

CONVERGENCE OR DIVERGENCE: COMPARING ENVIRONMENTAL
CRITERIA AMONG AFFILIATING ORGANIZATIONS

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CONVERGENCE OR DIVERGENCE: COMPARING ENVIRONMENTAL
CRITERIA AMONG AFFILIATING ORGANIZATIONS

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ABSTRACT

Environmental auditing is the measurement and assessment of company compliance with federal environmental laws and private sectors environmental management criteria. This auditing system ensures companies are in compliance with applicable standards and regulations. The methods and standards are constantly developing as our environmental impacts and demands change.

This study examines the progression of environmental auditing standards between partnering companies and determining whether there is a convergence or divergence in criteria. The relationship between the companies in the study is engaged in strategic alliances. Deere & Co., Topcon Positioning Company and Wacker Neuson's 2014-2017 internal environmental actual results and future projection targets are used in the study to compare convergence in standards between companies.

The study finds that Deere & Co., Topcon Positioning Company and Wacker Neuson's environmental criteria is divergent.

Purpose

Increasing environmental disruption by humanity has created obligatory monitoring of corporations and various entities to ensure the protection of the environment. While commercial and residential activities impact the local environment daily, industrial activity environmental impacts surpass that of residential. (EPA, 2014) Sustainable business practices are being widely adopted by various enterprises due to mandatory environmental compliances and from company' goodwill. The reciprocal relationship with the environment is measured through various standards. The chosen standards are based on the type entity.

However, a convergence in standards is the objective of many standard setters to create fluidity between entities, particularly between industries that have mutual alliances and similar markets.¹ The main inquiry of the project is to explore if this convergence in standards has progressed between the organizations, or is there remaining divergence?

¹ "Environmental Regulation and Governance", <https://www.eea.europa.eu>, (March 10,2018)

CHAPTER ONE: BACKGROUND AND INTRODUCTION

History and Emergence of Sustainable Development

“A Guide to Local Environmental Auditing” discerns the difference between sustainability and sustainable development as, “‘sustainability’ is taken to refer to the long-term health of global ecology” while sustainable development “is about the long-term enhancement of human social and economic well-being”. (Barton, & Bruder, 1995, p.4)

Sustainable practice is not a new phenomenon. Various original civilizations have survived for centuries due to their sustainable practices, stability and development. Most notably, China, India and parts of Europe effectively use natural resources and adequate agricultural development as humanity continued to modernize. In contrast, unsustainable practices and poor management of resources lead to the downfall of many civilizations such as the Mayans, Easter Islanders and many others. Early civilization recognized the significance of resource preservation and this rational is still held today.

Defining Sustainable Development

“... [T]he ability to make development sustainable [is] to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. ” (WCED 1987, 3.27).

This interdependence of humans and the environment can be measured, improved and monitored through environmental auditing standards. Environmental auditing is set in place to ensure humans are advancing in correspondence with sustainable development. The benefits of entity’s conforming to sustainable developments range

from financial stability in the business and the protection of biodiversity. Sustainable development within industries provides internal and external benefits.

Defining Environmental Auditing

Environmental auditing is a term that is defined and measured through many different standards. International Organization for Standardization (ISO), the International Chamber of Commerce, and the Environmental Protection Agency provide the most common descriptions of environmental auditing.

- ISO 14010s Environmental Auditing:

“An environmental audit is a systematic and objective process done to obtain and evaluate facts in order to determine whether the organization meets environmental criteria. The audit must also document and communicate the information obtained” (Kuhre, 1996, p.4).

- International Chamber of Commerce:

“A management tool comprising a systemic, documented periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to safeguard the environment” (DEAT, 2004, p. 4).

- EPA (Environmental Protection Agency):

“A systematic, documented, periodic and objective review by regulated entities of facility operations and practices related to meeting environmental requirements” (EPA, 1986, p. 25006).

