Accounting Policy And Carbon Credits

Stephen G. Kerr, Bradley University, USA

ABSTRACT

In 1996 the Kyoto Protocol established a global policy aimed at reducing green house gas (GHG) emissions. In response, slow steady steps are being taken to implement carbon emission limits. Markets are being established so that companies can exchange carbon allowances. Turning the environment, a public good, into private property presents many economic challenges. This paper explores the implications of the policy direction established in the Kyoto accord. Several changes to corporate accounting policy are recommended. The anticipated benefit is that socially responsible professionals will prepare their institutions cost and financial accounting systems to encourage success as carbon emissions become more regulated.

Keywords: Accounting, Green House Gases, Carbon Credits, Green Accounting, Environment, Environmental Policy, Professional Development, Accounting Education

INTRODUCTION

Financial reporting is a social activity. The present form of accounting reports and the standards used to prepare them reflect our business values. Over time accounting reports and what they contain have changed and will continue to change. Concern for the environment has reached the point of real proposals for action in the political arena. Environmental awareness within the management community is reflected in frequent coverage of sustainability and environmental responsibility in management oriented publications. These social developments create a need for financial information. If the trend towards increased corporate responsibility for environmental impacts continues then accounting practice will ultimately reflect this.

The purpose of this paper is to explore the impact of global warming on accounting policy. As a first step in this exploration it is useful to understand the environment in economic terms. It is difficult to turn a public resource into a private good. Market driven solutions viewed through the lens of economic theory are difficult to implement. The pace of politically motivated regulation regarding the environment is increasing. It is also very preliminary in light of what the science literature suggests is necessary. As environmental impacts are privatized a whole new class of assets and liabilities will emerge. The specific purpose of this paper is to examine how these items fit into the current financial reporting framework. Accounting policy that does this will ensure the relevance of accounting when it comes to evaluating corporate performance.

Change always creates opportunity for success. Companies that prepare for the new world of intense regulation of environmental impacts will become relatively more competitive. Implementing a green strategy too early is foolish from a stockholder perspective. It is equally foolish to do nothing and plan to invest in a green strategy once regulation comes into play and expertise is at a premium. Good leadership teams will make prudent efforts to influence the nature of future regulation for the common good and make investments to ensure readiness for the opportunities such regulation will create. Until quarterly financial reports reflect environmental assets and liabilities a portion of the investment community will continue to treat the environment as a public relations issue. This paper suggests ways that accountants and accounting systems can be modified to contribute to corporate preparedness.

ECONOMIC THEORY AND THE ENVIRONMENT

The air and water resources we rely upon have special economic characteristics. It is useful to review those economic characteristics for insight into why we collectively tolerate environmental degradation. There is a rational explanation for the declining situation. We have taken our physical environment for granted because it has been an abundant public good. Public goods and services benefit all members of society. Since no individual owns the resource a private price cannot be determined. Decisions about public goods are therefore political since there is no private market mechanism to regulate them. Put another way, there is no obvious way to block individuals from benefiting from these goods. Another common example of a public good is national defense. All of these characteristics mean we cannot easily create a private market for a public good. Political processes are the means through which members of a society negotiate the amount and quality of a public good that will be available and how it will be paid for.

Individuals that propose market solutions as the best way to respond to environmental degradation must keep in mind that our physical environment is a public good. Those that have a deep faith in private markets have to be especially careful. The current environmental situation provides a rationale for ongoing economic education. The environment is a political problem because the number of carbon emissions is not a private good. Controversy and conflict over how to proceed are an integral part of the political process. Those suggesting a market solution to environmental degradation is best may be revealing a lack of economic understanding.

In 1968, Garrett Hardin (1968) produced an essay that helped an entire generation of economic students contemplate the problem of public goods entitled "The Tragedy of the Commons." He proposed we imagine a common pasture shared by many shepherds. Each has a private incentive to increase the size of their flock whenever they can. Whenever a shepherd can do this, they get the full benefit of the extra animal. All the shepherds incur a small cost arising from the stress the additional animal puts on the pasture. Obviously the process can proceed until the pasture becomes so degraded that its ability to support the herds is greatly diminished. The immediate individual incentive leads to a tragedy that could only be avoided if there was a collective way to communicate to each shepherd the full cost of the decision to add an animal to their herd.

Economists refer to the cost from the stress on the pasture born by others, but caused by an individual increase in use of the pasture, as an "externality." The individual shepherd may not be aware of, or even able to compute, the costs of his decision to the whole community. It is hard and expensive to get that kind of information. The environment may be thought of as a global commons. Human activity creates a stress on the environment. We have no effective way of understanding the total cost of an additional trip to the store or the pursuit of an unnaturally lush green lawn. In reality, the personal cost remains near zero until the environment starts to collapse.

