

The Ethics of Carbon Neutrality: A Critical Examination of Voluntary Carbon Offset Providers

*K. Kathy Dhanda
Laura P. Hartman*

ABSTRACT. In this article, we explore the world's response to the increasing impact of carbon emissions on the sobering threat posed by global warming: the carbon offset market. Though the market is a relatively new one, numerous offset providers have quickly emerged under both regulated and voluntary regimes. Owing to the lack of technical literacy of *some* stakeholders who participate in the market, no common quality or certification structure has yet emerged for providers. To the contrary, the media warns that a relative “cowboy” atmosphere prevails in the current environment, and that there are “widespread instances of people and organizations buying worthless credits that do not yield any reductions in carbon emissions” (Harvey and Fidler, *Financial Times*, 2007). At this point in the evolution of the market, only a handful of offset provider-rating schemes exist; and, even these systems leave consumers with few answers when they seek to find a means by which to ensure that the said systems are having their intended impact. The purpose of this article is, first, to provide a grounded understanding of the nature of the offset market, a tendency toward carbon neutrality as a possible point of equilibrium, and the ethical tensions that surround it from the perspective of the consuming public. Second, we outline the standards environment for offset providers to illustrate most effectively the need for a single set of criteria among providers that is readily understandable by the common consumer stakeholder. We then explore the differences among the providers and articulate the specific criteria upon which providers may be evaluated by this particular stakeholder constituency, by bringing together best practices based on currently available analyses. Finally, we share the results of preliminary data collection in connection with 117 offset providers and highlight early findings. These findings allow us comparing providers effectively and efficiently on a common scale that services both providers, who thereby have greater guidance for

self-assessment purposes, as well as consumer stakeholders, who then have the ability to make useful and more informed choices about carbon emission reduction in the future.

KEY WORDS: Carbon emissions, global warming, offsets, carbon neutrality, ethics, sustainability

Setting the global scene

When opportunities emerge that purport to encourage business innovation – or what might even seem simply to permit a natural evolution – entrepreneurs and large businesses alike abhor sitting on the sidelines. To the contrary, an “act now, think later” mentality permeates their decision-making processes (Friedman, 2007a). One need only look to the consequences of the “act now” dot-com boom on its bust during that “think later” time period, which then led the Federal Reserve Bank to cut interest rates. A few pages later in that story, and a failure to “think now” resulted in the Great Financial Unraveling in which we found ourselves in 2009.

Reaching back further to the industrial revolution, we see another example of the high stakes and high cost of that mindset. As with the technology explosion in the 1990s, the fast-paced transformation afforded to business by the industrial revolution was not only unprecedented, but it also caught its key leaders unaware of the vital ethical implications of the decisions it required. While, at this point, it seems elementary to enumerate the advantages gained during that era, society has also developed what some might suggest is an unhealthy reliance on production that demands practically infinite quantities of coal-powered energy or other “dirty” fuel.

A “think later” attitude has discouraged attention toward the impact of energy consumption on the long-term sustainability of one’s lifestyle, resources, and the planet. Though London was the first city to protect its air from excessive contaminants in 1272 and Chicago became the first American city to pass clean air legislation in 1881 (Fleming and Knorr, 1999; PBS, 2003; Urbinato, 1994), the environment did not capture the more focused attention of the United States population and its Congress until the mid-Twentieth Century when the United States began to pass a number of Acts in favor of its protection. It was not until the next century, however, that the world recognized the particular augmenting impact of carbon emissions on the threat posed by global warming, and was faced with the serious challenge of accelerating rates of those emissions throughout the world (Raupach et al., 2007). It was in 2002 that the United States Environmental Protection Agency (EPA) first asserted publicly that global warming is a real threat, and that human activities are most likely to blame (United States EPA, 2002). The most recent report by the UN’s Intergovernmental Panel on Climate Change (IPCC) reinforced this pronouncement, declaring that global warming is “unequivocal” and is “very likely” to be the cause of most temperature increases since the 1950s (Intergovernmental Panel on Climate Change, 2007).

Energy consumption throughout the world contributes to pollution, environmental deterioration, and greenhouse gas (GHG) emissions. Increases in energy consumption are usually driven by population growth and economic development that tend to increase energy use per capita. Accordingly, given the two-fold impact of the projected increase in population in the near future, and the economic development that is likely in many countries, there are serious anticipated implications for the environment (Dincer and Rosen, 1998).

The relatively recent and heightened awareness of the impact articulated above has generated a fairly widespread sense of responsibility among individuals, as well as groups and institutions for its reduction, if not its reversal. Individuals now have the option to decrease their carbon footprint by reducing personal emissions through modifications of behavior and usage, resulting in conservation and energy efficiency. Alternatively, and perhaps more

alluring to some, individuals also have the option to compensate others to engage in these activities on their behalf. In essence, these individuals or organizations, known as *offset providers*, engage in activities that *offset* individual emissions: if someone performs an act that adds carbon to the atmosphere, then offset providers perform an activity that reduces that equivalent amount of carbon in the atmosphere. Given the increased demand for these purchased offsets, there has been a concurrent increase in the number of global providers, from a mere couple of dozen in 2006 (Trexler Climate + Energy Services, 2006, p. iii) to more than 170 in 2008 (Environmental Data Services, 2008).

However, this supply overload does not necessarily translate into an information overload. The average consumer – whether individual or institutional – has myriad providers from which to choose, but does not always have the technical literacy necessary to make that decision. As a result, the *Financial Times* warns that a relative “cowboy” atmosphere prevails in the current environment and reports that, in a regulated market expected to be at almost \$70 billion by 2010, with a companion unregulated market of \$4 billion, there are “widespread instances of people and organizations buying worthless credits that do not yield any reductions in carbon emissions” (Harvey and Fidler, 2007). Former U.S. Vice-President and environmentalist Al Gore suggests that the real challenge is found in credibility – a debate over which kinds of carbon offsets are valid and “which fall into the ‘snake oil’ category” (Gore, 2007). A clear choice remains, he insists: either educate the consumers to a level sufficient such that they are able to make informed choices, or develop a reliable third-party certification system, whether through private or legislated standards or a verification process.

Existing standards are not consistent, and there is not regulatory structure that binds offset providers to adhere to any particular standard. Moreover, there is no global agreement on which standard is the most credible measure of quality among the providers. As a result, only a handful of offset provider-rating schemes exist: and, even these systems leave consumers with few answers when they seek to find a means by which to ensure that they are having their intended impact.

Moreover, Gore’s suggested choice between enhanced consumer education or third-party

certification system might not quite define the complete universe of options available. It merely suggests those alternatives from within a Levinasian box that presumes a world wherein offsets already exist.¹ As we will discuss below, the current offset regime discourages personal accountability for one's footprint and instead allows an individual to pay another to accept that responsibility on one's behalf. Not only does this place no priority on an incentive to change one's eroding activities but it also contributes to a form of global economic discrimination, both at a personal as well as a geopolitical level.

The purpose of this article is, first, to provide a grounded understanding of the nature of the offset market, a tendency toward carbon neutrality as a possible point of equilibrium, and the ethical tensions that surround it from the perspective of the consuming public. Second, we outline the standards environment for offset providers to illustrate most effectively the need for a single set of criteria among providers that is readily understandable by the common consumer stakeholder. We then explore the differences among the providers and articulate the specific criteria upon which providers may be evaluated by this particular stakeholder constituency, by bringing together the best practices based on currently available analyses. Finally, we share the results of preliminary data collection in connection with 117 offset providers and highlight early findings. These findings allow us to compare providers effectively and efficiently on a common scale that services both providers, who thereby have greater guidance for self-assessment purposes, as well as consumer stakeholders, who then have the ability to make useful and more informed choices about carbon emission reduction in the future.

Facts + values

Global emissions of carbon dioxide currently are estimated at 47 billion tons per year, and growing (Stern, 2009). At the same time, the United States provides no federal mandates for the reduction of GHG emissions. This unregulated environment provides the setting for the voluntary offset market that we will examine in this research.

A surge of interest in *carbon neutrality* emerged over the past decade and is a stance that is adopted

increasingly by businesses and individual consumers. In general terms, this phrase signifies that there is no carbon burden upon the earth as a result of the activities performed by the company or the individual though, in reality, neutrality may be reached via offsetting. In fact, rather than a few individuals or companies "doing the right thing," this phenomenon has morphed into an environmental commodity market. Organizations and individuals such as Fédération Internationale de Football Association (FIFA), the Rolling Stones, and Al Gore have increased the demand for offsetting by drawing attention to it as an opportunity. It is within this milieu that voluntary carbon emissions reductions and offset projects play a significant role in supporting corporate leadership as it addresses global warming (Trexler Climate + Energy Services, 2006).

Achieving carbon neutrality is not simply a question of starting a business and sending a check, like one does to receive a license to operate of another sort. First, the individual or organization must determine the extent of its carbon footprint; there are numerous web-based calculators that perform this estimation (see [Appendix A](#)). The second step is to implement emissions reduction measures to reduce as much as possible before computing the remainder of the carbon emissions. Third, one identifies a provider and purchases offsets for that remainder amount (Trexler Climate + Energy Services, 2006).

