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Industry perspectives on carbon-offset programs in Canada and the United States

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Carbon offsetting is often put forward as a possible mitigation strategy for climate change. This study examines carbon-offset businesses in Canada and the United States to better understand their standards, project types, and project locations and to determine their perspectives regarding the challenges of the carbon-offset industry. Twenty companies (a 40% response rate) agreed to a structured interview, although many were reluctant to share some information. Several salient themes emerged and are discussed in more detail: involvement of the hospitality and tourism industry, financial commitment, confusion in the marketplace, transparency, and needs for education. Implementation of three recommendations—covering standardization, education, and further engagement among the industry, its customers, and researchers—could reduce confusion and increase the transparency of carbon offsetting. Yet these changes might not help business since customers might decide that purchasing carbon offsets does little to address climate change.

KEYWORDS: climatic change, mitigation, companies, market economy, greenhouse gasses, questionnaires

Introduction: Carbon Offsetting for Climate-Change Mitigation

As human-induced climate change has become a major concern, many techniques have been promoted to mitigate its effects by reducing greenhouse-gas emissions and increasing carbon sinks. One such strategy is carbon offsetting. The World Bank (2008) defines a carbon offset as:

A financial instrument representing a reduction in greenhouse gas emissions…carbon offsets are measured in metric tons of carbon dioxide-equivalent (CO₂e). One carbon offset represents the reduction of one metric ton of carbon dioxide, or its equivalent in other greenhouse gases.

Carbon offsets are implemented through activities that are commonly assumed to reduce or absorb greenhouse-gas emissions by, for instance, planting trees, substituting fossil fuels with renewable energy sources, or capturing and storing emissions. In 2008, the volume of the overall voluntary carbon-offset market on project-based transactions was 54 metric tons of CO₂e and was valued at US$397 million (Capoor & Ambrosi, 2009).

Concerns about climate change, and the perception that offsets can help, have led to the establishment of hundreds of carbon-offset companies, both for-profit and not-for-profit, around the world. Significant controversies have emerged regarding the effectiveness and ethics of carbon offsetting (e.g., Kollmuss & Bowell, 2007; Broderick, 2008; Gray, 2009; Posner & Weisbach, 2010) and many studies exist of customer attitudes toward carbon offsets (e.g., Becken, 2004; MacKerron et al. 2009; Mair, 2011). However, less attention has been devoted to the vendors of carbon offsets, how they analyze the offsets that they implement, and other perspectives of their work. Butzengeiger (2005), Gössling et al. (2007), and Ribón & Scott (2007) are examples of such studies.

Previous work identifies five main issues with carbon offsetting:

1. Types and locations of projects most pertinent for reducing emissions, including monitoring and verification challenges (Richards & Andersson, 2001; Cacho et al. 2004; van Kooten et al. 2004).
2. Status of standards, which is weak since carbon-offset providers generally follow their own standards for validation and verification, with a low degree of transparency and accountability (Gössling et al. 2007; Kollmuss et al. 2008; Lokey, 2009).
3. Permanence, referring to the “durability of the climate benefit from an offset project” (Carlson et al. 2009; see also Marland et al. 2001).

4. Leakage, defined as carbon emissions in other locations or in the future due to implementing a carbon-offset project (Richards & Andersson, 2001; Aukland et al. 2003).

5. Additionality, meaning that a project that would have happened anyway, without the need for carbon offsetting, should not count (Costa et al. 2000; Richards & Andersson, 2001; Lokey, 2009).

Due to these five issues, considerable skepticism and confusion exist among researchers and purchasers regarding carbon offsetting (e.g., Becken, 2004; Kollmuss & Bowell, 2007). Most carbon offsetting is voluntary, adding to questions regarding effectiveness (Broderick, 2008) because not everyone accepts that giving people a choice in environmental matters will achieve an outcome that ultimately is ecologically beneficial. As well, full disclosure from the carbon-offset companies is often not forthcoming regarding where money is spent and which projects will achieve an outcome that ultimately is ecologically beneficial. As well, full disclosure from the carbon-offset companies is often not forthcoming regarding where money is spent and which projects use which forms of monitoring and verification.

