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Catching Companies Who Refuse to Go Green Red-Handed

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Catching companies who refuse to go green
red-handed

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BY

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Accounting

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Introduction:

Recycling, planting trees, and bringing your own bags to the grocery store are some of the activities people regularly think about when it comes to sustainability. In the grand scheme of life, how much difference can one person make? What if there were stricter standards for corporations which accounted for their emission of pollutants? Environmental Accounting is a branch of accounting that is progressively gaining popularity and has the potential to redefine the standards of sustainability for companies. With integration of past proposals for a carbon tax and a cap and trade system, a new proposal could be formed that will be revolutionary for sustainability standards that could make an actual difference in the world.

Literature Review:

Environmental Accounting is a relatively new idea that has been slowly gaining favor in the accounting world since the 1960s, when companies' environmental impact and how that should be documented for stakeholders and the public to see became a subject of debate. It sounds like a relatively straightforward concept: companies report, or at least disclose, their damaging impact on the environment just like they would report a lawsuit or any other potential threat. But the issues concerning Environmental Accounting are complex, and there are a plethora of issues that need to be addressed before we can even begin to think of financial statements. For starters, what is sustainable development? The textbook answer would be "integrating the economic, social and environmental objectives of society, in order to maximize human well-being in the present without compromising the ability of future generations to meet their needs" (Taleb, 2011, p. 2). Taleb goes on to further explain that sustainable development should be classified into three types: compliance, 'do not harm', and sustainable. Defining each:

“Compliance is the minimum and means that companies should comply with national regulations and internationally agreed law. ‘Do no harm’ is beyond basic compliance; companies should be aware of their ability to create real and potential socio-economic and environmental impacts... sustainable... is beyond compliance and ‘do no harm’, i.e., companies can proactively contribute to national sustainability by engaging in innovative social investment, stakeholder consultation, policy dialogue, advocacy and civic institution building, ideally through collective action with other companies” (Taleb, 2011, p.4).

Understanding and categorizing these types of sustainable development provides an effective model for what the company should primary focus on. For example, companies are required to abide by the rules instituted by the Financial Accounting Standards Board (FASB) through the use of Generally Accepted Accounting Principles (GAAP) if they wish to avoid legal punishment. When companies complete the minimum in order to follow GAAP, they fall into the compliance category. ‘Do not harm’ would be taking it a step further by forcing companies to recognize that they have an effect on the environment and need to report it on their financial statements. Sustainable is the most liberal type, and is achieved when companies are proactive with the information they gathered in the ‘do not harm’ category, and include the interest of the shareholders, customers, and the community in general to balance any harm they may have caused to the environment. The goal of Environmental Accounting is currently to move companies from the compliance category, which many of them are currently classified as, to the ‘do not harm’ category. While it would be wonderful to have more companies in the sustainable category, it is not realistic at this time. There needs to be more of a focus on incentives not to get

companies into the 'do not harm' category, and work on getting them into the sustainable category after this has been accomplished.

Further confirmation that companies are in the compliance category is the fact that important environmental information is being withheld from the public. A study conducted by Afzal Ahmad shows that, as it stood in 2012, companies he studied that use Environmental Accounting often have their information make it only as far as the board of director's report, out of the hands of the stakeholders. Those companies that disclose the information to the stakeholders only use qualitative data that presents the company in a positive light, essentially withholding the whole truth from the stakeholders. Ahmad (2012) argues that once Environmental Accounting is adopted and companies start taking an interest in the environment and sustainability, there will be no need to withhold the information from the stakeholders (p. 5). With the global society gaining interest in protecting the environment, companies that report that they can be successful without harming the environment will gain a competitive advantage. During his research of Environmental Accounting conducted primarily in the 1990s in developing countries, Ahmad made an interesting observation in the study of 33 companies in Singapore that there was a certain level of disclosure that all the companies seemed to approach and yield disclosure when reached. This observation further supports the claim that companies are only in the compliance category and stop short of being in the 'do not harm' category. This observation seems to put Environmental Accounting in a debatable grey area. The old black and white question of whether or not Environmental Accounting should be enacted perhaps should change to the question of how much of a compromise is needed between environmentalists and companies in order for Environmental Accounting to be of interest to both parties.

The greatest motivators for companies to report their impact on the environment are the stakeholders. With current society focusing more on how production harms the environment, stakeholders are entitled to, and increasingly relying on, information pertaining to the social and environmental impact of a company. Looking to the literature, Lungu and his team analyzed a study done by Villiers and Standen that included more than 140 corporate annual reports over a nine year period, and used identifiable trends pertaining to environmental disclosure as their starting point. They found that currently, the problem is that reporting only describes the past when the stakeholders want to foresee the future. As the future is unpredictable, the knowledge of potential risks that a company faces specifically with the environment would be a stakeholder's greatest tool. The main consensus of their research was that there is need for significant changes so that companies become more transparent and subsequently allow stakeholders access to more information (Lungu et al., 2009, p. 103). According to the study, these environmental risks can be placed in two categories: nonfinancial risks and financial risks. Nonfinancial risks are those "that do not directly relate to monetary assets and liabilities, although they will have an affect on cash flow i.e. business risk and strategic risk" (Lungu et al., 2009, p. 104). The other category, financial risks, is defined as those "that do have a direct influence on the loss of value of monetary assets and liabilities i.e. market risk, credit risk, liquidity risk and operational and legal risks" (Lungu et al., 2009, p. 104). In order to have any effect, these risks need to be quantified so that the stakeholders are able to gather information on the equity of the company. In a world that is all about the bottom line, not many businesses are looking to go out of their way to quantify this data. Lungu and his team (2009) determined that, by having incentives, managers will not be so inclined to "overlook" information by providing just the basic amount to reach requirements, instead choosing to fully disclose all environmental