We are aware of the increasing number of countries and individuals becoming sensitive to the costs associated with global warning. This would be the equivalent of some shepherds noticing that the quality of the pasture is declining. Some may seek to redress the situation before the commons collapses and there is much less for everyone. That will only cause frustration because individual incentives do not support their diligence. In this context carbon credits are a rational way to turn a public good into a private property. Everyone does not have to understand global warming for the mechanism to work. The external costs of individual actions are incorporated into individual decisions regardless of political affiliation or private beliefs. Unless there is some other unforeseen development that diminishes the desire to produce more carbon than the planet can absorb, the carbon market has a high probability of developing into an important economic reality.

There is an international dimension to this problem since air and water move freely around the planet. Purely domestic actions can be ineffective because some sectors will face overriding international mechanisms. Consider the case of the International Civil Aviation Organization (ICAO). At their recent Montreal conference, the ICAO considered environmental actions (Wall, 2007). The ICAO has significant power in terms of regulating international flights. In conjunction with this, the European Parliament will impose an emissions trading scheme on all carriers in the near future. In addition, they will apply pan-national regulation on aircraft entering Europe that

require set emission standards per passenger to be reached and heavy taxes to drive out unacceptable equipment. These developments will cause airlines to dump functional but polluting aircraft into unregulated domestic markets.

Understanding the economic dynamics will help business professionals advocate for better public policy responses. Accountants have the benefit of economic education as well as practical experience concerning the operation of market and other regulatory mechanisms. Accounting professionals may find discussions about public goods difficult. They believe in private markets. Most economic activity fits into this category. The environment, national defense, and public infrastructure do not. There is no way, except through government and taxation, to ensure this good is provided to a level that maximizes societies benefit. A different discussion is required for public goods.

Many business leaders angst over the political attention devoted to environmental regulation. However the government is the correct place for this discourse. Accounting professionals can reduce the business angst by making statements about the environment within the paradigm of public goods. The societal risk is too high to simply wait for the environmental equivalent of a stock market crash to address the need for regulation. Forward thinking professionals cannot allow free riding citizens, companies, or countries to drag us into a crisis. The "drop-in-the-bucket" mindset has to be replaced with a more enlightened position. Public action can cause the environmental costs of carbon emissions to be internalized by everyone. The free rider advantage has to be taken away. Accountants can help business leaders make a contribution to policy formulation by turning their energy into creating effective markets and practical disclosure requirements.

MARKET SOLUTIONS

A deeper understanding of economics increases the possibility of a less dogmatic discussion of market mechanisms. Too many business leaders make dangerously simplistic assertions that market mechanisms will address environmental issues. Comments about the kind of market forces which will be effective would provide meaningful leadership. There are four distinctly different market models under consideration. All four could create a better environment. Almost none of us operate in a perfectly competitive market and so it is foolish to pretend that we do when commenting on market mechanisms. Accountants can contribute to the discussion by ensuring the business community is informed about how each model will be reflected in business systems and financial reports. Until these considerations are made businesses cannot determine where their opportunities lie. Each alternative utilizes a different economic mechanism.

Each of the market mechanisms effect the route we will take to an environmentally responsible equilibrium. The first model involves use of fees on polluting inputs. We do this now with fees on low efficiency SUVs and taxes added to the price of automotive gasoline. By making the input more expensive we shift demand to the available substitutes. In addition, the input fees are then used to subsidize alternative, underdeveloped technologies to further enhance the effect. We can see the Robin-hood effect in choices around cars; there has been increased attention to bio-fuels and longer term investments in power cells have increased. In this model, carbon generating activities continue for by those most willing to pay the price or where no substitutes are readily available.

The second model involves a system of quotas. We use this approach in many industries to provide limited protection for competition. In the energy realm we already have a form of quota in place due to the near ban on new refinery capacity. This causes prices to climb and consumers to seek substitutes as prices climb. Quotas could form the basis of a carbon credit market. Based on current uses, consumers and companies are awarded a quota. Those that want more capacity would then have to bid credits away from others. Those with the easiest opportunities for carbon emission reduction would benefit in this case. They can sell their savings to companies with less opportunity. Companies with the easiest opportunities to reduce carbon emissions would profit by responding to the opportunity to sell the carbon savings they create.