Based on our examination of a market that is extremely elastic, we have identified approximately 117 companies seeking to calculate carbon footprints and offering to sell offsets; however, we can state with certainty that this number will be incorrect at the time of publication precisely because of the market elasticity. To make carbon calculation more complicated, the cost of a carbon credit through these providers can range anywhere from a few cents to \$35 per ton of carbon dioxide offset, leading to more questions about offset credibility (Business for Social Responsibility, 2006; Economist, 2006a). Notwithstanding these variations, the trade in voluntary offsets was more than \$700 million for 2008, representing seven times the 2006 amounts and twice the 2007 levels, and continues to grow (Hamilton et al., 2009). To reduce GHG, available options include emission reductions via energy

efficiency, conservation, technology, re-engineering, green buildings, and other practices. If technology or finances constraint further reduction, offsets can then balance the impact, though they do not reduce it. Offsets also serve to educate and inform the public about climate change, as well as demonstrate to legislators that the issue is ripe for change through public policy.

The environmental commodity markets are new, and the retail market for voluntary carbon offset providers is even newer, catching up with public interest. In addition, as we will discuss below, there are no widely accepted standards of what qualifies as an “offset” for carbon neutrality purposes. Since an offset is an intangible commodity, it is difficult for the environmentally conscious consumer to make a distinction between a high quality and low quality offset. There is no such seal of approval, though there is certainly some work being done in the area.

Notwithstanding the difficulty of its demonstration, the general concept of carbon neutrality is, indeed, attractive, and one could argue its benefits on both intrinsic as well as instrumental grounds. Those who adhere to its standards with any sense of stringency, for instance, may do so for the most virtuous reasons, for the inherent value of global and community sustainability, the multi-track disposition or tendency of the firm toward the protection or sustenance of this value and the utter unwillingness (some might argue inability) to do otherwise while remaining true to the firm’s mission. Under this formulation, carbon neutrality is not simply about the ends of a carbon-free planet, but about a way of living or, more specifically, adhering to the type of virtues that contribute to that environment. This Aristotelian approach recognizes that living virtuously, to flourish, implicates the moral capacities to value and care for the natural world as an end in itself (Barry, 1999). It also warns that to act in any other way would be harmful to the environmental virtues, themselves, and is not considered a wrong because of negative environmental effects (Aristotle, 2009; *Harvard Law Rev.*, 2010). Similarly, one does not judge a firm to be virtuous on the basis of one lone act toward carbon neutrality, but instead the firm must consistently and continually uphold the virtues.

An example of a corporation that typifies this value structure would be San Francisco-based clothing manufacturer and retailer, Patagonia.

Patagonia holds environmentalism at the heart of all that it does, explaining,

[w]e acknowledge that the wild world we love best is disappearing. That is why those of us who work here share a strong commitment to protecting undomesticated lands and waters. We believe in using business to inspire solutions to the environmental crisis. (Patagonia, Inc., 2009).

Patagonia clarifies that its manufacturing, production and retail process has an impact on the environment and seeks to change the habits into which we all have grown. Therefore, it has a practice of publicizing every detail of its process and then asking for feedback from its public community to engage in constant improvements. In addition, it is public in its objective that its efforts at reducing and/or eliminating its carbon emissions or other negative environmental impact can have a significant impact on the way that other businesses choose to run their organizations. Patagonia’s efforts in this regard but permeate its social and physical footprint, from its paper use and disposal policies, to its transport and water consumption processes, distance traveled for products, to choice of factories (Patagonia, Inc., 2009).

An alternative ethical formulation of carbon neutrality, yet one that leads to a similar conclusion, encourages decision-makers to consider the effort as an opportunity to take personal responsibility for the global warming implications of their lifestyles. Rather than referencing the potential negative implications of global warming and climate change, options for carbon reduction may also provide a way to be a proactive part of a solution that serves to protect numerous stakeholders. From a pragmatic standpoint, it is public consciousness of the impact of emissions on the environment that has led to the call for increased attention and control of what, historically, has been a limitless arena. In lieu of the virtue or practical wisdom embodied in the discussion above, the question surrounding the value of offsets is often posed merely as a utilitarian cost-benefit analysis: what control regime or behavioral choice will have the greatest or least impact on happiness or social good, overall? What choice will reduce emissions, overall? The utilitarian analysis presumes that the impact will take place, and simply – or simplistically – strives to ensure that the resulting

negative consequence to the natural environment (and thus to the human, animal and vegetal environment) is minimized (Bentham, 1907; Singer, 1993).

Critics of this approach, who could be allocated to a rights-based camp, query its underlying adequacy, questioning whether the trade-off of current satisfaction of *any current priority* for known or unknown future challenges is not only realistic but even within our rights to barter. They ask how one would possibly quantify on the market's balance sheet the value of the human or other lives lost, the land permanently degraded, or the air and water polluted (Gaba, 1999; *Harvard Law Rev.*, 2010).

However, the utilitarian argument is bolstered by some who claim benefits of carbon markets to developing economies. By permitting economies with greater resources to purchase emission reduction opportunities in developing economies, the market thereby encourages a transfer that would not otherwise exist (Doyle and Erdmann, 2010). There is no resulting "greater" harm since the developing economy could otherwise exploit its right to emit, rather than selling it (Haya, 2007; Schneider, 2007). But some argue that this results, instead, in environmental or economic discrimination (Eraker, 2000). Philosophers and political scientists, alike, contend that this would create a market that would permit wealthy individuals, organizations or countries use their purchasing power to buy themselves out of responsibility for emission reduction (DePalma, 2006; Economist, 2006b; Friedman, 2007a, b; Revkin, 2007; Richardson, 2006, Russell, 2007)? Under this regime, it could create a pay-to-play (pay-to-pollute) process where, as long as one has the financial ability to participate in the market, one could continue to emit at will.

In connection with carbon credits, critics charge that imbalance in the global financial structure is the offender. India is home to 17% of the world's population though it is only responsible for 2.4% of the total emissions since 1750 (Banerjee and Rao, 2007). Whereas India and China are responsible for CO₂ emissions of 1293.17 and 6017.69 million metric tons, respectively, the United States is responsible for CO₂ emissions of 5902.75 million metric tons. This translates to *per capita* emissions of India and China at 1.16 and 4.58 tons *per capita* whereas the *per capita* emissions in United States are

at 19.78 tons *per capita* (Union of Concerned Scientists, 2009). Comparatively, the average American is responsible for twenty tons of CO₂ and other gasses per year, while the average human is responsible for only four and a half tons (Revkin, 2007). Efforts toward environmental justice, however, do not to identify a solution other than the market by which to determine responsibility for the burden of costs and distribution of benefits, nor to remedy past inequities and bias (Taylor, 2000).

While research has shown that market-based solutions might be the most efficient method for cutting emissions and achieving sustainability (Dhanda, 1999; Stavins, 2010; United Nations, Department of Economic and Social Affairs, 2009), there are both rights-based as well as utilitarian objections to the carbon market based on the concept of environmental discrimination. The philosopher Immanuel Kant suggested that there is essentially one fundamental moral duty of all persons – to respect the dignity of each individual human being – and therefore a corresponding right to be treated with respect (Kant, 1996). Inherent in this responsibility is a duty to treat each person as an end in themselves and never only as means to our own ends. In other words, our fundamental duty is to treat people as subjects capable of living their own lives and not as mere objects that exist for our purposes. The transfer of emissions opportunities in exchange for cash payment is precisely the objectification proscribed by Kant.

Applying a utilitarian analysis, one might presume to reach a more favorable result in connection with the market. However, since the value of a benefit may be discounted depending on its long-term perspective, the result of the carbon market over time needs to be taken into consideration. Its implications may be to stymie public support for absolute limits on emissions or a tax on GHG fuels, and to hinder the introduction or development of greener and cleaner technologies, irrefutably two significant costs, as well as to support a culture of complacency surrounding lifestyle choice and of resistance to change (Revkin, 2007). Relevant to the current examination, if other market participants are willing, and may even have significantly more expertise or experience, to respond effectively to the expanding carbon footprint, there may be little incentive for individuals to reduce their quality of

life. The answer would then lie in one's conclusion surrounding the reality and implications of climate change.

Perhaps resolution is grounded in a hybrid rights-based approach that secures individual or firm obligation beyond that identified via a pure cost-benefit analysis; but on what basis might one evaluate the *extent* of that obligation and subsequently determine whether it has been fulfilled? The evaluation of the greatest good, *in the "end,"* may ask current generations to make sacrifices for the benefit of future generations, a concept called "intergenerational equity." Philosopher John Rawls is the father of this theory of intergenerational justice, which mandates that we pass on to future generations a world that is not in worse condition than the one we received from our ancestors (Gosseries, 2008; Rawls, 1971). Rawls made that sacrifice even more explicit, explaining a distinction between investment and consumption, "[e]ach generation must not only preserve the gains of culture and civilization, and maintain intact those just institutions that have been established, but it must also put aside in each period of time a suitable amount of real capital accumulation" (Rawls, 1971, p. 285).

If we append to this mandate the right to a current environment that sustains us as humans, then we may find direction and guidance with regard to an appropriate balance for any option of a carbon market – or its boundaries. Neither individuals, nor the organizations or corporations that they comprise, then would be considered justified in engaging in decisions or activities that limit the above articulated rights. While markets may prevail, there remains the strong ethical argument for the co-existence of a fundamental and ethical *minimum*. The minimum therefore is based on a standard of "do no harm," as an interpretation of a responsibility not to destroy that which we received, but also a recognition that we must do what is fundamentally necessary to survive. This tenuous equilibrium, for example, would permit inter-country purchases and transfers, discussed above. However, the transfers would only be considered ethically appropriate to the extent that they did not allow the receiving country to destroy its natural environment beyond repair, and that they recognized the transferring country's need to support and care for its people. This might approximate the perspective articulated by the Constitution of the

Republic of South Africa, which "enshrines the right of everyone

- (a) to an environment that is not harmful to their health or well-being; and
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation; and
 - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development" (SAHRC, 2009).