impact (p. 103). Finding a way to make companies release their potential social and environmental risk in financial statements could in fact be the greatest hurdle in implementing Environmental Accounting.

The environmental risk that Lungu refers to is that of depleting and damaging environmental resources. Extensive research is being done concerning this risk as society becomes more environmentally conscious. The data that is currently being recorded shows a bleak future, as the natural capital on which civilization depends to create economic prosperity is rapidly declining. Looking at this from a business viewpoint, the loss is proportionate to material gains. Natural and industrial capital are two ceilings of profit, as a business can only extract and produce so much. As natural capital decreases, the standard of the amount of products a company can produce and sell will shift from industrial capital to natural capital. Scientists have not been able to determine how much natural store we currently have, but estimates have been made that from the 3,800,000,000 year store that “biological services flowing directly into society from the stock of natural capital are worth at least 36 trillion annually” (Swamy, 2010, p. 1). When equated to a monetary value, they would be worth between four hundred and five hundred trillion dollars. To better understand this change in capital one can look at the Exxon Valdez, which struck a reef in Alaska, leaked 11 million gallons of crude oil, and caused 1.25 billion dollars in damage. This monetary amount does not include the lives of both humans and animals that were affected. Exxon was able to write off 845 million dollars for cleanup costs, which violates the accounting principal of matching costs with revenues. Because there was no standard in accounting for reporting environmental impacts, the Intergovernmental Working Group of the United Nations began to discuss integrating Environmental Accounting with the traditional system. Going into environmental liabilities, Swamy believes it is waste that cannot or

is not recycled that is the greatest concern to humans. Companies need to find the quantity of the substance it takes to cause harm when exposed to wildlife and nature. A concern is that a substance that seems harmless now, through future research, may have actually been harmful the whole time. If this was to occur, the company would then need to determine the extent of the problem and how much it would cost to clean up. Another problem stated by Swamy is that “technological uncertainties make the extent of the contamination and final cost of remediation difficult to calculate” (p. 5). The legal uncertainty would be how to approach costing, and the regulatory uncertainty would be if governmental and other agencies have the power to conduct their own investigation. Swamy believes that the very least the government can do is force companies to provide what they can of their environmental impact. The idea is to hit companies where it hurts by converting a company’s harm to the environment into expenses featured on the income statement for every investor to read. All of this brings together the fact that companies do excessive harm to the environment, and that shareholders have the right to understand the full extent of such harm on the financial statements.

Environmental Accounting is necessary because it is the main tool used by companies to communicate their interactions between society and the environment with the general public. Two issues explained by Branco and Rodrigues (2012) associated with Environment Accounting are the methodologies used to capture the empirical data and the issues of theoretical interpretation. The first concern of the methodologies is the sample size based on the size of the company. It is sensible to gather samples of larger sized companies because not only are they likely to have more to report, but also have a website containing the information. Once the samples are chosen, the best method would be to start with the company’s annual reports. Since the reports are required under GAAP, accessibility is guaranteed. Companies are also required to

use a uniformed standard, making the annual reports easily comparable. There has also been an interest in the internet, as it is fast and inexpensive to access, but has the major drawback that it is not audited. Therefore, there is even more concern that the information could be bias. After the information is gathered, content analysis is performed. This “codifies qualitative information in anecdotal and literary form into categories in order to derive quantitative scales of varying levels of complexity” (Branco & Rodrigues, 2012, P. 75). This assumes that the more that is disclosed on a certain subject (in this case pertaining to a company’s environmental impact) or the more that subject is mentioned, the more important it is. Then, the qualitative information is put into quantitative information based upon the distinction of importance. A simpler way to do this would be to denote that each disclosed subject be given an equal weighting, so that while you lose the extent of each disclosed subject, you at least know each subject that is disclosed. Another issue associated with reporting Environmental Accounting is the question of why companies would disclose information in the first place. The first of the theories is the Decision Useful Approach. Under the Decision Useful Approach, “companies release information ... because users find it useful for their investment decisions” (Branco & Rodrigues, 2012, p. 77). Economic Theory Approach states that individuals are driven by self-interest so that “managers will disclose social information only if it increases their welfare, that is, when the benefits from the disclosure outweigh the associated costs” (Branco & Rodrigues, 2012, p. 77). Political Economy Theory says that economics, politics, and society are all tied together, so they all need to be considered. Stakeholder Theory encompasses the idea that companies have many stakeholders that are affected and in turn affect the company. Instead of focusing on one particular group of people, all groups must be considered when making a decision. And finally, the Legitimacy Theory implies that providing economic benefits and following the rules is no

longer enough for companies. With companies globalizing, they must also consider the values and norms of society. The idea behind these methods is that the shareholder will better understand why the company is disclosing its information. Knowing this, they will be able to determine if the company does so because of ethic responsibility or for personal gain.