The various definitions have commonalities and differences. The descriptions are broad enough to convey the overall meaning of environmental auditing. The commonality between all three descriptions is the “objective” and “systematic” nature of the audits. Objectivity is essential to the auditing process in order to provide an accurate judgment on the clients’ compliance. The “systematic” nature of environmental audits is common throughout the standards to provide clarity and formulaic process of assessment. Without objectivity and a systematic process, the value of the audit report will decline, due to the misrepresentation of the clients’ entity and neglecting the protection of the environment.²

The universal definitions provided above are widely accepted and provide a basis of environmental auditing’s purpose. However, there is a difference within companies. Internally, what is considered “environmental” to one company may not have the same definition as another company. For example, what a sharecropper considers to be environmental may differ from what a transportation manager considers environmental.

² Jason Smith and Nate Stephens, Introduction to Auditing & Assurance Services (Myeducator: 2018), Section 1 p. 1.15

CHAPTER TWO: ENVIRONMENTAL AUDITING

Emergence of Environmental Auditing

Although sustainable development has a long-standing history, environmental auditing is a relatively new, general, term. The term itself is a reactive definition that arose throughout “the 1970s and 80s [as] the number of anti-pollution laws and regulations grew” (Barton, & Bruder, 1995, p.8). Environmental auditing is reactive since it follows after environmental federal legislation enacted throughout the 1970s concerning anti-pollutants and emissions such as the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA) and the Clean Air Act. The ratification of these acts made environmental auditing of companies mandatory. The in compliance of standards can lead to legal ramifications and severe consequences to the entity.

Major Types of Environmental Audits

The two major types of environmental audits are environmental compliance audits and management systems audit. Regulations are considered mandatory audit criteria, while other criteria are optional.

An environmental compliance auditing is “an [examination] of the compliance status of a facility and/or the extent of environmental liability.” (BOMI International) The environmental compliance audit criteria generally entail federal, state and local protocols, applicable standards and internal industry guidelines.

A management system audit defined by ISO standards is a “systematic, independent and documented process for obtaining audit evidence [records, statements of

fact or other information which are relevant and verifiable] and evaluating it objectively to determine the extent to which the audit criteria... are fulfilled.” (ASQ, 2011) This audit criterion depends on the management system already in place by the industry, and certification will be rendered based on this continuous compliance. ISO has stated that management system audits are geared towards third-party audits, officials outside of the organization, yet most of the concepts are applicable for internal audits and is under consideration.

What Makes a Good Environmental Audit and Who Are the Auditors?

To produce an adequate environmental audit there must be a professional auditor conducting such report. According to the American Institute of Certified Public Accountants (AICPA) there are six principles of professional conduct expected of an auditor. Members should:

1. Carry out responsibilities with professional and moral judgment.
2. Act to service the public interest and honor public trust
3. Perform all professional responsibilities with the highest sense of integrity.
4. Maintain objectivity and are independent in fact when providing auditing.
5. Act with due care in professional technical and ethical standards
6. Observe the Principles of the Code of Professional Conduct in determining scope of services to be provided.

The professional auditor should then conduct an objective, factual auditing report. (See Appendix B)

CHAPTER THREE: THE ORGANIZATIONS

Coordination Among Businesses

Coordination between industries and companies provides various internal and external benefits of the business. Coordination increases productivity, comparability between alliance businesses and improve the overall quality of standards. Such convergence benefits the industry itself as well as outside users. Particularly critical is the convergence between businesses that enter into strategic alliances. Yet a strategic alliance means that organizations have set agreed upon objectives while remaining their own independent organization. The independence each organization maintains, result in different environmental standards. These differences prove to further divergence, which inhibits organizational progression.

The divergence shows differences in each organization corporate social responsibilities. Let us assume corporate social responsibility is presented as a pyramid of levels (See Appendix A). For example, one party of the strategic alliance may focus on the fundamental, basic level of “economics”, meaning their main focus is to maximize shareholders profits. While the other party in the strategic alliance may focus on the upper levels of “philanthropic” or “ethical” where, for example, their focus could be to sponsor and donate to charities. Without the organizations being on the same levels of corporate social responsibility, their alliance lacks long-term legitimacy. Therefore, a convergence should be the goal of such organizations. The convergence of standards allows the differing trades to work efficiently, with a common understanding and criteria.

Founded in 1837, Deere & Co. has provided agricultural products and services for farmers. Deere & Co. can be categorized in the business segments of agricultural equipment, forestry, construction and financial services. Since Deere & Co. has ventured to several segments, the company chose to enter into several strategic alliances to better concentrate on their segments. In 2012 Deere & Co. entered into a strategic alliance with Topcon Positioning System and in 2017 entered into a strategic alliance with Kramer Company, a division within Wacker Neuson.