By incorporating an ethical minimum standard, the evaluation included below accordingly maintains the baseline fundamental principles while also recognizing the needs of multiple, varied stakeholders. With no other consistent "seal of approval" by which a consumer can distinguish between a high quality and low quality carbon offset, this ethical minimum standard is practically the only guidance that the consumer would have in evaluating an offset for carbon neutrality purposes.

The offset environment

One of the paramount obstacles, however, in implementing any standard, or ethical minimum, is in its measurement and assessment. How does one determine whether it has been achieved and subsequently maintained? This is by no means a new hurdle; carbon neutrality is simply the most recent of objectives that impact reputation and are therefore subject not only to internal but also external scrutiny. Others include sustainability, corporate citizenship, comprehensive social reporting, corporate social responsibility, attention to workers with disabilities, family-friendly work environments, enhanced global working conditions and the implementation of auditable codes of vendor conduct. The challenges faced by multinational enterprises vary depending on the reporting structure, subject matter and technical details. In connection with carbon credits, for instance, there have been some reports of firms paying

for offsets that do not take place or for offsets that *may* have taken place without compensation (raising the issue of additionality, discussed in greater detail, below) (Harvey, 2008; Harvey and Fidler, 2007; Morgan, 2008).

In an effort to differentiate the “quality providers” of carbon offsets from other providers, Environmental Data Services (ENDS) compared companies offering offsets on the basis of their clarity, among other elements. For instance, programs that intended to plant trees were considered by the ENDS report to be “of questionable quality” based on the inability to measure the end result and the possibility that carbon would again be released if and when they are cut down. Renewable power projects fared better (Environment Data Services, 2008). Unfortunately, ENDS does not make the basis for its quality comparison publicly available and, since our current research is specifically designed to respond to the consumer need for access to information, this omission presents an impediment.

Similar challenges exist in the average consumer’s quest for greater or more precise direction with regard to provider standards by which to rate providers or quality controls by which to judge offsets. We will explore these hurdles below as we seek to create a more profound understanding of this new environment.

To market; to market?

Given the increased attention to global warming and climate change, as we have discussed above, there are several options currently available to policy makers and to consumers by which to reduce emissions under a strategy known as “mitigation.” A mitigation strategy strives toward the overall reduction of CO₂ emissions, and might embrace a number of approaches, such as placing a cap on GHG emissions, investing in renewable sources of energy, removing fossil fuel subsidies, focusing on energy conservation, sequestering carbon dioxide emissions, and/or other options.² Depending upon the regulatory environment, these available options can fall under two categories: *command and control* and *market-based* options.

In a command and control environment, the policies are either mandated by the government or

by a regulatory agency in the form of taxes, subsidies, caps or targets. Through regulation, the emissions are taxed or a subsidy is provided to encourage the adoption of clean technology, a strategy quite popular in Europe and one that seems to move toward the incentive-based system that would support the ethical minimums mentioned above. Under the market-based strategy to reduce emissions, policy makers encourage a solution primarily driven by the industry or consumers that might include freely-traded emission permits, carbon allowances, or pollution offsets. Emission permits are exchanged in the pay-to-pollute model explained above to meet their emission quotas. The market drives this exchange whereby a “clean” company could sell its excess permits on the market and a highly polluting company could purchase permits through that market to cover its excess emissions.

Voluntary offsets

The focus of this current research is on *voluntary offsets*, otherwise referred to as “gourmet” offsets or Voluntary Emission Reductions (VERs). These offsets are not required by the Kyoto Protocol,³ or by any other governing regulatory agency. The mantra underlying the voluntary offset process is “reduce what you can, offset the rest.” The role of these offsets is to focus on that part of the carbon footprint that has not been addressed via direct emission reductions or other alternatives.

The retail market for VERs is geared toward individuals, households as well as organizations who seek to play a role in alleviating global warming by going “carbon neutral.” As of 2009, well over one hundred firms around the world offer the public the ability to purchase offsets, though there are numerous estimates as to how many offsets opportunities are floating in the marketplace (Hamilton et al., 2008). The price variety mentioned earlier and the vast competition might pose benefits for consumers as the market matures. However, the price differential also presents both information overload and a risk of incapacity to the consumer since it has not only a range of prices but also very little means by which to differentiate among providers in terms of offset quality, as shall be detailed below.

Benefits and challenges of a market for voluntary carbon offsets

As we discussed above, a common ethical approach to the carbon emission environment is utilitarian – the language of literal offsets, exchanges or trade-offs, and cost–benefit analysis; let us consider accordingly the benefits and challenges inherent in the offset market process and substance, itself. Since this market is not mature, most of these issues can also be viewed as details that need to be examined as the market goes through its development process.

One of the primary advantages of the offset market is its economic rationale; market signals lead to the most *economical* offset project by which to sequester carbon. It is an easy market in which to participate since all that is required is a computation of a carbon footprint of the activity engaged in, and the amount entailed for the offset. There is also an opportunity for social or individual involvement. Furthermore, it is a voluntary market that builds awareness for a pressing global concern. Last but not the least, companies are joining in because of the prospect of a positive corporate image (Economist, 2006a; Russell, 2007; Trexler Climate + Energy Services, 2006).

However, one should recognize here two recurring themes regarding concerns with the *concept* of the offset market. The first theme is simply a restatement of the concept of environmental discrimination question on the individual level. Detractors of the market contend that offsets are “easy on sacrifice and big on consumerism.” There is no need to change one’s personal lifestyle since consumers can “purchase forgiveness with money.” In essence, the global emissions market permits countries to trade emissions credits while the carbon credit market permits wealthy individuals or organizations to buy themselves out of responsibility to reduce emissions (DePalma, 2006; Economist, 2006b; Friedman, 2007a, b; Revkin, 2007; Richardson, 2006; Russell, 2007). The second theme is articulated on the basis of public policy. A market in climate neutrality can blunt public support for binding limits on emissions or a tax on GHG fuels and the introduction or development of greener and cleaner technologies might be hindered. In addition, there are concerns that the market is based on a flawed principle in that it gives the impression that the people in rich

countries need not change their lifestyle to reduce global warming (Revkin, 2007).

Further, beyond conceptual concerns, there are grave credibility challenges to the *processes* or *functioning* involved in the offset market. Before even considering questions involving the offsets themselves, some critics have stepped further back in the equation to query the computation of the extent of the damage incurred by the offending behavior, the individual’s airplane flight or the corporation’s choice of disposable product. If there is no agreement on the cost of harm, then there is little hope of consensus on the price of its alleviation (Hanlon, 2007).

Following from that point of departure, the price differential of the offsets and the inherent variation can be confusing for consumers who often abandon the practice entirely for its lack of integrity. In just one example, the Carbon Neutral Company calculates the round-trip flight from Chicago to Melbourne as producing 3.8 tonnes of CO₂, which would cost a consumer just under \$48 to offset. Climate Care suggests that the trip would produce 5.04 tonnes of CO₂, and would cost \$64 to offset. While the difference of 1.6 tonnes certainly is not insubstantial, compare that difference to the price suggested by MyClimate. MyClimate determined that this same flight would emit 8 tonnes of CO₂ and a traveler would need to pay almost \$267 to neutralize that impact.⁴ One would not normally consider that the carbon impact of a flight would be so extremely complicated to determine.

The next obstacle is the uncertainty as to whether the emissions reductions in an offset project are verifiable or not. Many offset providers make use of third-party auditors to respond to this concern since, in a worst case scenario, it is possible to double count the offset wherein a provider could sell a single credit numerous times. Since this market is voluntary in nature, these audits or certifications are done voluntarily *and* arbitrarily; there is no standardization (as discussed in the section on “standards”). Finally, some the projects raise consumer and institutional red flags due to natural decay and destruction, which leads to the issue of insurance guarantees. Some countries, such as the U.K., have responded to these challenges by instituting quality marks or other voluntary certification processes to provide consumers and others with a more grounded source of

knowledge surrounding a provider. However, standards continue to vary across the board.

Quality of projects

Purchasers of offsets are highly aware of the type of project being purchased. For example, tree planting has been one of the favorite offset projects since trees act as carbon sinks; their natural process of carbon sequestration locks in carbon dioxide absorbed from the atmosphere. However, trees are subject to decay and destruction. The popular band Coldplay learned about this lack of sustained offset when it purchased an offset in the form of a mango plantation in India for its on-tour flights. However, a research study questioned the effectiveness of using trees to “offset” emissions, suggesting that their ability to “lock-up” carbon dioxide has been greatly exaggerated (Copping, 2007). As a result, offsetters are moving away from this option (Russell, 2007). Therefore, whereas forestry used to account for 100% of Carbon Neutral’s portfolio two years ago, it is now down to 20%. Jonathan Shopley of Carbon Neutral states that destruction of ecosystems accounts for about one-fifth of CO₂ emissions worldwide and thinks that they will need to include insurance instruments to guarantee permanence of forestry sequestration projects (Revkin, 2007).

Additionality

Another considerable challenge for the buyers is to prove that the project would not have happened without the investment reaped from offset purchases. For instance, in connection with our flight from Chicago to Melbourne, discussed above, the flight would likely take place whether our traveler bought a ticket on that date or not. However, one could argue that, in the long run, if she or he reduced the extent to which they traveled, overall, airlines would reduce the number of overall flights.