The process of transferring qualitative information about environmental impact into quantified information is much easier said than done. According to Debnath, the first step is to understand the environmental impact organizations have due to their waste. The problem with quantifying this data is that the nature of costs is one of the biggest boundaries to crossover from traditional accounting. With the current system, there is no regulated way for companies to express this information so that it is comparable, understandable, and verifiable. Debnath explains that there has to be new mythologies of cost identification, calculation, and information generation that all companies can abide too. This would mean that overhead indirect costs and expenses would be taken a step further for reporting standards. Instead of grouping environmental costs and expenses in each of these categories with other miscellaneous items, they would have their own sub-category for which new methods would have to be invented to produce accurate numbers. Through a cost accounting viewpoint, it is obvious that this is easier to implement and more of a necessity for manufacturing companies that rely heavily on improving the product cycle (raw materials – works in progress – finished goods – cost of goods sold), and thus it is reasonable that the studies have found that project based companies would have a harder time implementing such a change. Debnath uses these two types of companies to represent the two main viewpoints on Environmental Accounting. The product based companies represent the conservative perspective, which is a private cost approach that wants to keep business as usual. Manufacturing companies, on the other hand, represent the critical perspective.

This external costs approach takes a progressive stance, stating that there is a need for Environmental Accounting. An example of applying the external costs approach is a study by Seuring that developed a supply and chain costing technique for “green” yarn. The study found that the “green” yarn started with higher set up costs because of the low demand. However, the study went on to state that “supply chain costing can break this boundary and can help is reduce the costs of green products by working across the organizational boundaries to make it more affordable” (Debnath et al., 2011, p. 50). With this result, Debnath hypothesized that if Environmental Accounting was linked to organizational strategy that innovations, such as that of “green” yarn, it would improve the product and its service. He stresses that just because a company has the information of its environmental impact, they still may not make any effort to improve upon it. It is important that the company at least be aware of it and the viable alternatives. However, implementing Environmental Accounting also relies on the employees. If the employees understand and are motivated to use it, this will produce the greatest results. It is the manager’s obligation to help employees become motivated by knowing the supporting factors and objections to Environmental Accounting. This is showcased in a study of the ceramic tile manufacturing companies in Spain, where employees were not motivated and the managers did not have sufficient knowledge about Environmental Accounting with which to motivate the employees. The result was that they could not reach the necessary standards of sustainability, even with Environmental Accounting standards in place.

Determining a policy:

While there is consensus among prominent accounting figures that the there is a need for Environmental Accounting, what about the standards already set in place? As it stands now under GAAP, companies report revenues and expense without any intrinsic value. This means

that every financial statement to date is inaccurate because it is missing future cost savings and expenditures concerning environmental issues. In order for financial statements to be accurate and transparent, stricter policy needs to be put into effect. Instead of having this information only be a contingent liability footnote, it needs to be recorded as an asset or liability on the income statement. Crawford (2010) understands this and persistently insists that there needs to be a stricter system. The policy would not be designed to punish environmentally conscious companies because they acknowledge having higher environmental expenses. Likewise, it would also not be designed to reward companies who do not record or acknowledge that they pollute.

Cap and trade policy is the closest policy currently being discussed that would achieve such results. First, it would set a limit overall so that the government could regulate how much pollution is being released into the air. Second, those companies that do not acknowledge pollution or go offshore to avoid current regulation would be forced to report it on the income statement. Essentially, this would put every company on an equal playing field. A problem with this method is the indecision to tax the company every year it goes over the regulated standard or give every company carbon credits that it could buy and sell. However, it would be an accounting nightmare to record all such transactions. Going back to the previous argument, most for-profit corporations do not want to add such expenses because it would lower their net income. Some examples of these expenses would be future costs issues being integrated with part of the product costs (essentially increasing cost of goods sold), the costs of researching and planning environmental studies, and finally the “hidden costs that are not always apparent until the damage to the environment has already occurred” (Crawford, 2010, p. 288). A potential solution to address managers’ concerns would be to have the costs and benefits be recorded on

the comprehensive income statement. The information would essentially be available to shareholders, but it would not be on the most widely used income financial statement.