Deere & Co. and Topcon entered into a strategic alliance in 2012 where Deere will utilize, sell and manufacture Topcon's technology in order to maximize efficiency and minimize operating costs. The purpose of strategic alliance in 2017 between Deere & Co. and Kramer Co. was to form a long-term collaboration and engage in the selling of heavy machinery for the agricultural industry.

The Managerial Environmental Standards of Deere & Co.

Deere & Co.'s environmental policy and stewardship policy within the company is defined as "...committed to reducing our environmental footprint worldwide and have developed a set of eco-efficiency goals to do so" (Deere & Co). Deere & Co. publicly displays environmental reports and targets in the three categories of energy consumption, greenhouse gas emissions and water consumption. (See Appendix C)

Based on externally reported data in 2015 and 2016, Deere & Co. has experienced an increase in energy consumption by 0.26 metric tons. Despite the increase, Deere & Co.'s target projection to reduce energy consumption in 2018 "by 15% per ton of

production”, bringing energy consumption for 2018 to total 3.70 metric tons (Deere & Co., 2017).

Greenhouse gas emissions from 2015 to 2016 have remained the same at 0.54 metric tons. Deere & Co.’s target projection to reduce greenhouse gas emissions in 2018 is matched to the energy consumption goal, reducing emissions by 15%, bringing greenhouse gas emissions for 2018 to total 0.41 metric tons.

Water consumption from 2015 to 2016 has increased by .10 metric tons. Deere & Co.’s target projection is to “reduce water consumption by 15% per ton of production”, bringing water consumption to total 0.89 metric tons (Deere & Co., 2017).

Based on the 2015 and 2016 data, Deere & Co.’s managerial environmental standards hold the consistent goal of a 15% reduction in the major categories of environmental impacts.

The Managerial Environmental Standards of Topcon

Topcon’s environmental managerial policy is distinct as “...committed to promoting environmental conservation in accordance with... [complying] with all relevant environmental laws and regulations as well as voluntary standards” (Topcon, Chapter 6, para. 3). Topcon publicly reports their environmental impact in the categories of energy consumption, greenhouse gas emissions and waste emissions. (See Appendix D)

Based on Topcon’s reported data change in total energy consumption has decreased from 26,891kwh in 2013 to 23,543khw in 2014. Although Topcon does not

have a specified percentage target for the next years, Topcon “strive[s] to reduce energy use and conserve resources...” (Topcon, 2015).

Topcon’s greenhouse gas emissions change has decreased from 13,761t-CO₂ in 2013 to 12,437t-CO₂ in 2014. Topcon’s environmental target in 2020 is to reduce greenhouse gas emissions in their Japan sites by 25%. (Topcon, 2015)

The waste emissions of Topcon decreased from 934tons in 2013 to 925tons in 2014. Topcon currently recycles appropriate waste materials, and those that cannot be recycled “...undergoes thermal recycling...the zero emission plan is underway” (Topcon, 2015, p. 20)

The years of 2013 through 2014 resulted in a reduction in the three categories of energy consumption, greenhouse gas emissions and waste emissions. While Topcon does not have percentage targets for every category in upcoming years, Topcon transcribes plans to reduce these categories of environmental impact.

The Managerial Environmental Standards of Kramer Co.

Kramer, a division within the company Wacker Neuson³, considers their internal energy and environmental policy as “...committed to meeting all of its obligations under environmental and energy legislation and to minimizing the environmental footprint of its production processes and operating’s” (Wacker Neuson Group, 2014). Wacker Neuson has set environmental standards and goals within the company that are ISO 14001 certified (Wacker Neuson Group, 2014). The Wacker Neuson Group publicly provides data reported in previous years concerning energy and the environment. The three major

³ For the purposes of the study, “Kramer Co.” and “Wacker Neuson” will be used interchangeably

categories Neuson provides reported data include energy consumption, greenhouse gas emissions and volume of waste. (See Appendix E)