A third market model looks at output efficiencies rather than monitoring inputs. This model establishes a baseline of carbon use per unit of production. Permits for a quantity of CO_2 emissions are granted for a period of time that reflects a specific carbon allowance in relation to actual output. These permits are typically granted for

periods of 3-5 years. Once the permit period has elapsed, fresh standards would be imposed for the new permit. This model facilitates growth and allows an enlightened regulator to motivate improvements in the context of new technology or market conditions. This system would be similar to an extension of our business licensing system which, for example, regulates the number of taxis on the road. Progressive reduction of the carbon allowance for electric production would accelerate the demise of high polluting plants and therefore create incentives for new plant construction.

A fourth model, that is very popular with celebrities, is the market for carbon offsets. It is socially popular to state that you made a trip "carbon neutral" by planting the number of trees needed to absorb that carbon caused by a trip. At a corporate level a company would be required to invest in projects that reduce their carbon "footprint." This model will require careful regulation to ensure legitimate and verifiable measurement of carbon use and carbon offsets. As an example some agricultural projects can reduce the amount of carbon in the atmosphere. Investment in those projects could create new carbon credits for firms. Obviously a market mechanism to sell the created carbon offset allowance will be an incentive to launch such projects. There is a real risk that such an allowance will eliminate the need for real change as market players find ways to bring existing (as opposed to new) activities into the market as offsets.

It is a common misunderstanding that the quota system is what public leaders mean when they talk about establishing carbon limits through markets. This perception is wrong. The current approach favors a baseline-and-credit method for establishing a Green House Gas (GHG) emissions trading market over a cap-and-trade method in several ways. The most important significance of this for business is that a total emissions ceiling (Willems, Ellis & Bosi, 2001) is not under consideration. Allowable levels of carbon emission refer to emissions per unit of production. The Kyoto Protocol therefore supports a growth model that assumes total emissions will go down because efficiency gains will outpace the carbon inputs associated with new production.

The implications of this approach must be understood and cry out for industry comment. Consider the application to a firm producing power at a coal-fired facility. The permit would establish the amount of carbon dioxide emitted per megawatt produced for a coal-fired generating facility. The firm may buy or sell credits in order to achieve the baseline figure. The regulating agency would then periodically adjust the rate of emissions to suit economic circumstances and force implementation of new technology generating a lower emissions rate. This approach to allocating emission credits requires a huge number of baseline values that are applied to the multitude of industrial sectors. This approach will give governments a great deal of control over regional and country-wide emission profiles. One can easily speculate that this, the favored approach, will necessitate many legions of regulators and windfall profits to those individuals and management firms with scientific skills. The prospect of such a legion of regulators makes the author wonder why many accountants approve of this strategy.

Some industrial resistance is understandable in context of the work involved. This is only adding to public angst that is evident in outbreaks of market activism. Emel (2002) provides a good "at home" example of this. McMoran Copper & Gold Inc. is headquartered in Louisiana. One of their principal operations is a mine in Freeport, Indonesia. This mine is not known for meeting USA labor and environmental standards. The company was targeted as an example by activist investors. Emel traced the tactics that led to changes in the way the mine was operated. Imposition of shareholder driven codes of conduct will become more frequent. Not every unprepared company will be as fortunate to be in a sector experiencing rapid price inflation. The lesson of this case points to the need for accountants to be aware of the environment and to be taking steps to avoid disruptive business events.

An additional consideration is carbon shifting. If the USA raises its costs by reducing carbon emissions we could hurt the economy by shifting jobs to countries that do not. So discussion about the carbon market has created an international macro-economic discussion about green accounting. Green accounting is about governmental economic accounts and not the financial books of companies and government entities. Green accounting means national accounts would include environmental costs in public accounts. In this system, countries like the U.S. would suddenly show huge trade deficits associated with their high carbon outputs. Ferreira and Vincent (2005) have summarized current developments in green accounting. Governments have been actively discussing green accounting in the Doha round of trade talks. It is foreseeable that the United Nations could create an international

carbon market that would see the United States paying huge sums to other nations in order to maintain its disproportionate use of global emissions capacity. As policy developments continue in that direction, several economic sectors need to be prepared for the US to increase protectionism and become isolated from portions of global trade. There will be domestic winners and losers as this circumstance develops.

In conclusion it is important to specify what market mechanism is under consideration. It is best for everyone if dramatic change can be averted. The collapse of the Atlantic Cod fishery provides a recent example of the cost associated with deferred action. Slow incremental adjustments to fishing quotas would have been less costly in retrospect. The easiest and therefore most predictable approach to creating a market mechanism to reduce carbon emissions is to look at what we already have in place. Staying abreast of the regional approaches to carbon trading is therefore a way to gain insight as to what is likely to happen as the situation becomes more urgent.

WHAT ARE WE PREPARING FOR?