The first step is putting a setting into place for the level of emissions, as shown in Table 1, permitted under the caps. After a cap is agreed upon, the number of allowances distributed can then be discussed, keeping in mind that cap and allowances influence each other. It is important to note that “while the quantity of emissions is determined under the cap, the price of allowances will fluctuate with the market” (Mann, 2009, p. 39). Mann points out that if the number of allowances distributed is too low, then prices surge, creating turmoil, but if the prices are set too high there will not be significant reductions in emissions. Once it is determined how many allowances to distribute, the next logical step is to decide who should receive them. If an upstream approach is taken, then the importers and producers receive them. As they are fewer in numbers, it is far more efficient to distribute to them. A downstream approach allocates to all emitters from electric companies to, possibly, all automobile drivers. Cheating is the next downfall to consider, and someone would need to be in charge of overlooking and regulating the market for these allowances. The Environmental Protection Agency and the Department of Energy are two agencies that Mann suggests could do so, as well as suggesting a new agency be created for this specific purpose. As the federal government has not made any progress in this direction, the decision process is currently left up to the states, which have formed regional sections to experiment implementing this system.

Table 1

Emissions Table

Industry Sector	Number of Reporters	Emissions (Million Metric Tons CO₂e)*
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Power Plants	1594	2221
Petroleum and Natural Gas Systems	1880	225
• Onshore Petroleum & Nat. Gas Prod.	448	94
• Offshore Petroleum & Nat. Gas Prod.	99	6.3
• Natural Gas Processing	372	62
• Natural Gas Trans./Compression	424	24
• Underground Natural Gas Storage	44	1.4
• Natural Gas Local Distribution Co.	168	14
• Liquefied Natural Gas Storage	5	**
• Liquefied Natural Gas Imp./Exp. Eq.	7	0.7
• Other Petroleum & Nat. Gas Systems	331	23
Refineries	145	182
Chemicals	458	180
• Adipic Acid	3	12
• Ammonia	22	25
• Fluorinated GHG Production	16	6.6
• HCFC-22 Prod./HFC-23 Dest.	5	6.9
• Hydrogen	103	34
• Nitric Acid	36	12
• Petrochemicals	64	53
• Phosphoric Acid	13	2
• Silicon Carbide	1	0.1
• Soda Ash	4	5.1
• Titanium Dioxide	7	2.4
• Other Chemicals	213	21
Other	1377	126
• Electrical Equipment Manufacturers	5	0.3
• Electronics Manufacturing	49	5.4
• Ethanol Production	162	18
• Food Processing	299	30
• Manufacturing	280	17
• Military	43	2.7
• Underground Coal Mines	175	28
• Universities	109	9.4
• Use of Electrical Equipment	102	3.9
• Other	156	11
Waste	1593	103
• Industrial Landfills	173	8.5
• Municipal Landfills	1208	81

• Solid Waste Combustion	68	10
• Wastewater Treatment	151	3.7
Metals	297	115
• Aluminum Production	10	6.7
• Ferroalloy Production	10	2.3
• Iron and Steel Production	128	91
• Lead Production	13	1
• Magnesium	9	2.5
• Zinc Production	6	0.9
• Other Metals	121	10
Minerals	362	98
• Cement Production	96	56
• Glass Production	110	8.4
• Lime Manufacturing	73	31
• Other Minerals	83	3.6
Pulp and Paper	230	44
• Pulp and Paper	110	31
• Other Paper Producers	120	13

* Biogenic emissions are NOT included in the total emissions.

** Total reported emissions are less than 0.05 million metric tons CO₂e.

Note: Table depicting carbon emissions from a variety of industries which have negative effects on the environment. Table from *GHGRP 2011: Reported Data*, United States Environmental Protection Agency.

Supporting Crawford's view that a cap and trade system would be the best way to implement Environmental Accounting, John Elfrink and Mitch Ellison researched the likelihood of implementation of a cap and trade system. On June 6, 2008, cap and trade had a chance to be the standard for Environmental Accounting; instead it led to more questions and confusion. On this date, the U.S. Senate failed to pass the bill that would have allowed the EPA the authority to dictate policy to reduce pollution produced by companies. The significance is that it would have laid the groundwork for the acceptance of a cap and trade system in the United States. While cap and trade systems are prevalent in Europe, they have not been as widely accepted in the United

States, the exception being one for acid rain. As studied, some “observers believe that the [U.S.] market is worth at least a hundred million. Privately, those same observers talk about a four billion dollar carbon-trading market once federal caps are approved” (Elfrink & Ellison, 2009, p. 30). This is based upon the impact of Europe’s Kyoto Protocol, which is worth tens of billions of dollars. In 2003, the Emerging Issues Task Force (which assists the FASB with decision making) investigated the problems of having a cap and trade system. The result was that they did not see the urgency to even look into the problems and the investigation led nowhere. Not significantly mentioned again until 2007, the FASB directed its staff to produce an excessive report on cap and trade systems. Again, there was nothing to report, as nothing of consequence happened with it. As a result of the non-action for cap and trade systems, the only official guidelines on the matter are regulations from 1993. These were published from the Federal Energy Regulatory Committee, which limited the impact specifically to the utility companies. Obviously, the cap and trade system for pollution would impact many different companies, making the current regulations far outdated. Before any regulation can be passed, however, discrepancies about the emissions allowances (EA) exist as to how they should be classified. Two major discrepancies are how to record their value and how they are expensed. Concerning the value of the EA, the most popular opinion is that they should be classified as inventory unless they are being held for speculation for other investments. Another opinion is that they should be classified as intangible, thus they would be recorded by the cost of the EA minus the fair value. The last major opinion as to how they should be recorded is that they should be marketable securities and investments. This is because the lack physical substance they possess as well as the possibility of being traded qualifies them to be treated as financial instruments, with the discrepancy being divided into two arguments on how they should be expensed. The first argument is to expense them on an accrual