According to Wacker Neuson's environmental impact reports for 2015 and 2016, there has been a slight increase in greenhouse gas emissions of 30 tons. Wacker Neuson does not provide numerical targets for the future years but explains their goal to reduce "energy costs as a proportion of total costs by efficiently controlling energy consumption..." (Wacker Neuson Group, 2014, p. 73)

Wacker Neuson experienced an increase in the volume of waste from 2015 to 2016 of 482 tons. Wacker Neuson's target "for the end of 2017 is to reduce the waste intensity... by 3 percent" (Wacker Neuson Group, 2016, p. 7)

The energy consumption of Wacker Neuson experienced an increase from 2015 to 2016 of 470 MWh. Wacker Neuson's target by 2020 is to reduce energy consumption "of at least 5,000 MWh" (Wacker Neuson Group, 2016, p. 7)

Overall, Wacker Neuson Group experienced an increase in three major environmental impact categories. Greenhouse gas emissions, volume of waste and energy consumption increased from 2015 to 2016.

CHAPTER FOUR: MEASURING STANDARDS

How To Measure Progression of Standards

Environmental standards vary in each company due to different values within the company. Such standards progress and perform differently among organizations, and this progression and performance must be measured in environmental auditing. Despite the various standards within organizations, there are general sources of measurement that every organization possesses. Sources of measurement of environmental auditing include ISO certification, environmental impact data reports and company environmental targets.

- **ISO Certifications**

Organization	ISO Certification Type
Deere & Co.	ISO 1464-3
Topcon	ISO 14001:2015
Kramer Co.	ISO 50001:2011 ISO 14001:2009

Although entities with ISO certification have adequate framework to manage environmental performance, Welford explains that ISO certification has limitations. “[ISO] does not set any absolute requirements, except for compliance with laws”, this permits each entity to interpret and create environmental criteria in any manner it chooses. Welford further explains ISO “only requires that organizations have a commitment to compliance, continual improvement and pollution prevention” (Welford, 1997, p.101).

- **Environmental Impact Assessments**

Many organizations provide annual Environmental Impact Assessments (EIA) available for public consumption. The concrete numerical reporting's of environmental impacts within the organization display the changes of environmental effects as a result of the organization's actions. EIA's historical reports also serve as a guideline of the long-term sustainable developments and allow one to observe the trends of the organization.

- **Company Environmental Targets**

Environmental targets serve as indicators of progression in environmental impacts. These targets allow for comparisons between projected results and actual results. The comparisons allow one to infer how accurate and reliable future targets are. Organizational targets measurement how well the entity has reached their goals and what actions are necessary to meeting the goal projections.

CHAPTER FIVE: RESULTS

Is There a Convergence/Divergence in Standards?

Concerning relationships between supporting businesses, Deere & Co's aims to perform with sustainable systems and "when investing in new products, approaches, or technologies, we give preference to those that have the least environmental impact" (Deere & Co, 2018). In the sense of moral environmental stewardship, Deere & Co., Topcon and Kramer Co. share the aims of conducting business sustainably and aim to reduce their environmental impacts. In the sense of moral environmental stewardship, there is a convergence in standards between the affiliated organizations. The benefits of

such convergence include shared values and long-term goals between alliancing organizations, allowing the entities to develop alike morals.

Moral environmental stewardship statements are not the only measurement of convergence. As stated earlier, EIA's measure concrete environmental impacts of each organization and the results from Deere & Co., Topcon and Kramer Co. vary in measurement types and in annual results.

Deere & Co., for example, reports environmental impacts in measurements of "metric tons" (See Appendix C). Meanwhile, Topcon reports vary in measurements of "kilowatts per hour", "t-CO₂" and in "tons" (See Appendix D). Wacker Neuson also varies in measurements of "tons" and "megawatt hours" (See Appendix E).

Evidently a divergence in types of measurements between organizations exists. This divergence negatively affects entities because the information is not environmentally bilingual. Users of the environmental impact assessments are unable to readily compare the results and changes between organizations. Globalization makes bilingual transparency necessary. Having bilingual organizational reports creates information that is universally accessible and useful. Although not mandatory, being environmentally bilingual in impact reporting can be especially beneficial to alliancing organizations. Deere & Co., Topcon and Kramer already share the environmental stewardship morals; if the environmental impact measurements were displayed in a unified measurement, these environmental stewardship goals could translate to the numerical environmental impact results.