Political agenda of countries around the world reflect the broad base of concern regarding global environmental degradation. The Kyoto Protocol of 1996 was a huge step towards worldwide regulation of the environment. Many countries have ratified the protocol and are now taking limited steps to achieve their commitments. The USA did not ratify the agreement because the current administration determined it could not achieve the targets. That was either a self fulfilling prophecy or realistic. The resulting patchwork of political, industrial, and individual efforts to become more environmentally neutral is nonetheless very significant. This leaves management in an awkward position. Companies know that environmental degradation is not going to end on its own. It is difficult for managers to understand what strategies can be effective when the public policy responses are not known. Without clear direction the incentives will appear to favor those that do not adopt costly green strategies.

The headline change in response to environmental degradation is emissions reduction. The leading idea with regard to reducing emissions is to create a limit on carbon gas production. By making CO_2 inputs more expensive, innovation will be encouraged and the market will shift to other alternatives. This concept was imbedded in the Kyoto protocol. The development of a serious carbon trading business in Europe can give US businesses insight into how they should prepare. Norton (2006) reported on the intense investment activity of investment banks in the European Carbon Market. For example, Morgan Stanley invested $3 billion dollars to quietly beef up its market position. While attention is lost in the press due to the sub-prime mortgage crisis the development has not stopped. The Morgan Stanley investment indicates that there are market makers who can help companies prepare to either buy or create sellable credits now.

The number of political proposals for carbon regulation indicates that a critical mass of support for substantial change is approaching. Congress is working at the committee level on the Lieberman-Warner Climate Security Act which has passed the first of several congressional committee votes. According to Sawa (2008) Japan is heeding the call to maintain leadership with its legislative agenda. Europe is refining its systems to allow for a specific push towards environmental efficiency around 2011 (Wall, 2008). The most telling example in the USA is the cap and trade regulation on power plants under the Clear Air Act of 1990. Ragin and Staglino (2007) note some of the consequences in their investigation of the Act. We will see industries relocate overseas and some entirely new green industries develop. That response does not let us off the hook. Business leaders' and accountants should realize that significant regulation is near. Exportation does not address the global problem that will require global regulation.

There is also evidence that the appetite for radical change is growing at the grass roots level. The European Federation for Transport and the Environment (Edmondson, 2007) is ranking cars by emissions and the EU is moving toward a tight standard for CO_2 emissions. This was in response to consumer demand for a measure that is more responsible than reporting fuel efficiency which is the standard in the US. Closer to home we have seen Wal-Mart respond by establishing a "live better" index. This index communicates to customers the greenness of their choices. There has been a 20% adoption rate amongst Wal-Mart customers according to Campbell (2007). While

some consumers will always resist, on principle or by necessity, a higher cost environmentally responsible option, these developments become evidence of consumer support for radical change.

The accounting profession was also thinking about the environment in the time leading up to the Kyoto Protocol. Epstein (1996) wrote a book on the associated issues of environmental reporting. Another example of professional attention at the time was Milne (1996) who highlighted the impact, amongst other factors, of accounting practices that do not include an enlightened understanding of sustainability costs in the management accounting practices used in decision making processes. Accounting is a social practice and it reflects the values of the financial community unless pushed to a broader perspective. Unless there is a legal obligation to record the cost of environmental degradation caused by a firms operations they are unlikely to be recorded. Until there is enough social pressure to change, corporate accounting financial reports will understate a serious long term liability related to preserving the environment. The externality is not reported. There is a significant risk of ugly impacts on net income and balance sheets of companies that ignore environmental liabilities they do not currently need to report.

Regulatory proposals to manage CO_2 emissions are more than a social or political indulgences. Some will under estimate the issue by adopting that mindset. When we have substantial segments of the population prepared to work towards a neutral carbon foot print, tomorrow is almost here. Folks are prepared to spend considerable sums on products, offered at places like climatefriendly.com, myclimate.org and terrapass.com. The federal government is already imposing high energy costs on businesses by refusing almost any expansion of refinery capacity. As a result, businesses that have adopted energy efficient practices already understand the competitive opportunity environmental regulation brings. Our government will adopt more legal, environmental requirements and businesses that are ready can excel rather than scramble to cope.

A whole world of opportunity can be identified if we accept that capping CO_2 emissions by governments is necessary and inevitable. This position leads to effective preparation rather than denial. Understanding the basic intent and workings of the Kyoto Protocol is essential. This is the context within which nations are designing cap-and-trade markets. There is also much to be learned by studying the experiences of industries in countries that are further along the road to Kyoto compliance. This is a time for forward thinking. Accountants work with managerial decision-making processes that impact investments everyday so they can offer ideas about how to most effectively get firms and industries to internalize the costs of carbon emissions. As a result accountants that become informed are in a unique position to comment on the implementation issues associated with each of the models under consideration.