basis. This works by an expense being recognized by the monthly emissions of the company. In order to accommodate for the fluctuation of the market place, a weighted average of accumulated expenditures would be taken to determine how much would be expensed. As studied, once the “usage exceeds the amount allowable by the EAs held, a liability is recognized at the estimated cost to obtain additional allowances in the marketplace” (Elfrink & Ellison, 2009, p. 32). The other argument is to use the market value basis, which would expense it as it is emitted. As market adjustments are not permitted, this could give inaccurate results should the market greatly fluctuate. However, it must be noted that the EA could still have impairment.

Researching what Crawford, Elfrink and Ellison neglected to even mention, Kumazawa and Callaghan believe that the Kyoto Protocol holds the greatest insight on how Environmental Accounting can be implemented in the United States. Established in Kyoto Japan in December 1997 as part of an agreement by the United Nations, the Kyoto Protocol was specifically established under the United Nations Framework Convention on Climate Change, which 187 countries worldwide agreed to endorse by 2010. Possibly the greatest flaw with this agreement is that “activities that lead to increases in the carbon dioxide emissions, such as fossil fuel consumption and industrial production, simply shift from developed to developing countries due to global trade” (Kumazawa & Callaghan, 2012, p. 202). With the figures from many studies being solely based upon developing countries, the results lead to a decrease in carbon dioxide emissions, when in reality it is merely being produced elsewhere. Another flaw is that all six of the major gases that contribute to greenhouse gasses are limited to one general agreement, instead of being separated into six different agreements with separate rules and regulations.

Kumazawa and Callaghan conducted a study based on this information that focused on two groups of countries. First is the “Annex B” group, which targets the emissions reduction

goals for the 38 leading developed countries in the world. However, six of the countries in this group have targets above their carbon emission levels from their 1990 statistics. Also, out of the group the United States is the only country that had not ratified the program. According to Kumazawa and Callaghan, “this lack of ratification means that the target reduction of seven percent is not binding for the US even though it contributes approximately a quarter of the world’s emissions” (p. 203). Second, the “non-Annex B” group includes all developing countries. A peculiar stipulation of this agreement, is that developing countries are exempt and do not have to take part in any reduction of their carbon emissions. This is the reason why many of the studies do not include developing countries, which may not be presenting the situation accurately. The results of this study are what one would expect: developing countries with low GDP continue to experience growth in carbon emissions because they are not regulated, while the opposite happens with developed countries seeing their carbon emissions generally dropping. It was not until the Kyoto Protocol was officially enacted in 2008 that carbon emissions dramatically dropped from these countries, as would be expected. Another observation was that the authoritarian governments were less likely to impose strict regulations concerning the environment than those of democratic governments. Interestingly, the Annex B countries income per capital had strong positive effects on the decline of the carbon dioxide emissions. On the other hand with the non-Annex B countries, income had no effect. While the reasoning for this needs to be investigated further, the Kyoto Protocol still is an excellent study that can be referenced.

Not everyone, however, is quick to agree that a cap and trade system is best. Anthony Hopwood sees the potential of a cap and trade system, but also researches the major drawbacks. Hopwood (2009) contemplates that it is inevitable with changes in the way that people in society

think of the environment, that those managers who are heavily influenced by customers will be faced with a demand for different flows of information (p. 433). The change that Hopwood specifically divulges about is that of pollution and the cap and trade system put in place to safeguard against it in the United Kingdom. Financial institutions jumped at the idea of exploiting pricing carbon emissions as a new financial area. That was until the recession starting in 2009, when companies had a surplus of permits causing the prices to plummet. Putting this aside, one of the problems with exploiting pricing is that there are huge possibilities for fraud and manipulation of the system. People are also being rewarded for doing something they would already be required to do. For example, improving a building that had structuring problems which would soon be condemned and writing it off as a sustainable act because the lights were made environmentally friendlier in the process. Another problem that Hopwood gives is that the market cannot currently adjust the prices of the permits quickly enough. When the economy starts to get better, the prices of the permits do not adjust accordingly.

Then, there are the problems with distributing the permits. For starters, many of the companies that pollute were given more permits than they needed. This means that these companies can sell off the permits they don't use, and actually make money while still polluting. A reason that these polluting companies are able to get so many permits in the first place is because of lobbyists, who play an important role in determining the structure of the distribution of permits. All of this plays out in a cycle: the companies make profits from polluting, which pays for the lobbyist costs, who then get the committee to give that particular company more permits, which the company then sells to make a profit. The other problem that Hopwood states about the distribution of permits is that there is currently no way to differentiate between the permits that the committee gives a company and the permits that a company can purchase.