In the sector of clean energy projects, buyers must show that the energy savings made are *additional* to those under a “business as usual” scenario for a credit to count as an offset. In other words, would the project be financially viable without the infusion from the carbon credits or is the project’s economic success dependent on that revenue, such that it could not survive without it? This concept is known as *additionality*.

In one high profile case, the 2007 Academy Awards promoted its annual extravaganza as entirely “green.” As part of its effort, it partnered with TerraPass to offset the equivalent of the amount of greenhouse gas that would be emitted by a standard celebrity over the course of a year. One of the offset projects supported by the partnership was an Arkansas land fill operated by Waste Management, Inc., from which TerraPass purchased gas reductions. However, it was later determined that Waste Management had initiated the program years prior to TerraPass’ involvement and its operation was not at all dependent on the offsets purchased by the Academy. In fact, “five of the six [project developers selling offsets to TerraPass] said the offsets hadn’t played a significant role in their decision to cut emissions. ‘It’s just icing on the cake. We would have done this project anyway’” (Elgin, 2007).

Under the *Clean Development Mechanism* (CDM) of the Kyoto Protocol, there are three criteria accepted as basis for the project additionality:

1. It is not required by current regulation.
2. The technologies used are not common practice.
3. It faces economic, technological, or investment barriers and, hence, needs offset resources to start up.

The buyers and developers of offsets need to set a baseline that can be used to predict emissions that would occur in case the project did not go ahead. In the CDM market, there are about 60 methodologies alone. However, a lack of standardization in these methodologies plagues the offset market (Russell, 2007). In fact, “lack of standardization” may be an understatement. After what some have called a “crackdown” by the United Nations in connection with approved projects for CDM, and a failure by some clean-air projects of leading firm EcoSecurities to qualify, one of its board members commented, “It’s like saying the speed limit’s going to be between 50 and 90. So do you drive 55 or do you drive 85?” (Ball, 2008).

Ownership

Another challenge is ownership since offsets remain largely unchartered territory. The price range exhibits a vast variation; there is uncertainty whether

the emissions reductions in a project are verifiable, and it is possible to sell a single credit numerous times leading to double counting. Hence, a buyer of offsets needs to be assured that there is sole ownership of the purchased offsets. There needs to be an assurance from the offset providers that the same offset is not being sold multiple times, to different parties. Jasmine Hyman at Gold Standard certification states that the voluntary market is “a no-man’s land” and that companies need to be aware of this (Russell, 2007).

Price differential

This variation in pricing is not so much of an issue when Compulsory Emissions Reductions (CERs) are traded by governments and companies to meet the emission reduction targets under Kyoto Protocol. The majority of the offsets purchased worldwide are CERs; 4.9 billion tons of CO₂ were traded in 2008, up 83% from 2007 (Point Carbon, 2009). In addition, the carbon market’s total value for 2010 is expected to total \$170bn a 33% jump from 2009 (Mouawad, 2010). The Kyoto CDM market, within which the CERs are traded, is highly bureaucratic with high transaction costs. On the other hand, the market in voluntary offsets is highly fragmented with vast price differences and projects supported range from planting trees in Tanzania to building hydro-electricity plants in Bulgaria. The price differential is often – though not always – due to the quality of the offset project.

The standard among provider standards?

Carbon offsets are an intangible good and, as such, their value and integrity depend entirely on how they are defined, represented, and guaranteed. What the market lacks are common standards for how such representations and guarantees are made and enforced. (Broekhoff, 2007)

Before exploring the nature of the provider market, and the hurdles it presents to offset purchasers in connection with credibility and verification, one might ask whether there is any potential for external verification through the use of uniform standards. Indeed, not only do standards exist but, again, consumers suffer from an information onslaught. There is not one standard but over a dozen

standards to verify the legitimacy of an offset provider by seemingly infinite combinations of metrics, and no one seems to be able to agree on a valid combination by which to measure providers. If there remains no agreement on a set of standards to which offset providers should be held, how can we even begin to judge whether a corporation has achieved carbon neutrality by using any of these providers? The effort to self-regulate is weighted down by its own relativism.

There is therefore little disagreement that, in the end, the market will likely demand uniform standards or registries to vouch for the legitimacy of the purchased offsets (Hamilton et al., 2007). Moreover, there has been an increase in the demand for a consistent and independent standard because of the practices outlined above that threaten to diminish confidence in the burgeoning market. The most effective standards will be those that are clear and rigorous, and have broad support from a wide spectrum of stakeholders, ranging from carbon offset project developers to offset traders and buyers, from environmental non-governmental organizations (NGOs) to the financial industry. Let us consider the types of standards that currently exist in the VER market before we continue to our analysis of the offset providers that strive to meet these standards.

There are three types of standards and certifications in the voluntary carbon offset market. There are some standards purpose of which is to certify the quality of an offset and the projects that it supports. Examples of this type of standard would include the Voluntary Carbon Standard, the Gold Standard, Plan Vivo, and the Climate, Community, and Biodiversity Standard. A second category of standard would be those whose focus is on the certification of offset sellers, products, services, and their claims relating to carbon neutrality. Standards that include this certification include Green-e for GHG Product Standard, Defra’s Guidelines, and the Climate Neutral Network. As additional proposals for *new* standards reach the market, they draw criticism from certain circles. There are concerns that rival international standards will confuse consumers. Jan Hamrin, president of *Center of Resource Solutions*, which proposed the Green-e standard, stated that the aim was to “develop a transparent standard that allows individuals to buy carbon offsets” knowing that emissions of GHG are being reduced. It is not clear that

this statement represents a new addition to the market of standards.

A third category of standards has been developed by the offset retailers, themselves, to ensure quality within their own portfolios. Examples of these types of standards include the Carbon Neutral Company and MyClimate. While the intent of these retailers may be laudable, there seems to be an apparent conflict of interest inherent in a self-imposed standard structure and, accordingly, these standards are likely to phase out as the market matures (Hamilton et al., 2007).

According to a comprehensive analysis conducted by Kollmuss et al. (2008), an inclusive, complete, and credible carbon offset standard must include the following three components:

1. *Accounting standards*: To ensure that offsets are “real, additional, and permanent.”
2. *Monitoring, verification, and certification standards*: To ensure that the projects perform according to project design and to quantify the actual carbon savings that happen once the project is up and running.
3. *Registration and enforcement systems*: To ensure that carbon offsets are only sold once, to clarify ownership and to enable trading of offsets. The offsets must include a registry with publicly available information to uniquely identify offset projects as well as a system by which to track transparently the ownership of those offsets (Kollmuss et al., 2008).

In order to apply the Kollmuss components, we performed a meta-analysis on three reports that detailed the standards: the Kollmuss report itself, a BSR report (2006), and an analysis by Hamilton et al.

(2008). Kollmuss used CDM as a baseline standard and compared eight voluntary standards and two accounting protocols along the following dimensions:

1. Market share
2. Additionality
3. Third-party verification
4. Separation of verification and approval process
5. Registry
6. Project types
7. Co-benefits
8. Price

Please see [Appendix B](#) for a detailed listing of the standards measured in Kollmuss et al. (2008) along the various dimensions.

Research conducted by Business for Social Responsibility (BSR) report (2006) also analyzed the voluntary carbon offset standards. However, it explores a slightly different set of standards and according to different criteria leading to consumer confusion. In addition to the standards used in the Kollmuss study, BSR analyzed five different standards, and did not evaluate two of the standards from the Kollmuss report. BSR also used dissimilar criteria in its examination. See [Appendix C](#) for results of this study. Hamilton et al. (2008) conducted yet another significant study of the carbon offset market. While their report evaluated standards similar to the earlier two, it also used a slightly different list of subject data. See [Appendix D](#) for results of this study. The four standards most commonly listed in the three reports reviewed include the Gold Standard, the Voluntary Carbon Standard (VCS), the Voluntary Offset Standard (VOS), and Plan Vivo:

| Standard | Description | Applies to |
|------------------------|--|---|
| The Gold Standard (GS) | Requires that each carbon offset project that bears its certification demonstrate social and environmental benefits and have a well-developed stakeholder engagement process | Voluntary offset projects as well as to Clean Development Market (CDM) Standard projects under the compulsory Kyoto Protocol system |

| Standard | Description | Applies to |
|---|--|--|
| The Voluntary Carbon Standard 07 (VCS 07) | Focuses only on GHG reduction attributes and, in a significant departure from other schemes, does <i>not</i> require projects to have additional environmental or social benefits | The VCS 07 is broadly supported by the carbon offset industry (project developers, large offset buyers, verifiers, projects consultants, etc.) |
| The Voluntary Offset Standard (VOS) | A carbon offset screen that accepts other standards and methodologies using its own specific screening criteria. It currently accepts Gold Standard's VER projects, as well as projects that employ CDM procedures but which are implemented in countries that have not ratified the Kyoto Protocol and are therefore not eligible for CDM | |
| Plan Vivo | An offset project method for small scale "Land Use, Land-Use Change and Forestry" (LULUCF) projects with a focus on promoting sustainable development and improving rural livelihoods and ecosystems | Works very closely with rural communities, emphasizes participatory design, ongoing stakeholder consultation, and the use of native species |

In addition to standards, there is yet another tool that can track credit ownership and eliminate "double counting" of the offsets, a persistent credibility challenge that will be discussed in detail in the next section. *Offset registries* follow two basic frameworks: One category of registries tracks GHG emissions and/or emission reductions, and a second category of registries comprises a carbon credit accounting system. Examples of tracking registries would include the United States' Department of Energy Voluntary GHG Reporting registry, the Canadian Greenhouse Gas Challenge, and the World Economic Forum Global Greenhouse Gas registry, while the Environmental Resources Trust GHG Registry and the Bank of New York Global Registrar and Custody Service fall into the second category. In some cases, a registry might serve in both capacities such as the California Climate Action Registry (Hamilton et al., 2007).