Comparing the environmental impact results across all three companies display numerical differences. The differences in the numerical environmental impact results validate that a divergence in numerical environmental trends among the organizations. The summarization of Deere & Co.'s Environmental Impact from 2015 through 2016 is an increase (with the exception of the static results of CO₂ emissions) in environmental consumption. In contrast, Topcon has had an overall decrease in emissions and consumptions between 2013 through 2014. Wacker Neuson's summarization of emissions and consumptions between 2015 and 2016 show an overall increase in the three major categories discussed earlier. Results in each organization display a divergence, varying from category to category of increasing, decreasing or remaining stagnant.

In regard to environmental targets, each organization percentage aims vary. Deere & Co.'s aims for a 15% reduction in most emission and consumption areas by 2018. Topcon does not report specific target percentages for all of its environmental impact categories but does aim for 25% reduction in greenhouse gas emissions by 2020. Kramer Co. aimed for a 3% reduction in waste by the end of 2017 and a 5,000 MWh reduction in energy consumption by 2020. The targets between the organizations vary in percentages, categories and years. While convergence in targets between affiliating organizations is not mandatory, this divergence provides as a disadvantage for the organizations. The organizations hold the common moral environmental goals but measure these goals differently in terms of years and percentages.

CHAPTER SIX: CONCLUSION

Recommendations and Conclusion

The companies can achieve unison through a number of efforts. Since the companies have differing measuring units in their environmental reports, cohesive measuring units should be established. As Deere & Co. displayed in the environmental impact reports; emissions and consumption were all reported in metric tons. Wacker Neuson and Topcon should report in metric tons as well, as opposed to their use of megawatt-hours and kilowatt-hours. A convergence in measuring units will allow the companies to readily collect and compare impact results. The companies may also wish to engage in vertical integration. The use of vertical integration allows a company to produce its own products. This type of production gives the company leverage to manufacture and produce in an ecofriendly manner.

The companies should set similar targets and goals for the environmental efforts. For example, Deere & Co.'s goal is to reduce energy consumption by 15% from 2012 to 2018.⁴ A standardization of environmental goals can allow track environmental progression. The companies may wish to conduct environmental audits through third party audits. The presence of a third party audit can reduce any bias and increase objectivity of reporting. Additionally, entities can require the professional due care of Certified Fraud Examiners, to identify likelihood of misstatements and detect fraudulent misstatements in reports.⁵

Based on the publicly reported data, there is a divergence in environmental criteria among alliancing companies. This divergence stagnates the goals of companies

⁴ "Environmental Stewardship", <https://www.deere.com/>, (February 12, 2018).

⁵ <http://www.acfe.com/cfe-credential.aspx>

working towards the same overall environmental goals. Although the companies are ISO certified and make it a point to practice environmental stewardship without comprehensive convergence throughout the environmental standards, the company's only common morality is to achieve environmental friendliness. The means to achieve environmental goal differ. This study can serve as guidance for future alliancing companies to develop environmental efforts in unison. The companies can progress with the recognized goal of attaining their environmental goals by shared environmental impact numerical measurements, coalition of future targets and bridge the gaps of differences.