Because there is no difference, companies are costing the permits given to them (which are free) as the market costs of the permits that are sold. The company factors this into the price of the goods or service they produce, essentially raising the price for the consumer while management makes extra profit. What is even more bizarre is that the regulatory authority defends such activity, calling it an opportunity cost. This means companies should be able to record the permits at market value, because the cost of the opportunity lost if the company does not sell the permits should be calculated in the price of the object. This is just one example of an accounting question that is crucial to the cap and trade policy, and an overall example of the point that calculability, such as a new form of accounting, is important to both the environment and to businesses.

Lodhia, on the other hand, believes that a carbon tax system is the optimal alternative solution to implement Environmental Accounting. Lodhia ties together the need for regulation of carbon emissions through carbon pricing and how Environmental Accounting will reflect such regulation of the recently implemented carbon tax in Australia. The overview of recommended ways of regulating carbon emissions is differentiated into two categories: carbon pricing (another name for cap and trade), and a carbon tax system. With this implementation, Australian polluters are expected to remove 159 million tons of carbon from the air over the course of the tax (Lodhia, 2012, p. 10). The debate leading to this system is much the same that the United States is facing, with the conservative side worrying about jobs and how the carbon tax will affect the market and the other side worrying about the environment. A major obstacle that Australia is currently facing and needs to be extensively researched is that some companies are given too many polluting permits, which has essentially had a negative effect on the system.

With concern to Environmental Accounting, there are three popular ideologies: managerialist, critical, and the middle of the road perspective. The managerialist perspective holds that if a business is environmentally responsible, then the stockholder value will increase. Taking the opposing argument, the critical approach believes that, rather than being voluntary, current policies and business practices need to be completely changed and forced upon companies. This way social and environmental issues will be taken seriously by companies as it becomes a requirement to reach the set guidelines. As implied by the name, the middle of the road approach is a medium between the other two approaches. With the understanding that current standards are not doing enough, the approach works to modify them with consideration of all stakeholders. Seeing the middle of the road approach as the most practical to implement, Lodhia explains how carbon pricing fits this model, therefore making it the best choice. Overall, when businesses engage with the stakeholders, as in the middle of the road approach, they will not only be implementing the best strategy for controlling emissions, but will also be held responsible by both the law and stakeholders in the process (Lodhia, 2012, P. 13).

Government involvement:

Where is the EPA, the governmental agency that should be making the rules, in all of this? The main focus of EPA regulations is the Clean Air Act (CAA), Section 111, which provides the agency with authority, gives guidelines for states, as well as flexibility in making decisions. As good as this seems, the important parts of the CAA are rarely used, leaving the EPA to make some very important decisions. One decision is between how much regulation to give the states or having the states come up with their own regulation. Between either a model rule in the form of a complete program the states would be required to adopt or a basic program that leaves the design up to the states, Burtraw leans towards supporting the model rule. Butraw

states that this is because the “model rule would provide a path of least resistance for cash-strapped states and would likely be widely adopted” (Burtraw et al., 2012, p. 42). The other significant choice the EPA has to make is how lenient they should be, since Section 111 requires that this be considered in monetary terms. The more lenient the regulations the EPA produces are, the less costly it is for companies affected by it. When the EPA has decided upon guidelines, creating standards is the next step. Standards are split into two categories: the newly set performance standards, which regulate new sources in certain categories, and existing standard performance standards, which regulate existing pollutants on a specific basis (only a few pollutants qualify in this category). If states wish to modify or adopt new standards contrary to the standards the EPA currently have in place in these two categories, they need only to propose these new standards for the EPA to approve.

In 2005, the EPA attempted to implement a cap and trade system, but it was rejected for unrelated reasons. Burtraw ties in the notion that such a system is politically controversial, and believes that it does not have a good chance to ever be successful. Instead, Burtraw campaigns for tradable standards with trade credits. These tradable standards with trade credits are essentially a simpler cap and trade system: there would be no cap, reduced legal risk, and the EPA would not have to be responsible for distributing allowances to companies. Instead, performance is set for the whole industry with companies performing above the performance set gaining trade credits. These trade credits can then be sold to companies that are not performing at the performance level essential to make up for their over polluting.