Methodology

Examination of offset providers

Current ratings in published studies

In order to best understand the needs of the consumer market in terms of information overloads and gaps, it is

vital to engage in a comparative content analysis of published reports that provide information or ratings on offsets. We attempted to access only those reports that were publicly available to consumers and free of charge to ensure that what we reviewed was also available to the average person seeking information. Four reports met these criteria, and they are summarized in Tables I and II.

Based on this overview, it appears that there is a need for current information on a larger number of providers across common criteria where diversions of information have generally arisen. Our analysis below seeks to respond to those voids.

Identifying sample for current study

In order to isolate and to distinguish offset providers who may answer the concerns expressed by the market's critics, to fill the voids left between the various reports discussed above and the large number of providers seeking to provide offsets, and to allow our study to provide the information most applicable to consumer stakeholders, we collected data on a large volume of offset providers. Our original collection team included seven scholars familiar with green company projects. We engaged in extensive research using the internet and online databases to

TABLE I

| Name | A consumer's guide to retail carbon offset providers | Carbon offsets in context | Voluntary offsets for air-travel carbon emissions | Carbon offset providers evaluation matrix |
|--|--|--|---|--|
| Responsible party/ author | Trexler Climate + Energy Services (2006) | Context Group (2006) | Tufts Climate Initiative (2006) | Carbon Concierge (2008) |
| Intended audience | Average consumer | Average consumer | Consumers particularly interested in air travel offsets | Average consumer |
| Number of retailers ranked | 30 | 23 | 13 | 17 |
| Process | Each retail provider is assigned a score between 1 and 10 | Includes information gathered from websites on: <ul style="list-style-type: none"> • Key activities • Role in offset market • Type of offset provided • Guidelines/verification, and geography of portfolio • Turnover/total CO₂ offset • Year since the company was operational • Whether the site has a carbon calculator • The cost per ton of carbon • External partners | <ul style="list-style-type: none"> • Atmosfair (highest recommendation) • Better World Club • CarbonCounter.org • Carbonfund.org • Carbon Neutral Company • Cleanairpass • Climate Care • Climate friendly (highest recommendation) • MyClimate (highest recommendation) | <ul style="list-style-type: none"> • Climate Trust • Native Energy |
| Highly Ranked Providers (UNDERLINED) providers appear on more than one list) | The <i>Consumer's Guide</i> lists eight companies that scored more than 5.0 on their rankings. These eight companies are: <ul style="list-style-type: none"> • <u>AgCert/DrivingGreen</u> • <u>Atmosfair</u> • <u>Carbon Neutral Company</u> • <u>Climate Care</u> • <u>Climate Trust</u> • <u>CO2balance</u> • <u>Native Energy</u> • <u>Sustainable Travel/MyClimate</u> | Unranked | Includes 13 companies listed below, with the <i>highest recommended</i> offered to four: <ul style="list-style-type: none"> • <u>Atmosfair</u> (highest recommendation) • <u>Better World Club</u> • <u>CarbonCounter.org</u> • <u>Carbonfund.org</u> • <u>Carbon Neutral Company</u> • <u>Cleanairpass</u> • <u>Climate Care</u> • <u>Climate friendly</u> (highest recommendation) • <u>MyClimate</u> (highest recommendation) | Results are calculated for 17 providers in North America and the companies rated highest by this report were: <ul style="list-style-type: none"> • <u>Climate Trust</u> • <u>Native Energy</u> |

TABLE I
continued

| Name | A consumer's guide to retail carbon offset providers | Carbon offsets in context | Voluntary offsets for air-travel carbon emissions | Carbon offset providers evaluation matrix |
|------------------|---|---|---|---|
| Criteria | <p>The <i>Consumer's Guide</i> identifies the seven evaluative criteria that it used in its ranking, along with the respective weights assigned. These criteria with the weights are found in Table II</p> | <p>It lists the 23 companies (mostly taken from the UK) and data collected from the respective websites. It is a brief report giving a snapshot on the activities of these 23 companies</p> | <ul style="list-style-type: none"> • Native Energy (highest recommendation) • Offsetters • Solar Electric Light Fund • Terrapass <p>This report evaluated its subject companies along six criteria:</p> <ol style="list-style-type: none"> 1. Overhead 2. Quality of Offsets 3. Standards and Verification 4. Air Travel Emissions Calculator 5. Price per ton of carbon offset 6. Transparency | <p>The eight criteria used in its evaluation matrix include:</p> <ol style="list-style-type: none"> 1. Business and Project Transparency 2. Offset Quality 3. Project Location and Offset Traceability 4. Industry Leadership 5. Business Model and Program Services Ratio 6. Third-Party Evaluation 7. Education 8. Social Benefit |
| Additional Notes | <p>Criteria not used in the ranking process, but which are discussed in the report include:</p> <ul style="list-style-type: none"> • Cost of the offset to the consumer • For-profit versus non-for-profit status of the providers • Proportion of the funding that goes to the offsets <p>In addition, there is no discussion of the basis for the weights given above. The report analyzes only 30 companies; however, it was completed in 2006 and, since that time, there have been numerous other providers entering the market so the report is unfortunately outdated</p> | <p>The primary drawback of this report is that there is no rationale provided on the selection of the 23 organizations analyzed and, furthermore, there is no mention of any methodology used</p> | <p>Interestingly, on the whole, the rated providers scored highest in the categories of third-party evaluation, and Business and Project Transparency. The lowest scores were found in Project Location, Offset Traceability, and Business Model and Program Services Ratio</p> <p>While this report is one of the most current, and quite comprehensive in its content, it discusses only 17 North American companies, including three wholesalers, an extremely small segment of today's offset provider market</p> | |

TABLE II
Consumer's Guide evaluative ranking criteria and respective weights

| | |
|---|------|
| Providers' prioritization of offset quality | 10.0 |
| Buyers ability to transparently evaluate offset quality | 9.4 |
| Transparency in provider operations and offset selection | 9.2 |
| Providers' understanding of technical aspects of offset quality | 9.0 |
| Priority assigned by provider to educating consumers about global warming and global warming policy | 7.8 |
| Ancillary environmental and sustainable development benefits of offset portfolios | 5.6 |
| Use of third-party project protocols and certification | 3.9 |

compile an initial sample of 125 companies worldwide, though they were predominantly based in the United States, Europe, and Australia. From that larger population of sources, we examined each company's website to determine whether the information was sufficient from which to make a full evaluation of the company's offset projects on the bases discussed in the next section. The initial sample was thereby reduced to 117 based on the modest information available on eight of the firms' websites. We then conducted a far more detailed analysis of these 117 companies to ascertain whether detailed information on the market performance criteria were available. This process narrowed the sample to 92 companies, which constituted our final data sample for this study.

Analysis – examination of the offset providers

The comparative analysis of the final 117 online carbon credit providers sought to ascertain whether detailed information on market performance criteria was available via standard consumer inquiry methods. To this end, we evaluated each company based on the following five questions, based on key market performance hurdles identified previously. Examples of variable satisfaction are provided later in this section.

Q1: Project Quality. Does the provider's website offer information on the quality of the projects? For example, do the projects involve tree planting or clean energy projects? [*This question was delineated by four component parts.*]

- a. *Type of projects:* What are the types of projects available and how many different types are available?
- b. *Certification:* Are the offsets or the projects certified? If so, by whom? Is the certification third-party verified?

- c. *Additionality:* Does the website provide information to illustrate or prove that the project would not have happened without the offset investments?
- d. *Transparency:* Does the website provide clear and detailed information about projects, company policies, standards, verifications and the pricing of offsets?

Q2: Calculator. Does the provider's website offer information on calculating how many tons of carbon offsets need to be purchased? Is the service for road trips or air travel?

Q3: Quality of providers. Does the provider's website offer information on the quality of the offset provider, itself? [*This question was delineated by two component parts.*]

- a. *Single ownership:* Does the website provide assurance that the offsets are sold only to one entity, that the offsets are not being sold forward?
- b. *Other benefits:* Does the website provide other information on education, sustainable development, overall climate strategy, advising, consulting, or other benefits?

Q4: Price per ton of carbon offset: What is the price charged for each ton of CO₂ offset? Is there a range and what is the range?

We trained two research assistants to perform an evaluation of all the websites based on the above protocol. Since the purpose of this investigation is to explore the online providers from the perspective of the consumer as stakeholder, we sought through our protocol to represent an "average" consumer in evaluating the providers. The evaluators were also given detailed background data to understand the purpose of the research study, all of which is delineated in the bibliography.

The evaluators analyzed the public, online information available from each provider based on the above protocol using a 5-point Likert scale (see complete results at [Appendix E](#)). The final number of providers included in the evaluation was 92. Twenty five companies of the original 117 were not included by the raters for several reasons, reasons that were in fact significant and germane to the objectives of the study, itself. For instance, where a website was in a foreign language without translation, the evaluator could not apply the protocol. Since the raters stood in the shoes of the average consumer stakeholder, if they could not understand the website, they did not include it in the study. Of course, if the company was misclassified and, in fact, was not in a business to sell retail offsets, if the website was being re-launched and therefore was not currently operational or available, or if it was a donation-based conservation group and therefore did not offer offsets, the company was also removed from consideration.