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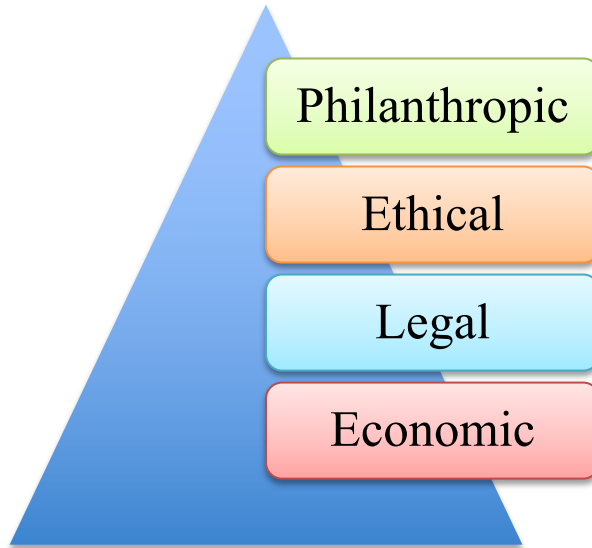
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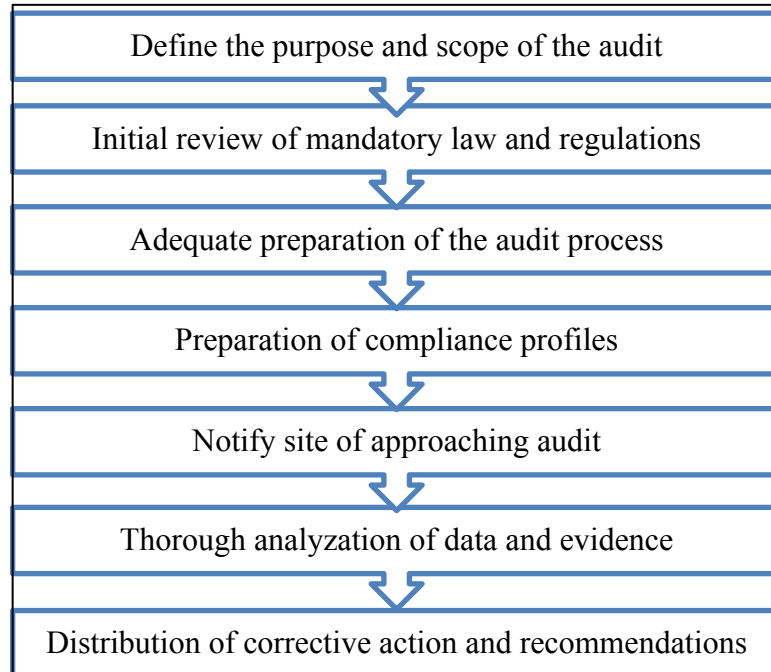
Appendix A