Burtraw uses an example of the fossil fuel electricity generation, since it is the largest emitter, and goes through the situations that the EPA would face. First, the average heat rate or emissions rate to benchmark would have to be set. The incentive would be to perform above the

set guidelines, because companies would be missing out on the opportunity cost of selling the credits if they did not. To do this, Burtraw states it is easy for “a unit that does not meet performance standard [to] comply either through upgrades or through the purchase of credits” (Burtraw et al., 2012, p.42). Next, it would have to be determined if it would be up to the states to determine the rates, or if it would be a uniform system. Then, source categories would have to be defined to disclose which pollutants would be regulated for which sources. Under the CAA, the EPA retains the right to dissent how to define these categories. Once the categories are defined, it must be decided if a bank is to be allowed for companies. This essentially means that a company that earns credits one year is given the option to save them for another year instead of selling them. Burtraw supports this, as it gives the system a much needed safety valve in the event that forces outside the companies’ control happen (e.g. hurricane Katrina). Finally, there is the decision of what to do if a state already has a complete Greenhouse Gas regulatory program. Either the EPA could obligate that the state prove that the program is equal to or above performance that they require, allow for a conversion of efficiency standards for emissions so that states would only have to amend their regulations, or impose state regulations which could lead to states leaving the national market. While the EPA may be the most valuable governmental agency in order to enforce Environmental Accounting, it is obvious that much needs to be decided upon before they have a critical impact.

Rhonda Ross acknowledges that there are many different options to deal with greenhouse gas emission, and follows the example of Mann and Burtraw by analyzing different systems. Ross notes that the EPA currently has many options, including the New Source Review and Prevention of Significant Deterioration programs, both having legally binding emission limitations on regulated pollutants at the source. Her argument, however, is that these options

which the EPA possesses are not enough to have a significant impact, and that there needs to be a system put in place. Starting with the cap and trade system, she gives praise to the success of reducing sulfur dioxide when implemented to combat acid rain. Since it was implemented, sulfur dioxide emissions have dropped 61% and nitrogen emissions dropped 44%, resulting in dramatically improved air quality (Ross, 2011, p. 7). A major setback to this system is that it did not reduce energy consumption or increase the demand for renewable energy. While it was successful in reducing pollutants that lead to acid rain, Ross doubts that it will have a dramatic effect on greenhouse gasses. As sulfur dioxide is emitted by large coal combustion sources, it is easy to regulate and enforce these sources. Greenhouse gases, on the other hand, are emitted by many sources, large and small, which would be much more difficult to regulate and ultimately would be too costly and time consuming. Ross puts it in terms of the transportation section, which makes up a third of greenhouse gas emissions. It would be ridiculous to even think of regulating every car on the road, but even by broadening it to major transportation companies it would be a major challenge to regulate all of them. The EPA recognizes that this would be a serious problem, and has several other ways that they could indirectly regulate the greenhouse gases. With the Corporate Average Fuel Economy Standards in place, the EPA enforces the reduction in fossil fuels as well as emissions in new cars. This is important because, as Ross states, these “sources are significant contributors to greenhouse gasses in that they emitted twenty eight percent of all U.S. greenhouse gasses emission in 2007 and have been the fastest growing source of U.S. greenhouse gasses emissions since 1990” (Ross, 2011, p. 13). While helpful, this does not solve the problem of regulating cars that are already on the road.

One critical step, which will ultimately make the argument for Environmental Accounting pointless, is the possibility of a lack of support on any legislation for any

implementation of a system by president Obama. Understanding this, Uhlmann (2013) bases his entire research on the executive branch. Uhlmann believes that Obama's first term was a disappointment to environmentalists because congress failed to decide on, and pass, greenhouse gas legislation. In his opinion, this needs to be made top priority by the president, because without focusing on sustainability, congress will be left divided, with conditions only getting worse. The way to go about promoting sustainability after it is made a top priority is to engage the public more than any other president has before. In order to create any momentum, bipartisanship would have to be formed, which will greatly be encouraged if the American people come together and support such a cause. With many different statistics and facts such as "NASA reported in 2011 that nine of the ten hottest years on record have occurred since 2000" (Uhlmann, 2013, p. 6), the president needs to persuade the American voters that this is just the beginning, and it is in their best interest to make it congress' best interest. Implementing a carbon tax system would be the best policy, as it would not only help reduce greenhouse gases, but the money made could help lower the deficit. This, in turn, would make it appear more appealing to congress as well as the American people. The central piece of Uhlmann's argument is that this is president Obama's legacy. Whatever the result is in the future, either the president will be seen as a champion for his work in preserving the environment or as a coward, should he choose to ignore the problem.

Providing several interesting statistics on renewable energy, Uhlmann leads to the point that this is the direction president Obama needs to take: "In 2011, renewable energy provided twelve and seven tenths percent of total domestic electricity, up from ten and two tenths percent in 2010, and nine and three tenths percent in 2009" (Uhlmann, 2013, p. 11). Investing in research and developing renewable energy has also increased 51 billion dollars domestically and 257

billion dollars worldwide (Uhlmann, 2013, p. 11). After analyzing these facts, Uhlmann insists that Obama needs to mandate a federal renewable energy standard. While Obama does have a goal to have eighty percent of energy be clean by 2035, Uhlmann believes that there should be a standard equipped stating that twenty five percent of all electricity should be from renewable energy (p. 12).