The ethics and effectiveness of carbon offsetting are lampooned to devastating effect by the website Cheat Neutral, which jokingly offers people who have cheated on their romantic partner the option to pay for someone else to not cheat. The point is that it is better not to conduct the offending activity in the first place, whether that offending activity is cheating on one’s romantic partner or using fossil fuels. If one nonetheless insists on doing it, there is an intense moral discussion about whether or not offsetting (the cheating or the carbon) provides some form of compensation.

This article contributes to the literature regarding carbon offsets through research on two objectives: 1) to obtain information from offsetting companies regarding their standards, project types, and project locations and 2) to determine these companies’ perspectives regarding issues and challenges in the carbon-offset industry.

Methodology

To fulfill this study’s objectives, we investigated the carbon-offset market in Canada and the United States. These two countries were understood to constitute the North American market, so Mexico and the Caribbean were not included. Although the market for voluntary offsets was already well-established approximately five years earlier in Europe, it was only around 2004 that it fully took off in North America, with a significant number of small, independent startups (Hamilton et al. 2007; Tansey, 2008). The main reason why uptake in North America has likely been relatively slow is because neither Canada nor the United States has moved forward with legislation that would encourage carbon-offset purchasing, in contrast to the European Union. In North America, venture capital money soon supported companies trying to break into the field (Captor & Ambrosi, 2007). This development was responsible for the volatile situation of North American carbon-offset businesses at the time of this research in 2009, expressed through the rapid rate of companies being founded, merging, and disbanding.

We compiled a list of all 63 carbon-offset companies active in Canada and the United States at the time. Managers, directors, or owners of these companies were contacted in September–October 2009 via telephone as well as e-mail to complete a structured survey (see Appendix). As per discussion in texts such as Edwards et al. (1997) and Groves (2004), a combination of open-ended and closed questions was developed to glean insight into the business perspective regarding carbon-offset challenges identified in the literature. The survey was based on and expanded from Butzengeiger (2005) and Gössling et al. (2007) and was piloted prior to being used for the full interviews with company representatives.

During the time period of contacting and interviewing companies, the number of firms operating in North America dropped from 63 to 50 due to mergers and closures. Out of the final 50, 23 companies (46%) did not respond and seven (14%) did not wish to participate. In the end, representatives from 20 companies agreed to be interviewed (Table 1), yielding a 40% response rate.

Telephone interviews were used to collect the data (from the method in, for example, de Vaus, 2002; Miller & Salkind, 2002; Leon et al. 2003), except for three e-mail questionnaire responses (respondents #1, #12, and #17, from the method in, for example, Leon et al. 2003) from representatives of companies unable or unwilling to participate via telephone. Each telephone interview lasted approximately 30–45 minutes and was completed with the company’s chief executive officer (CEO), a managing director, or a project manager. CEOs were the preferred interviewees, but at times we were redirected to a managing director or specific project manager, as the CEO deemed such personnel to be more familiar with the answers to the questionnaire. The companies and respondents are kept anonymous here.

Due to the controversies outlined above, some respondents were reluctant to disclose information, so
not all questions elicited reactions from all of the companies. In some instances, companies had their legal department approve the blank questionnaire before filling it out.

**Findings**

**Offsetting Profile of Respondents**

The twenty companies were in business on average for five years. Eight of them were selling offsets for only two years or less while three were selling them for over ten years. Several of the firms had gone through mergers or takeovers, making it difficult to meaningfully establish their exact age. For example, Respondent #6 stated, “Operation since the mid 1990s. The sale of carbon offsets started in 2001—under a different company [name kept confidential here] that merged with [name kept confidential here].”

Thirty-one percent of total carbon-offset revenue for the respondent companies is from individual customers and 69% is from organizations, mainly businesses. Table 2 lists the most prominent industries identified as purchasing carbon offsets—but it represents only a snapshot in time. Respondent #10 highlighted the volatility of the company’s main customers: “Currently it is food service, but if you would have asked me six months ago, it would have been printing; it is continually changing.” Furthermore, Respondent #14 identified no principal industry, explaining that their customers are so broad and varied that they serve many industries nearly equally.

