owned media was a hierarchy of what was to be reported on the most in terms of sustainability. In earned media, companies were socially and economically analyzed and not environmentally unless responding to a crisis. In owned media, companies organized their sustainability priorities in a way they believed most represented their company. All three reports were organized in different ways. This often can be attributed to the product or service the company provides. On all three reports the most under-reported pillar of sustainability was environmental. All three companies have a huge ecological footprint and very general data regarding it is reported. In sustainability reports, the more complicated the business portfolio, the more complicated it becomes to differentiate data sets. For example, Duke Energy operates on three continents and creates energy from many different resources, making it complicated to know where the 32.6 million tons of coal were allocated and used. Sustainability issues are not only a global concern but often must be solved at their source on a facility level. Environmental transparency in corporate owned reports could be improved by taking emission testing more frequently at a facility level and compile it in a communicative way. This is an example of how companies can move beyond compliance and reach customer expectations of stewardship. The Global Reporting initiative aims to make sustainability communicative, but standardizing reporting is not full communicative across different industries in different geographical locations. Companies often reported in whole numbers and different measures implying incomplete reporting or simply bad reporting. Interviewed managers stated that they had been visited very few times by state regulators and even fewer had encountered a federal Environmental Protection Agency employee. This could imply a check missing in the reporting and regulating process and could have consequences economically, socially, and environmentally. Another issue raised was management having a specialized perspective on running a business. Long term sustainability

goals set by corporate weren't prioritized in operations by management. Facilities often run on short term and profit-oriented goals and management reflected this. A commonality between all three industries was the attention placed on employee safety beyond compliance. All three companies showed self-interest in investing in employee health and safety initiatives. All three companies also report investing in educational opportunities for perspective employment. They are seeking out young people as current labor employees reach retirement age. Content under earned media did not discuss Domtar and Nucor because their business and facilities are very isolated and only well known by the employees and surrounding geographical area. This is because they are both primarily a business-to-business operation. The impact that these facilities have on the economic and social welfare of the surrounding towns cannot be understated.

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