The averages of the scores for all of the providers from the two evaluators were 2.1 and 2.35, respectively. The offset providers that ranked the highest as a total set of the two raters, along with their average combined scores, are included in [Tables III and IV](#).

The key market performance hurdles that comprised the variables included in these scores were satisfied based on attributes identified and shared with the raters. In order to allow consumers and others to apply this scheme to other current and future offset providers, the following example model providers are offered.

Q1: Project quality. Why did a particular company earn a high score in this category?

- a. *Type of projects:* **AtmosFair** is an example of a high score provider in this category. The company offers a broad number of projects from which consumers may choose. Within that variety, the company offers many different *types* of projects as well (i.e., solar energy, hydro power, irrigation, efficient fuel uses and more). AtmosFair also includes the current status of each project in significant detail, and all information relevant to a consumer's decision: a description of each particular project, what it has accomplished and how it has helped. **Climate Care** also received a high score since the company offers a wide variety

TABLE III

Tier one group of companies (with an average combined score greater than 4.0)

| | |
|-----------------------|------|
| 3Degrees | 4.5 |
| The Carbon Fund | 4.43 |
| Terrapass | 4.43 |
| EcoSecurities | 4.33 |
| Carbon Clear | 4.21 |
| Climate Friendly | 4.14 |
| Tricorona Green | 4.07 |
| Pure | 4.07 |
| Climate Care | 4.02 |
| Climate Neutral Group | 4 |
| My Climate | 4 |

TABLE IV

Tier two group of companies (with an average score 3.5 or greater)

| | |
|----------------------------------|------|
| Action Carbone | 3.93 |
| Carbon Balanced | 3.93 |
| Carbon Impacts | 3.93 |
| Carbon Neutral | 3.93 |
| Zerofootprint | 3.93 |
| AtmosFair | 3.93 |
| Carbon Aided | 3.92 |
| Native Energy | 3.86 |
| LivClean | 3.79 |
| Sustainable Travel International | 3.79 |
| Carbonfund.org | 3.5 |
| Planetair | 3.5 |
| TargetNeutral | 3.5 |
| Zero GHG | 3.5 |

of projects from which to choose. The projects are diverse in their types ranging from wind, solar, bio fuels, stoves, and others. Furthermore, the website provided extensive, detailed information on each project, including project reports, detailing the status of the projects, certification, immediate impact and the benefits of the project on the community, as well as video and pictures from the project sites.

- b. *Certification:* **Carbon Impacts** received a high score since it was certified by both the Gold Standard and the Voluntary Carbon Standard. In addition, this company offers

details about what those standards represent, what it has accomplished and it provided a link for more information. **3Degrees** also scored high because its website clearly stated each of the certifications that it recognizes and illustrates what kind of certification each projects has. They also give details on the criteria for each kind of certification and provide links to more details. A company usually ranked higher if it had certification from Gold standard, CCX, VCS, CCAR, CDM, Green-e climate, and UNFCC.

- c. *Additionality*: **Carbon Balanced** scored high since its website explained the concept of additionality in detail and provided information on how it achieved additionality, both financially and through delivery. Another example of additionality is offered by **Carbon Clear**, which illustrates on its website that its projects are certified and then explains why it would have been otherwise impossible to start a project in that region and how it has helped the community socially, economically and environmentally.
- d. *Transparency*: **Tricorn Green** received a high score on transparency because it explained where the consumer's money was allocated and how the consumer would be kept informed about activities. It went into detail with transparency and provided an abundance of information on its administrative costs. In addition, after a consumer's money was allocated to a project, Tricorn Green offered to the consumer the option to track their offset. **Carbon Clear** details the date on which a project is started, its certification, the current status of the project and the total emission reduction made possible by the project. The FAQ page also gives information as to the allocation of the money and the allocation of the funds between the project and administrative costs.

Q2: Calculator. **Offset the Rest** received a high score for two reasons. First, its website provides complete detail on how its calculator functions. Second, the website offered six different categories for offsetting – private transportation, commuter

transportation, home energy, waste production, along with the details on each category. **Carbon Neutral's** website calculator provided an option of calculating carbon footprint from various activities. It went into details of travels (flights, cars, train), household (electricity, number of people living in the house, type of house, waste management), and the process from which the final computation was derived.

Q3: Quality of providers. Does the provider's website offer information on the quality of the offset provider, itself?

- a. *Single ownership*: **LivClean** received a high score because the company's website guaranteed that each of their carbon offsets is measured accurately and that there is no double counting. Also, the company's website explained and verified the retirement of purchased offsets. **3Degrees** directly addresses the question in its FAQ page and states that the projects are registered in the VER registries that guard against double selling and have special security checks to prevent double selling.
- b. *Other benefits*: **EcoSecurities** received a high since the website not only concentrated on carbon offsets but also offered consulting, career opportunities, press information and responsibilities. In addition, it provided a great deal of information about green energy. For instance, the press and media sections provide articles on the current issues on green energy.

Q4: Price per ton of carbon offset: What is the price given for each ton of CO₂ offset? Is there a range and what is the range? The range in terms of price per CO₂ offset ton was extremely broad, as might be expected given the range of the projects supported. The raw data on price per ton of CO₂ from the offset providers was collected in local currencies and was converted to U.S. dollars on 28 May, 2009.⁵ The price per ton of CO₂ from all included providers ranges from \$2.50 (*Carbon Neutral*) to \$43.80 (*Planet Air*).

In this research, we provide two tools to both individual consumers as well as corporations: a

means of assessing carbon offset providers and a more complete database of those companies available for their consultation or future use when they opt to offset. To critically evaluate the market, this research offers a vital protocol for individual application by any interested stakeholder. While we opted to focus our examination on retail offset providers to represent the consumer stakeholder, it is noteworthy that there are several companies that do provide offset opportunities to corporations or large organizations, alone; and these companies were excluded from our research study.

Conclusion – implications of returning to facts + values

In this article, we have offered a basic understanding of the offset market, its social and environmental context, and the ethical tensions embedded in decisions surrounding stakeholders. Given the large and rising number of offset providers in the highly unregulated and often misunderstood carbon offset industry, our contribution offers value in highlighting areas of concern and dilemmas for consumers and other related stakeholders. We also offer insight into the standards environment for offset providers since the numerous standards themselves need to be standardized. Furthermore, we offer a detailed exploration of the areas of ethical challenge in the offset provider market, since there is a concern that these challenges may, in turn, derail the market for carbon offsets. Finally, we share results with regard to consumer perspectives of carbon offset providers, striving to provide a means by which one can compare offset providers.

But, where does this plethora of information leave the consuming public? Notwithstanding a new political administration in the United States, which has brought with it renewed aspirations for a global climate agreement (Rosenthal, 2009), and more attention to environmental sustainability than individuals or organizations have ever paid to it in history, these changes will bring nothing close to a revolution unless we can be successful in educating ourselves and our community, and in encouraging a recognition of a global fundamental and ethical minimum responsibility. As discussed at the outset, neither the basic and stone-faced utilitarian balanc-

ing act nor Kant's stone wall of universalism will offer us that cavalry call; both present inherent flaws in implementation that stumble at geographical, cultural or other boundaries.

The United Nations cautions, "climate change is the defining human development issue of our generation. All development is ultimately about expanding human potential and enlarging human freedom. It is about people developing the capabilities that empower them to make choices and to lead lives that they value. Climate change threatens to erode human freedoms and limit choice. It calls into question the Enlightenment principle that human progress will make the future look better than the past" (UNDP, 2007). Unless we heed its warning, we are likely to steer ourselves directly toward an even more stark division between classes, races and ethnicities than we have already. The UN continues, "The impacts [of climate change] will be felt the greatest by the poorest and most vulnerable individuals in society, particularly those with little or no access to food, water, resources, and few opportunities for meaningful public participation."

Ultimately, this awareness is the definitive key, and hence the basis of the current research. As long as the purchaser of carbon credits remains naïve about the process, uninformed about standards, confused by conflicting claims and overwhelmed by choice, she or he shall not fully comprehend the eventual consequences of their actions (on themselves or on other stakeholders), which in turn will have severe implications on the incentive structures in place. These conflicting variables, coupled with the failure of political forces to identify ethical minimum standards based on baseline fundamental principles while also recognizing the needs of myriad global stakeholder groups, foreshadows a time of vast social divides. It is during this period that neither the fundamental values of a right to health and to a sustaining physical environment, nor the benefits of a balanced, equitable and fair global carbon emission standard will truly be realized.

Notes

¹ The term refers to a space that is not prescriptive in what it may contain but only by reference to its

context, defined, perhaps somewhat arbitrarily, by social or cultural shifts. It is derived from the following quote, “I do not know how to draw the solution to insoluble problems. It is still sleeping in the bottom of a box; but a box over which persons who have drawn close to each other keep watch. I have no idea other than the idea of the idea that one should have. The abstract drawing of a parallelogram – cradle of our hopes. I have the idea of a possibility in which the impossible may be sleeping” (Levinas, 1999, p. 89).

² The alternative to a mitigation strategy is an “adaptation strategy,” which refers to a form of acceptance and the process of learning to live with the consequences of climate change. An *adaptation strategy* calls for adjusting to lower crop yields, water scarcity, and potential increases in storm events. This latter strategy is not considered as attractive or as preferable as mitigation, since impoverished nations will be hardest hit. They have the fewest resources with which to develop the adaptations necessary to tackle the problems caused by climate change.