Pyramid of Corporate Social Responsibility



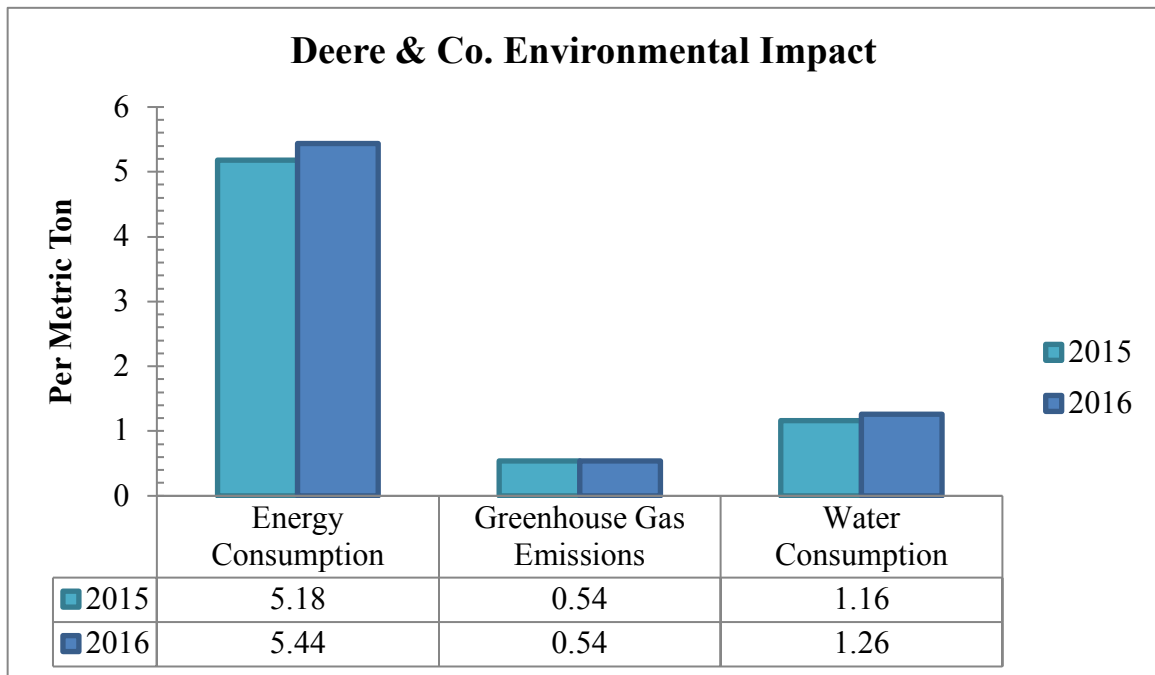
Appendix B

Steps of Successful Environmental Audits



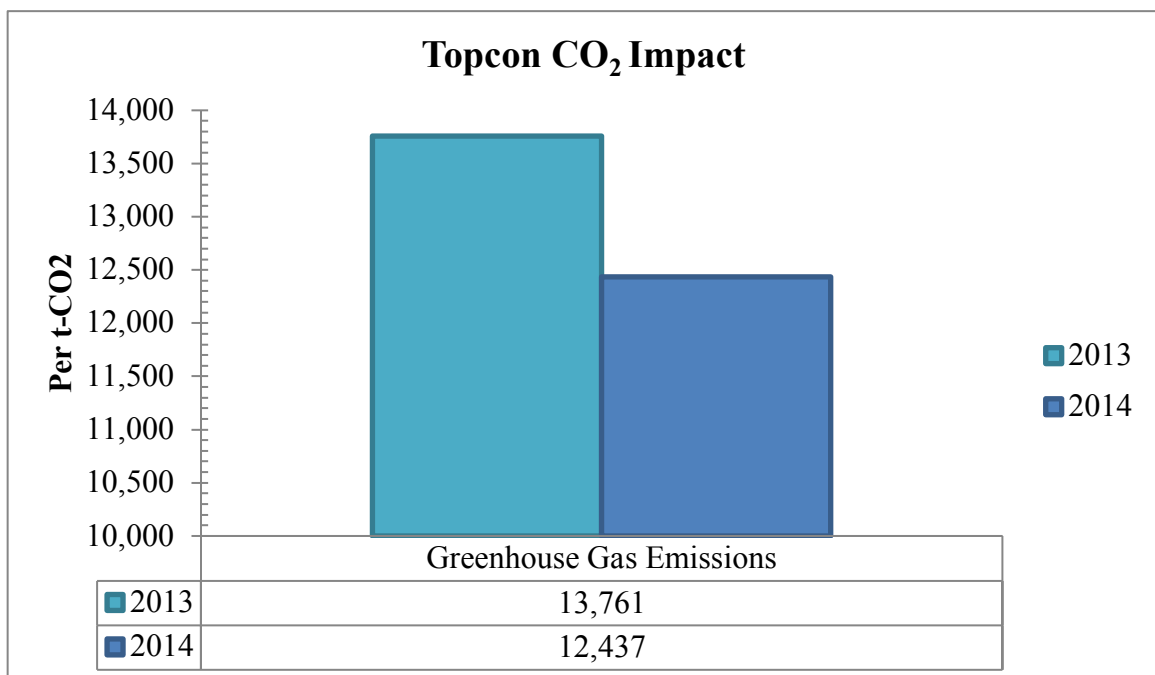
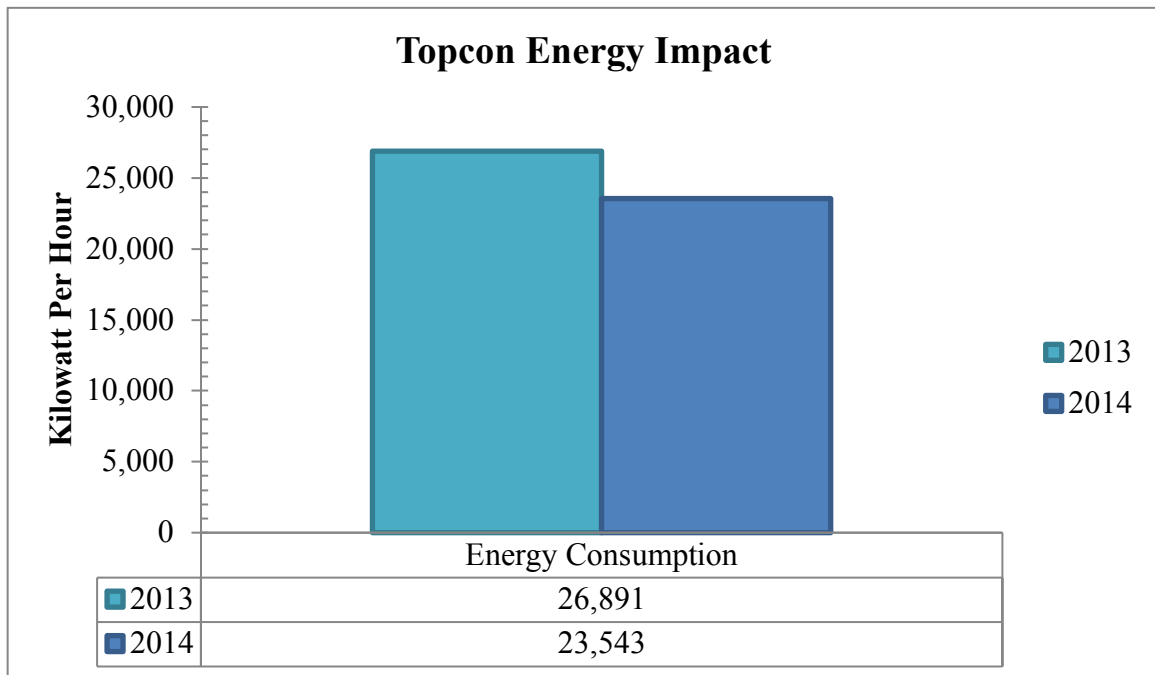