Canada and the US have yet to established emissions limits for CO_2. Firms therefore need to consider strategic preparation very carefully. Lacoursiere (2005) described this situation very well in her article "A Calculated Gamble." At the moment, the only tangible motivation for trading in GHG emissions can be an organization's desire to portray a responsible image. The absence of relevant environmental regulations has undoubtedly stunted the formation of large scale organized emissions trading. It is nevertheless important to monitor the public developments in Canada and the US to know when there is an advantage to accelerating strategic investments.

In Canada, the trading of carbon credits is set to occur on the Canadian Climate Exchange, an affiliate of the Winnipeg Commodity Exchange. However, due to uncertainty over the government's future view of transferred credits, no trading has yet occurred. There has been some trading of carbon credits through independent brokers such as North American Carbon and Evolution Markets as well as several industry-specific initiatives such as the Pilot Emission Reductions Trading program. Given that the Canadian government wishes to create a made-at-home solution, it is likely that local firms will be handicapped by their inability to purchase carbon credits from foreign emitters. The lack of foreign trading is a significant difference in the preliminary policy that Canadian firms and US owned facilities in Canada will have to consider. Multinational firms will have to split their strategies and perhaps shift emission generating activities to the most favorable jurisdiction. Some Provinces and States will take advantage of this incentive through slow implementation plans as an unpublished economic development strategy.

The US government ultimately decided to excuse itself from signing the Kyoto Accord despite its role as a party to the United Nations Framework Convention on Climate Change (UNFCCC, 2005). White House officials have since said that they would like to see a market-based solution for GHG emissions reduction. The absence of a formal commitment to reduce GHG emissions has not been a barrier to the establishment of a trading market. The market in the US is developing some unique features.

The Chicago Climate Exchange (CCX, 2007) has facilitated limited GHG emissions trading since late 2003. Prices are quoted per CO_2 eq with a contract consisting of 100 CO_2 eq. Participating organizations voluntarily join one of three classes. Members enter a legal commitment to reduce emissions according to a set schedule. Exchange allowances are granted to members according to this schedule. They may obtain additional units through electrical power conservation or carbon sequestration projects. Exchange Offsets are offered by participating members to those that over their quotas (Office of Air, 2002). These units are created via qualifying mitigation projects such as the purchase of electrical power from renewable energy sources, destruction of methane from landfills or livestock operations, or adoption of environmentally friendly agricultural practices.

The awkwardness of the current situation can be highlighted through the case of Transalta Utilities. They have been proactive in their preparations as a power producer with a high risk of sudden regulatory costs when the current discussions start converting into enforced government policy. Transalta is a company that is trying to gain a competitive advantage by leveraging its extensive experience in dealing with the transfer and exchange of emissions credits. As a leader in environmental sustainability, the Calgary-based power generation and wholesale marketing company has been actively reducing GHG emissions since the early 1990's. During this time, they have been involved in projects to change the mix of power generation sources, realize process emissions reductions, and develop GHG offset projects. At various points they have found themselves assuming the role of either credit buyer or seller. The concern is evident in the sustainability section of their annual reports for 1999-2006.

A large GHG emitter like Transalta is typically a buyer of carbon credits. Transalta was involved in the first exchange-based trade of GHG emissions reductions in 1999, but in most cases their purchases have come through the financial support of an emissions offset project. Early investments included the Saskatchewan Soil Enhancement program (a carbon sink project) and the Uganda Cattle Feed Project (a methane destruction project). The following year they sold 210,000 tonnes of offsets to Murphy Oil in the US and then bought 24,000 tonnes from the German utility, Hamburg Electric. Transalta stopped detailing individual transactions in 2002 for reasons of confidentiality. This apparently recognizes that the costs associated with this activity outweigh the public relations benefit derived from their diligence. Now of the credits as assets or liabilities were visible on their balance sheets.

Except in a few limited cases companies in the USA and Canada are not required to trade emission credits. The existence of markets in both countries provides valuable experience for forward looking managers. One area where trading has been required relates to power plants falling under the authority of the Clean Air Act. The Act has made an impact on the investment choices within that industry. Ragin and Stagliano (2007) did discover something significant about the power producers. Even though they have been trading credits since 1990 they have yet to show the related assets and liabilities on their financial statements. So on top of the difficulties of creating a market for a public good we can see that the accounting profession is not addressing these new instruments when they do exist. It is therefore important to consider the absence of financial accounting disclosure when formulating opportunities for profit.