Harm that companies have on the environment is essentially the importance of Environmental Accounting. Environmental Accounting holds companies responsible for their actions so that sustainability is universally promoted. What harm have companies done, and what does “harm” encompass in this situation? With a plethora of research at the public’s disposal, Uhlmann states that “harm”, in this case, “illustrates multinational corporate culpability in the proliferation of environmental pollution both in the USA and globally” (p. 97). While pollution comes in many forms such as water, soil, thermal, etc., keeping with premise of this thesis, “harm” will be limited to air pollution. Katz (2012), who performed “research examining the effects of outdoor particulate matter pollution across three thousand two hundred and eleven cities in fourteen WHO regions among populations greater than a hundred thousand people, found that mortality rates had increased by five percent from tracheal, bronchial, and lung cancer over recent decades” (p. 100). The surprising, and ultimately devastating, impact of this was that it was responsible for, roughly, 1,900,000 deaths annually, most of which were in developing nations (p. 100). Taking into account that only one type of air pollutant was measured, it is imaginable that the combined effect, including all other types of air pollutants, would be astronomical. The main problem, specifically taking into account dioxins and polychlorinated dibenzofurans, which are by-products from industries, is that they are carcinogenic. This accounts for roughly 15% of cancers not accounted for by cigarette smoking (p. 99). While the

harm extends much further than cancer and mortality, those are the most prevalent and recorded effects concerning human health. This data does not even begin to take into consideration the harm companies have on all other biological entities.

Conclusion:

As humans are quickly realizing that their impact on the environment has and will have a significant negative impact, sustainability is becoming the status quo. However, companies do not currently have clearly defined standards to report their impact on the environment, which is essential information for shareholders. Experts in the accounting world have expressed overwhelming concern with the inability to adapt this information in the form of Environmental Accounting through GAAP standards. The aforementioned authors are divided between the two mainstream ideas of how Environmental Accounting should be implemented: a cap and trade system and a carbon tax system. As both systems have advantages and disadvantages, each author's perspective differs on how practical, informative, and complicated they are. Though these authors have contrasting differences in the way they believe Environmental Accounting should be instated, it is clear that they are in agreement that Environmental Accounting is desperately needed.

Staying in compliance with the research presented, a middle approach would be the best course of action in my opinion. Through the lack of collective agreement between lawmakers and accounting professionals, it is evident that there needs to be a new system created that will include the strengths of both the cap and trade and the carbon tax system. Specifically, the solution to the problem of accounting for greenhouse gases and using Environmental Accounting as the standard to record it is to use a middle approach, combining cap and trade with the carbon

tax system, similar to the middle of the road approach described before. The strength that this new system would incorporate of the cap and trade concept is that of being fair to every company regardless of its size or ability to have offshore facilities. However, the major drawback of the cap and trade system, the permits, would have to be addressed. The first problem to arise is that of instances with a surplus of permits due to a depression because companies are not using or buying as many permits, and prices plummet. This creates a liability to the environment and society because companies with the economic wealth to withstand or prosper during a depression can buy a significantly greater amount of permits due to the price being so low. Essentially these companies are being allowed, or even encouraged, to pollute with such a deal on these permits. The other problem with the permits is that the market does not adjust the prices of the permits quickly enough. When the economy starts to get better, the prices of the permits do not adjust accordingly. So this strategy that the larger companies would use through the depression of buying cheap permits becomes an opportunity for smaller companies during a recovery period. Then, even more companies would be buying more permits while not being adequately held financially responsible for them. For this new approach, the best strategy would be to eliminate the confusion of permits and incorporate instead the strength of the carbon tax system. This would mean that the new system would be transparent, easy to understand, and would apply a tax that is easily adjustable to current prices. It is straightforward: however much a company pollutes the company would be charged with a set rate based on the economy. Safeguards would have to be in place so that the price of the tax does not drop too low and larger companies would take advantage of it. By integrating the strength of the cap and trade system so that companies are fully held accountable, especially concerning their offshore facilities, and the ease and flexibility

of a carbon tax, this new middle group system would create groundwork for congress to adopt it and lead to GAAP officially implementing Environmental Accounting to record the companies.

Once this system is created, it is critical that legislation is instated by the EPA to give companies a time limit with which they to be on track to move into the 'do not harm' category, and eventually the sustainable one. To make this transition most efficient and simple, employees need to be trained and involved with the process, which will gain their feedback and increase their willingness to actively become aware of their own environmental impact, and on a larger scope, that of the company. While the ultimate goal is for companies to improve upon their environmental sustainability, or at least become less harmful to the environment, the initial goal is for Environmental Accounting to get companies to record impact on their financial statements so that investors will be able to have access and understand the harm being done to the environment. By involving the investors and the community, this will set in motion a moral responsibility for CEOs of companies to start caring, which will put us on the path to our ultimate goal of greater environmental sustainability.

Since this is a relatively new topic, there are significant limitations for each author's conclusions. The foremost limitation is how apathetic upper-level management and congress seem to be with implementing any form of Environmental Accounting. Because of this, there is not much information, if any at all, to use as an argument to support making companies comply with Environmental Accounting. Another significant limitation is the lack of large scale examples for the two systems, with the Kyoto Protocol being the only significant example the authors can analyze. Without more available large-scale examples, theories are all that we have to suggest the consequences of either system being implemented under GAA

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