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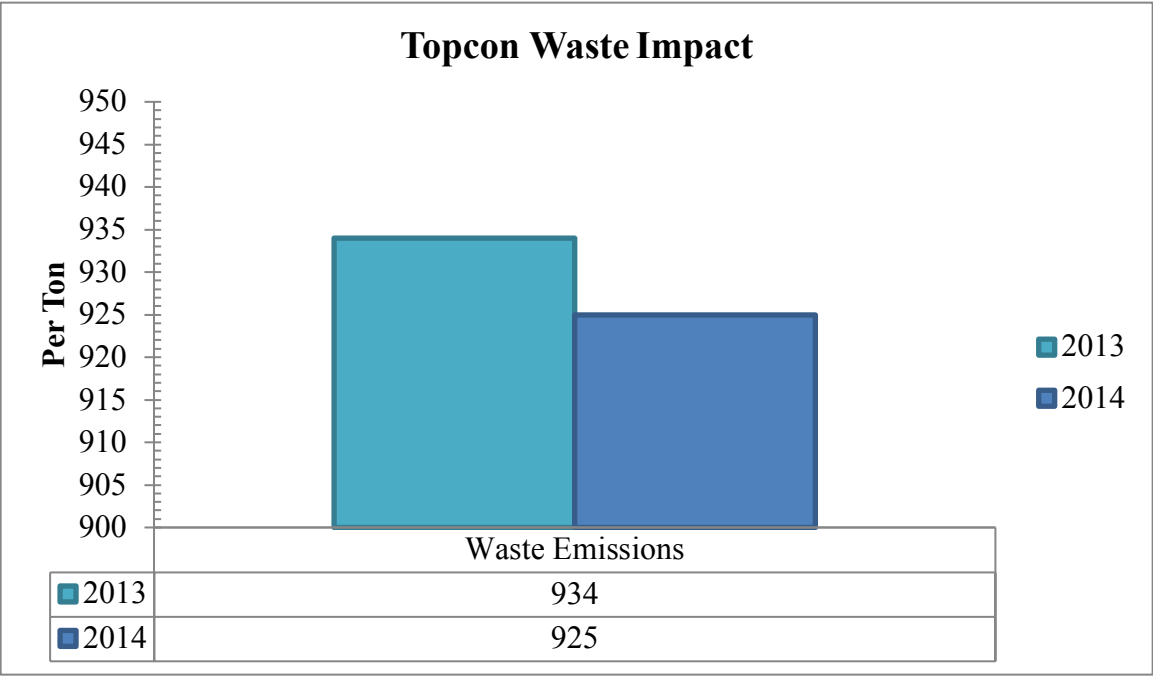
Deere & Co. Environmental Impact for 2015 and 2016



Appendix D

Topcon Environmental Impact for 2013 and 2014





Appendix E

Wacker Neuson Environmental Impact for 2015 and 2016