CORPORATE ACCOUNTING AND THE ENVIRONMENT

Accounting plays a central role in determining what matters. Until it is measured and reported on in financial statements an economic development will rarely receive much attention. Consider how different Michigan would be today if the full cost of health commitments made in the 1960s for retired workers had been fully booked as health premiums rose over the last 20 years. Consider how different New Orleans would look if the documented need for civic engineering maintenance had been recorded 15 years ago. Whether public or private, we can document numerous cases where there were known liabilities but their was no accounting requirement to show them

on the balance sheet. It takes a disaster for the rules to change. In too many cases, the large cost of responding up front was small, when compared to the cost of the resulting disaster.

Accountants take a great deal of pride in the principles that form the basis of a profession that is best understood as a social science. The profession has a well developed sense of social responsibility. A responsible profession does not need a disaster to generate change. Why then, is the accounting process complicit in the decision to not record important environmental costs? The answer lies in basic accounting principles and points to an opportunity for a fresh interpretation of them. Accounting evaluates processes by a hierarchy of principles that set out highly valued, qualitative characteristics of accounting information. These characteristics require fresh attention in light of the environmental issues society is facing. It is useful to widen the definition of useful information so that the accounting process internalizes more environmental cost information.

The overriding qualitative characteristic of accounting information is decision usefulness. This value was established for the profession when the 2nd Statement of Financial Accounting Concepts was issued (FASB, 1980). This value goes into practice by considering the relevance and reliability of information. Each of these terms is defined further by their specific components which are understood in specific situational contexts. Accounting practice can contribute to the development of environmental markets. The impact of environmental degradation on economic activity needs a higher priority in the accounting profession. Environmental costs that are foreseeable if current trends continue need consideration if financial reports are to have decision usefulness; Application of the components will change as more accountants understand the situation.

Reliability is one of the primary characteristics of useful information. Accountants view reliability in terms of specific components. One such component is that information must be verifiable. This places a great strain on the market mechanism for carbon credits. If our governments proceed with the output-licensing model, there will be huge difficulties with verification of carbon credit reductions. The implementation of the proposed market, in light of this component, merits deep consideration.

There are two necessary steps for carbon emissions and reductions to be certified. Certification is needed so that the resulting credits are recognized and may be legitimately traded. We have to know what a legitimate credit is and there has to be a method for accreditation by an independent party. Certification is necessary since a carbon credit is not a deliverable commodity. The value of this intangible asset exists because of trust that buyers place in the system. The success and survival of the system is thus predicated on the credit-worthiness of emissions reductions. At the present time, the profession has gone a long way towards denying the existence of intangible assets and will have a great deal of trouble recognizing companies that are creating them.

Carbon credits are created when GHG emissions are reduced below some business-as-usual baseline. This baseline allowance is set by governing bodies such as the United Nations (through the UN Framework Convention on Climate Change) or, in North America, the Chicago Climate Exchange. The basic requirements are that emission reductions are measurable and last at least five years. The potential agency problem is addressed through the mandatory use of independent third parties to verify that emission reductions are real (UNFCC, 2005). This will create a large demand for professionals that can provide this attestation service. These transaction costs are not emphasized in discussion about which regulatory model to adopt.

The verifiability problem has not been ignored by the environmental activists. An independent third party carries out the function of verifying, monitoring, and certifying emissions reductions (Karmali, Price-Jones &Ebert, 2003). The oversight body (i.e. Supervisory Committee for the Kyoto Protocol) will only recognize emissions reductions certified by one of its accredited auditors. The qualifications to become a certified emissions auditor are not onerous. The auditing party must demonstrate technical expertise of certification criteria, possess strong internal systems and controls, and have the financial resources and liability insurance in place to carry out its duties. Periodic spot checks of the auditors are routinely carried out by the accreditation body in order to ensure ongoing compliance with existing standards. The possibility of errors and malfeasance are obvious. Market shocks due to verification failures will occur.

The verification of carbon credits is therefore a difficult issue. It is likely the profession will not allow companies to record the value of carbon credits they have created until they are sold. Another likely response will be to exclude the liability associated with the need to purchase carbon credits or invest improvements to meet standards each time the output measure changes. In both cases, the professions response results in understating reality and therefore dimming corporate response and market awareness. Continuing to uphold the current strict interpretation of a verifiability standard will hinder the professions support of environmental activism.

Objectivity is another component that is used to evaluate the reliability of information. The most evident outcome of this value is the historic cost principle. One application of this principle has been the elimination of asset write-ups. Under no circumstances may professional judgment be exercised and an unrealized gain on long term assets be realized. Unrealized gains on long term liabilities do not get recorded until they are realized. Managerial efforts that create carbon savings or reduce future environmental costs are not recorded until they are realized. Firms that are proactive about generating carbon assets will find that their associated assets and liabilities, as shown in their financial statement, will understate their real situation. The effect is to dim our attention to environmental action and perhaps reward inaction in the short term. Items that are in the management report have less impact when they do not tie into specific entries on the income statement.