³ The Kyoto Protocol, an agreement under the United Nations Convention on Climate Change, adopted in 1997 and ratified in 2005, allows Annex I (industrialized) countries to meet *binding* targets through a mar-

ket-based solution – purchasing or buying GHG emission reductions outside of their home countries. One of the mechanisms by which they can achieve their targets is through the Clean Development Mechanism (CDM), implemented by the United Nations, where a Certified Emission Reduction (CER) can be traded by countries to meet GHG targets. These CERs are board-certified and must follow a rigorous process of assessment and approval. Though CERs are valued for their credibility and validation, because of the highly bureaucratic nature of these trades, the transaction costs tend to escalate.

⁴ All calculations conducted on organizations’ websites on February 6, 2009, from Chicago O’Hare to Melbourne Tullamarine, and currencies were exchanged using www.xe.com.

⁵ We used www.xe.com for all currency conversions.

Appendices

Appendix A

Carbon calculators

| Companies | Websites | Types |
|--------------------------------|--|---|
| Airplane travel emissions | | |
| Atmosfair | www.atmosfair.de/index.php?id=5&L=3 | Location to location detail, with layovers |
| Climate Care | www.climatecare.org/living/calculator_info/index.cfm | Location to location, as well as house and car emissions |
| Offsetters | www.offsetters.ca/calculators_fights.htm | Location to location detail |
| Business emissions calculators | | |
| Climate Friendly | www.climatefriendly.com/business.php | One of very few business calculators. Includes factory and office electricity, fleet fuel, and corporate air travel |
| Car travel emissions | | |
| Certified Clean Car | www.certifiedcleancar.com/menu/cleannow/foryou/index.htm | Input exact car make and model |
| Target Neutral | www.targetneutral.com/TONIC/carbon.do?method=init | Calculate up to four cars at once |
| TerraPass | www.terrapass.com/road/carboncalc.php | Input exact car make and model |
| Clean Air Pass | www.cleanairpass.com/treecanada | Input exact car make and model |
| Other notable calculators | | |
| Carbon Counter | www.carboncounter.org/test.php?testPath=estimate&nextStep=1 | Calculate “estimated” or “exact” emissions |

APPENDIX A

continued

| Companies | Websites | Types |
|----------------------------------|--|--|
| Sustainable Travel International | www.sustainabletravelinternational.org/offset/index.php?p=hotel | Include hotel emissions |
| World Land Trust | www.carbonbalanced.org/personal/calculator/calctravel.asp | Includes hotel, boat, flight emissions, etc. |
| Atmos Clear | www.atmosclear.org/calculator_tran.php | Includes household and recreational equipment, from leaf blowers to jet skis |

Appendix B

Overview of:

Kollmuss, A., H. Zink and C. Polycarp. 2008. Making sense of the voluntary carbon market: A comparison of carbon offset standards. Commissioned by World Wild Fund for Nature.

Kollmuss, et al., used CDM as a baseline standard and compared eight voluntary standards and two accounting protocols along several dimensions.

The eight voluntary standards included:

- Clean Development Standard (CDM)
- Gold Standard
- Voluntary Carbon Standard 07 (VCS 07)
- Voluntary Emission Standard+ (VER+)
- Carbon Climate Exchange (CCX)
- Voluntary Offset Standard (VOS)
- Climate, Community, Biodiversity Standard (CCBS)
- Plan Vivo

The two accounting protocols included:

- GHG Protocol
- ISO 14064

The several dimensions against which this report evaluated these standards are

- Market share
- Additionality
- Third-party verification
- Separation of verification and approval process
- Registry
- Project types

- Co-benefits
- Price

Please see Table B1, for a detailed listing of the standards along the various dimensions.

Appendix C

Overview of:

Business for Social Responsibility 2008. Offsetting Emissions: A Business Brief on the Voluntary Carbon Market. *The Ecosystem Marketplace*. February.

Research conducted by Business for Social Responsibility (BSR) report (2008) also analyzed the voluntary carbon offset standards. Leading to consumer confusion, however, it explores a slightly different set of standards and according to different criteria. In addition to the standards used in the Kollmuss study, BSR analyzed five different standards, and did not evaluate two of the standards from the Kollmuss report. BSR also used dissimilar criteria in its examination.

In addition to the standards used in the Kollmuss study, BSR also analyzed

- Green-e
- Greenhouse Friendly
- WBCSD/WRI Protocol (WBSCD World Business Council for Sustainable Development, WRI World Resources Institute)
- CCAR (CCAR California Climate Action Registry)
- Social Carbon.

However, BSR did not include the Clean Development Standard, nor the GHG Protocol, as

TABLE B1
Making sense of the voluntary carbon market: a comparison of carbon offset standards

| Main supporters | Market share | Additionality tests (relative to CDM) | Third-party verification required | Separation of verification and approval process | Registry | Project types | Excludes project types with high chance of adverse impacts | Co-benefits (relative to CDM) | Price of offsets |
|--|--|---------------------------------------|-----------------------------------|---|----------|---|--|-------------------------------|--|
| Clean Development Mechanism UNFCCC Parties | Large | = | Yes | Yes | Yes | All minus REDD, new HFC, nuclear | No | = | €14–30 |
| Authors' comments: | | | | | | The CDM is part of the Kyoto protocol and aims to create economic efficiency while also delivering development co-benefits for poorer nations. It has been successful in generating large numbers of offsets. Whether it also has delivered the promised development co-benefits is questionable | | | |
| Gold Standard Environmental NGOs (e.g., WWF) | Small but growing | =/+ | Yes | Yes | Planned | EE, Re only | Yes | + | Yes: €10–20 CERs: up to €10 premium |
| Authors' comments: | | | | | | The GS aims to enhance the quality of carbon offsets and increase their co-benefits by improving and expanding on the CDM processes. For large-scale projects the GS requirement are the same as for CDM. Yet unlike CDM, the GS also requires the CDM additionality tool also for small-scale projects | | | |
| Voluntary Carbon Markets Actors (e.g., IETA) | Standard 2007 (VCS 2007) New; likely to be large | = | Yes | No | Planned | All minus new HFC | No | – | €5–15 |

TABLE B1
continued

| Main supporters | Market share | Additionality tests (relative to CDM) | Third-party verification required | Separation of verification and approval process | Registry | Project types | Excludes project types with high chance of adverse impacts | Co-benefits (relative to CDM) | Price of offsets |
|---|---|---------------------------------------|-----------------------------------|---|----------|-----------------------|--|-------------------------------|------------------|
| Author's comments: | The VCS aims to be a universal, base-quality standard with reduced administrative burden and costs. The VCS plans to develop performance based additionality tests. These tools have not yet been developed and are thus included in this rating. Prices are for projects implement under VCS ver.1 | | | | | | | | |
| VER+ Carbon Market Actors (e.g., T0V S0D) | Small but growing | = | Yes | No | Yes | CDM minus large hydro | Yes | – | €5–15 |
| Author's comments: | VER+ offers a similar approach to CDM for project developers already familiar with CDM procedures for projects types that fall outside of the scope of CDM | | | | | | | | |
| Chicago Climate Exchange (CCX) and Carbon Market Actors | Large in the US | – | Yes | Yes | Yes | All | No | – | €1.2–3.1 |
| Authors' Comments: | CCX was a pioneer in establishing a US carbon market. Its offset standard is part of its cap-and-trade programme. Sales in USD: \$1.8–4.5 per metric tonne (October 07–February 08) | | | | | | | | |
| Voluntary Offset Standard (VOS) Financial Industry and Carbon Market Actors | N/A | = | Yes | No | Planned | CDM minus large hydro | Yes | = | N/A |
| Author's comments: | VOS closely follows CDM requirement and aims to decrease risks for offset buyers in the voluntary market | | | | | | | | |

TABLE C1
Detailed listing of standards against BSR criteria

| | Description | Focus on env. and social benefits | Reporting/ registration | Product label | Includes LULUCF methodology? | Geographical reach | Start date |
|---------------------|--|-----------------------------------|---|---------------|---|--|---|
| Gold Standard | Certification for offset projects and carbon credentials | Yes | VER registry in development | Yes | No, energy project only | International | First project validated 2006, first credits verified 2007 |
| The VCS | Certification for offset projects and carbon credentials | No | Use Bank of New York; other registry TBD | Yes | Yes | International | |
| Green-e | Certification for offset sellers | No | Registry incorporated | Yes | Accepts other standards that include LULUCF | Aimed at N.A., international possibilities | Expected mid-2008 |
| CCB Standards | Certification offset projects | Yes | Projects on website | Yes | Only LULUCF | International | First project certified in 2007 |
| CCX | Internal system for CCX offset projects and CCX carbon credentials | No | Registry incorporated with trading platform | No | Yes | International | 2003 |
| Plan Vivo | Methodology and certification for offset projects and carbon credits | Yes | No | No | Community-based agro forestry | International | 2000 |
| Greenhouse Friendly | Certification for offset sellers and carbon-neutral products | No | No | Yes | Yes | International | 2001 |
| WBCSD/WRI Protocol | Guidelines for projects and corporate GHG accounting | No | Does not include registry | No | Protocol created For LULUCF | International | 2001 |