The context of output productivity is critical with reference to a discussion of objectivity. Companies that invest in research and technologies to increase their output efficiency will be creating significant reductions in their need to buy carbon credits. They may also be creating a significant asset consisting of surplus credits that can be sold. A carbon market will create an objective current value for these positive steps. Since the objective of creating the market is to make companies more responsive the financial impact needs to be stressed. Without a change in accounting practice, the profession will again dull the disclosure and responsiveness of financial markets to companies that are taking action. Accountants will help their firms by supporting initiatives that will transform the reliability principle. Accountants that can find ways to adapt accounting practices that value environmental action will increase the positive rewards available to their firms.

The second primary quality of useful information is relevance. Relevance is interpreted in terms of specific information components. Information is relevant when it has predictive value, is timely, and provides feedback to the stockholders. Unfortunately relevance is interpreted in the narrow sense of management stewardship of the funds entrusted to it by stockholders and creditors. In that context, the societal concern for our environmental commons is just that, context. Relevance is therefore the poor cousin to reliability when it comes to determining what useful information is. If the profession is to be supportive of public concern about the environment, this interpretation will have to be changed. If accountants can see the stockholder as an investor and as a member of society facing a mounting environmental cost, then this situation can change. Regulation is likely to make future environmental costs relevant but the profession can initiate this change on its own.

THE ENVIRONMENT AND FINANCIAL ACCOUNTING CULTURE

Accounting is more art than science. It is a reflection of our prevalent culture. As long as we realize accounting is a powerful social tool it can play a role in leading cultural change. There are many examples within the accounting literature that encourage optimism regarding the role of accounting. One aspect of this discussion is the conflict within the profession regarding current value accounting in the move to adopt globally harmonized accounting standards. Plantin & Sapra (2008) reveal the depth of argument that is going into this issue. There is a push to have all assets and liabilities "marked to market" more frequently. This debate is caused by the push to harmonize accounting standards around the world. Another example of an important vein of research is the work done by Cairns & Lasserre (2006) regarding ways in which societal market prices for environmentally valuable assets such as forests can be included in private accounts. Recording the environmental impacts quickly will result in immediate reporting of unrealized gains and losses. It is not hard to see why society will argue that accounting reports will be more predictive and therefore relevant, should a change in how we evaluate relevance is made.

The reference to art is important. Every self regulating profession is imbued with the dominant culture that surrounds it. Therefore, a final and important consideration in this discussion is the inclusion of environmental

studies in the process of educating accountants. The education process changes slowly to protect past wisdom from fads. One argument behind the 150 credit hour rule was that candidates entering the profession would have a more profound liberal arts foundation. At great deal can be done to ensure that the 150 hour rule results in meaningful education. In the best case a deeper grounding in the social issues of the day would result. The profession needs to ensure that it adjusts for past failures as noted forcefully by Fleischman and Schule (2006)

While the education requirements for entry into the accounting profession, the pro-activity of government in promoting environmental awareness, and the acceptability of environmental research on the part of accounting faculty vary widely between the US and the world at large, the end result is, unfortunately, the same. Accounting education has not successfully communicated the message to students entering the profession, either as public or managerial accountants, that environmentalism is an ethical issue which requires them to consider the interface between the public interest and the well-being of the client/stockholders they serve. Moreover, in the event that accounting professionals become more involved with environmental reporting, it will be necessary for the higher education system to begin processes of creating a greater awareness of the issues and the additional expertise that may be required.

Every accounting educator can do their part by extending every aspect of the curriculum to include consideration of the impact of accounting on business, the economy, and society. The author has become increasingly concerned with how easy it has been to pass off the social context of accounting to others because there is so much technical content to cover. It may be analogous to the final hours on the Titanic. There was a point at which recording the coal usage and keeping good inventory was irrelevant. The process was no doubt comforting and purposeful in the short run. The environmental agenda will face a serious headwind until the language of business reflects our new societal value of environmental preservation.

Accounting is the language of business. That language can include the environment. Until accountants embrace the importance of environmental issues the financial part annual reports will understate social reality. In other words, accountants will be contributing to the understatement of the private costs associated with the damaging level of use to the commons. Accounting will be an excellent vehicle for discourse about reporting, auditing, and recording issues associated with the proposed solutions to the environmental crisis. This is the basis of our opportunity to help firms be ready to profit from the changes that lie ahead. Accounting can provide useful information for the strategic decisions faced by investors when it comes to evaluating a firm's position in a society where the costs of environmental degradation are low but rapidly increasing.