TABLE C1
continued

| | Description | Focus on env. and social benefits | Reporting/ registration | Product label | Includes LULUCF methodology? | Geographical reach | Start date |
|---------------|---|-----------------------------------|---------------------------------------|---------------|---------------------------------------|--|------------------------------|
| CCAR | Registry protocol | No | Reporting protocols used as standards | No | Yes, first protocol | Forestry – California Livestock – US; Registry – international | First protocol in 2005 |
| VER + | Certification got offset projects, carbon credits and carbon-neutral products | No | TUV SUV Blue Registry | Yes | Yes, JI or CDM methodology | International | 2007 |
| ISO 14064 | Certification for emissions reporting offset projects, carbon credits | No | No | No | Yes | International | Methodology released in 2006 |
| VOS | Certification for emissions reporting offset projects, carbon credits | No | TBD | TBD | Follow CDM or JI methodology | International | TBD |
| Social Carbon | Certification for offset projects and carbon credits | Yes | Creating its own registry system | Yes | Reforestation & avoided deforestation | South America and Portugal | First methodology in 2002 |

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TABLE D1
Detailed listing of standards against Hamilton, et al. criteria

| | Description | Focus on env. and social benefits | Reporting/ registration | Includes LULUCF methodology? | Geographical reach | Start date | Projects/credits verified |
|-----------------------|--|-----------------------------------|---|---|--|---|--|
| Gold Standard for VES | Certification for offset projects and carbon credentials | Yes | VER registry in development | RE & EE projects | International | First project validated 2006, first credits verified 2007 | 10 VER projects verified |
| The VCS | Certification for offset projects and carbon credentials | No | Use Bank of New York; other registry TBD | Yes, Methodologies TBD | International | Expected mid-2007 | Unknown |
| Green-e | Certification for offset set sellers | No | Registry incorporated | Accepts other standards that include LULUCF | Aimed at N.A., international possibilities | Expected mid-2007 | 3 Projects |
| CCB Standards | Certification offset projects | Yes | Projects on website | Only LULUCF | International | First project certified in 2007 | 9 Projects |
| CCX | Internal system for CCX offset projects and CCX carbon credentials | No | Registry incorporated with trading platform | Yes | International | 2003 | 28Mt CFI's registered |
| Plan Vivo | Guidelines for offset projects | Yes | No | Community-based agro forestry | International | 2000 | 3 Projects |
| Greenhouse Friendly | Certification for offset sellers and carbon-neutral products | No | No | Yes | Australia | 2001 | 4,373,877 registered (259,202 in 2007) |
| CCAR | Registry protocol | No | Reporting protocols used as standards | Yes, first protocol | Forestry – California Livestock – US | First protocol in 2005 | 2 Projects |
| VER+ | Certification program for offset projects carbon neutral products | No | TUV SUV Blue Registry | Yes, JI or CDM methodology | International | Expected launch mid-2007 | 706,107 VERs registered |

TABLE D1
continued

| | Description | Focus on env. and social benefits | Reporting/ registration | Includes LULUCF methodology? | Geographical reach | Start date | Projects/credits verified |
|---------------|---|-----------------------------------|----------------------------------|---|----------------------------|------------------------------|---|
| ISO 14064 | Certification for emissions reporting offset projects, carbon credits | No | No | Yes | International | Methodology released in 2006 | Unknown |
| VOS | Certification for offset projects, carbon credits | No | TBD | Follow CDM or JI methodology | International | TBD | Unknown |
| Social Carbon | Certification for offset projects and carbon credits | Yes | Creating its own registry system | Reforestation and avoided deforestation | South America and Portugal | First methodology in 2002 | 10 projects representing 350,000 tonnes |
| DEFRA | Proposed consumer code for offsetting and accounting | No | Does not include a registry | If CDM/JI approved | UK | TBD | Unknown |

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Kollmuss did. BSR evaluated the standards according to six criteria:

- Focus on Environmental
- Focus on social benefits
- Reporting Requirements
- Labeling, Inclusion of LULUCF methodology (*LULUCF* Land Use, Land-Use Change and Forestry)
- Geographical Reach
- Start Date

Please see Table C1, for a detailed listing of the standards along the various dimensions.

Appendix D

Overview of:

Hamilton, K., M. Sjardin, T. Marcello, & G. Xu. 2008. Forging a Frontier: State of the Voluntary Carbon Markets. San Francisco: Ecosystem Marketplace & New Carbon Finance. http://ecosystemmarketplace.com/documents/cms_documents/2008_StateofVoluntaryCarbonMarket.4.pdf.

Hamilton, et al. (2008) conducted yet another significant study of the carbon market. While their report evaluated standards similar to the earlier two, it did not look to CDM and included DEFRA. Moreover, it was the most inclusive report, including 13 standards overlapping with both other examinations. It then used dimensions similar to those in the BSR report.

- Gold Standard
- VCS
- Green-e Climate
- CCB
- CCX
- Plan Vivo
- Greenhouse Friendly
- CCAR
- VER+,
- ISO 14064
- VOS
- Social Carbon
- DEFRA.

Please see Table D1, for a detailed listing of the standards along the various dimensions.

Appendix E

Complete results of average rating evaluations

| | |
|-------------------------------------|------|
| 3Degrees | 4.50 |
| The carbon Fund | 4.43 |
| TerraPass | 4.43 |
| EcoSecurities | 4.33 |
| Carbon Clear | 4.21 |
| Climate Friendly | 4.14 |
| Tricorona Green | 4.07 |
| Pure | 4.07 |
| Climate Care | 4.02 |
| Climate Neutral Group | 4.00 |
| My Climate | 4.00 |
| 3Degrees | 4.50 |
| The carbon Fund | 4.43 |
| TerraPass | 4.43 |
| EcoSecurities | 4.33 |
| Carbon Clear | 4.21 |
| Climate Friendly | 4.14 |
| Tricorona Green | 4.07 |
| Pure | 4.07 |
| Climate Care | 4.02 |
| Climate Neutral Group | 4.00 |
| My Climate | 4.00 |
| Action Carbone | 3.93 |
| Carbon Balanced | 3.93 |
| Carbon Impacts | 3.93 |
| Carbon Neutral | 3.93 |
| Zerofootprint | 3.93 |
| AtmosFair | 3.93 |
| Carbon Aided | 3.92 |
| Native Energy | 3.86 |
| LivClean | 3.79 |
| Sustainable Travel International | 3.79 |
| Carbonfund.org | 3.50 |
| Planetair | 3.50 |
| TargetNeutral | 3.50 |
| Zero GHG | 3.50 |
| Conservation Fund's Go Zero Program | 3.43 |
| Live Climate | 3.36 |
| Offset the Rest | 3.36 |
| Offsetters | 3.36 |
| Carbon Offsets LTD | 3.29 |
| Climate Positive | 3.29 |
| CO2Logic | 3.29 |
| Neco | 3.21 |
| Versus Carbon Neutral | 3.21 |
| Climat Mundi | 3.17 |
| BEF – Bonneville Environmental FDN | 3.14 |

APPENDIX E

continued

| | |
|-----------------------------|------|
| The Nature Conservancy | 3.14 |
| World Land Trust | 3.07 |
| Carbon Passport | 3.07 |
| Delta Offsets | 3.07 |
| CLIMACT | 3.00 |
| Carbon Positive | 2.93 |
| BeGreen Now | 2.93 |
| ClearSky Climate Solutions | 2.93 |
| Clear- | 2.86 |
| carboNZero | 2.79 |
| Origin | 2.79 |
| Cleaner Climate | 2.71 |
| Greenfleet | 2.71 |
| Climate Stewards | 2.57 |
| Good Energy Initiative | 2.57 |
| Carbon Friendly | 2.50 |
| Coolaction | 2.50 |
| DriveNeutral | 2.50 |
| LiveNeutral | 2.50 |
| Carbon Footprint Offsetters | 2.43 |
| Carbon Forestry | 2.43 |
| Standard Carbon | 2.43 |
| EcoNeutral | 2.43 |
| Solar Electric Light Fund | 2.42 |
| Blue Ventures Carbon Offset | 2.36 |
| Carbon Planet | 2.36 |
| e-blueHorizons | 2.36 |
| My Clean Sky | 2.36 |
| Carbon Angel | 2.29 |
| C Level | 2.29 |
| Go Neutral | 2.21 |
| PrimaKlima-Weltweit | 2.20 |
| EcoVoom | 2.14 |
| Plan Vivo | 2.08 |
| Carbon Reduction Institute | 2.07 |
| Tist | 2.01 |
| CO2 Australia | 2.00 |
| Envirotrade/Plan Vivo | 2.00 |
| Flying Forest | 2.00 |
| Carbon Retirement | 1.93 |
| GroPower | 1.93 |
| ClimateSave | 1.83 |
| Tree Canada | 1.79 |
| Green Pass | 1.76 |
| LiveCooler | 1.71 |
| ETA | 1.71 |
| Carbon Me | 1.64 |
| Treeflights | 1.63 |

APPENDIX E

continued

| | |
|--------------------------|------|
| Trees, Water & People | 1.63 |
| PowerTreeCarbon | 1.57 |
| Global Cool | 1.50 |
| Canopy | 1.36 |
| Reforest the Tropics | 1.36 |
| Better World Club | 1.29 |
| Enviro Friendly Products | 1.24 |
| Pembina | 0.86 |

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K. Kathy Dhanda and Laura P. Hartman
 Department of Management,
 DePaul University,
 1 E. Jackson Blvd., Ste. 7000, Chicago,
 IL 60604, U.S.A.
 E-mail: LHartman@depaul.edu

K. Kathy Dhanda
 E-mail: Kdhanda@depaul.edu