PROFIT FROM ACCOUNTING POLICY INITIATIVES

This research has considered how unreasonable and irresponsible it is for business leaders to accept a simple statement advocating a market solution to address environmental degradation. Society needs responsible discourse that takes into account efficient economic solutions. Accountants that have a deeper understanding of the economic and political situation can contribute to their employers and society more effectively. We all gain if the environmental agenda includes the concerned voice of accountants. As a profession, there is a great deal to be considered and studied that is missed with simplistic statements that market solutions are best. The language of business can incorporate societies need to elevate environmental issues, now that we are reaching the practical capacity of this public good. It is time for this to be treated as a professional responsibility.

The Kyoto accord left countries a great deal of flexibility with regards to the mechanisms they would use to comply with treaty obligations. Even though there is flexibility, the discussion has focused on trading carbon credits based on quota's and productivity scales (Jepma & Van der Gasst, 1998). These public policy responses will be extremely difficult to incorporate into accounting policy. The accounting profession has to respond with more than a recommendation to added sustainability as a measure in the balanced scorecard. We can therefore advocate for three categories of response by professional accountants: inclusion of carbon gas emission markets in the capital budgeting process, reporting environmental impacts in financial reports, and advocating for the most efficient regulatory approach for each sector of the economy. Accountants that respond in these ways will contribute to the competitive advantage of their firms and society.

The first step is to consider future costs in capital budgeting models. A carbon credit market based on output permits is costly to implement. Many businesses can expect that the cost of this will be higher than an input tax such as the one we have on gasoline now. Since we cannot assure a change in policy direction, it is prudent to make investments with the output mechanism in mind. Retrofitting existing systems and processes to record emissions is expensive and disruptive. Firms that build in such capacity now, create a competitive advantage in the future. Costs of training are also likely to sky-rocket. Firms that establish relevant training now will compound their cost advantage. The return on these investments will be a great benefit to the stockholders. This is no more than good risk assessment. Enlightened accountants will look for and emphasize these preparatory investments when they are evaluating capital budget proposals and participate in setting budgetary priorities.

The second opportunity is to report environmental assets and liabilities on the balance sheet now. There is a long learning curve required to incorporate carbon credits into the reporting process. Firms can develop experience with carbon assets by preparing procedures for determining market values and disclosing unrealized gains or losses on a pro-forma basis. They can also implement processes to collect and disclose carbon emissions much like those we have for disclosing future lease and debt payments. This disclosure will increase awareness of future costs and create stockholder confidence in firms that can give a clear accounting. Reporting on carbon offset projects, as we now report on research and development pipelines, form a third opportunity. The market will be able to value the firms' ability to create marketable credits in relation to their competition. In every case, a proactive accounting policy enhances the ability of management to see tangible benefits from environmental investments. Every time regulation is increased firms that employ enlightened accounting processes will be rewarded by a market that can assess their readiness.

A third opportunity for accounting professionals is to advocate for effective regulation. Those that are forming public policy are in a difficult position. They have a duty to take action and deal with a population of voters that do not appreciate the cost of accelerating environmental degradation. When accountants label all regulation as undesirable they miss an opportunity for considerable economic gain. Firms can gain a competitive information advantage when they involve themselves in the process. A model that regulates output efficiency will cause high implementation costs on some sectors. Firms could create a sectoral trade advantage by supporting and endorsing regulation that is less costly. For example, a US sector might gain a cost advantage over Canadian firms if it convinces US regulators to adopt a regulation, such as an input tax, that has low measurement and transaction costs.

CONCLUSION

This paper has examined how the perception regarding carbon credits can be misleading. Deeper understanding of the issue and the structural problems associated with societal decision-making regarding public goods are needed. Accountants can heighten corporate discussions through broadening their firm's capital budgeting criteria, developing relevant, forward looking financial systems, and advocating for economically efficient regulation. There is no need for accountants to passively react to the growing problem of environmental degradation. This paper has explored the way accountants can contribute to their firms by fulfilling their professional role in society.

There is a moral hazard for professional accountants. An accountant could identify their effort as small and inconsequential compared to the political and scientific influences within the environmental discourse. That thought could be used as a rationale for not taking action. Taking comfort in that rationale does not fully reflect the pervasive impact of accounting policy has as the language of business. Accountants do play a role in shaping responsible public policy as member of the business community. Their employers and clients will benefit from being able to avoid a crisis caused by lack of preparation if the accounting community takes action. We only have to examine the passive role of the accounting community in setting conditions that allowed the sub-prime crisis to occur. The financial impacts of environmental degradation are far more significant. Attention to accounting policy regarding carbon credits can be the professions positive contribution the societal discourse about environmental degradation!

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