The average amount of CO$_2$ offset during the 2008 fiscal year (the exact months of which vary, depending on the company), covering the eleven respondents willing to answer this question, was 163,914 metric tons. Fifty-seven percent of the associated projects were located within Canada and the United States, followed by Latin America and the Caribbean with 17% of projects and Asia with 13% of projects. No information on why or how project locations are selected was provided, but since the respondents are based in Canada and the United States proximity seems influential.

The effects of the financial crisis varied. Eight of the nineteen respondents experienced a decline in sales attributable to the economic downturn. The others said that they were not adversely affected. Of the businesses impaired, a sales decline ranging from 20–50% was reported. According to Respondent #3, “Currently it is food service, but if you would have asked me six months ago, it would have been printing; it is continually changing.” Furthermore, Respondent #14 identified no principal industry, explaining that their customers are so broad and varied that they serve many industries nearly equally.

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Barriers to Carbon Offsetting

Biological sequestration projects have the highest risk with regard to permanence. Out of the thirteen respondents offering this option, nine of them had such initiatives as more than 20% of their portfolio and so were asked about permanence (Table 5).

Addressing another problem, when respondents were asked if they believed that barriers existed to customer interest in and support for carbon offsets, four responded negatively. Sixteen respondents agreed that obstacles existed, with some identifying multiple categories (Table 6). Explaining more about carbon offsets—such as how they work, what they do and do not achieve, and the implications of purchasing them—respondents named increasing credibility and sales as a common theme. Respondent #2 stated that “[E]ducation is a must, which includes standards, regulations, and the need for carbon offsetting to be explained properly to gain a full understanding.” Respondent #11 noted that offset companies must “make clear and accurate statements as to what they are doing and how they are doing it,” while also meeting third-party standards.

On the issue of obstacles to interest in and support for carbon offsets, Respondent #4 highlighted the tourism and hospitality industry as facing the most significant barriers. Reasons given were the intangibility of tourism products, the negative opinions and image of offsets, and the reluctance of travel businesses to tell their customers about offsetting because it would draw attention to the negative impacts of traveling. Respondent #6 highlighted these perceptions in the following terms: “There is value in being green, environmentally friendly, or to be perceived as such. However, there is a plethora of ways to achieve this and for many companies this does not involve carbon offsetting.”

Respondents were also asked what recognized standards they adopted to certify their carbon offsets. Two said none, but eighteen answered that they were certified to particular standards (Table 7). No information was provided as to the number of projects certified by each standard that the respondent used. Respondent #8 described how his firm had its own standard, combining already accepted existing standards that were selected. Respondent #6 complained that the existence of so many standards created confusion for the company and its customers.

Standards were the most popular measure for ensuring additionality, but several other techniques were used (Table 8). Respondent #14 used individual project diligence to ensure that the firm’s projects were additional—i.e., project participants monitor for themselves how the activities are undertaken and judge on their own the level of additionality attained—while simultaneously using available standards. Respondent #1 applied its own diverse additionality tests, establishing accurate baseline and performance benchmarks by using what the company stated were best practices along with relevant and available data. This firm also quantitatively demonstrated the additional climate benefits by calculating carbon emissions.
emissions using scenarios with and without the project. In contrast, Respondent #7 did not understand the meaning of additionality or accurate quantification.

Table 9 suggests how carbon-offset companies think that they could reduce customer confusion about why they should purchase carbon offsets, from whom, and which carbon-offset options to select. Respondent #12 noted that the development of standards adopted by all carbon-offset companies, such as the International Carbon Reduction and Offset Alliance (ICROA)\(^2\) in the UK, is a strategy that could contribute to reducing customer (and seller) confusion. That would mean mandatory, rather than voluntary, standards that all companies must obey and be monitored for to be permitted to sell carbon offsets. Respondent #4 echoed this sentiment, noting that carbon-offset companies should be adhering to standards and certifications, along with continuously educating customers on the value and legitimacy of offsetting. Respondent #4 acknowledged that working with other offset providers to ensure that the standards are globally accepted is “crucial” to tackling customer confusion about carbon offsetting.

In discussing “communication” in Table 9, the respondents suggested that their customers needed more information about what carbon offsetting is, the technical aspects of offsetting projects, and the outcomes that result when purchasing offsets. When respondents were asked how they educated their customers about climate change and the need for climate-change policy, including offsetting, the most popular reported method by far was blogs and websites (Table 10). As Respondent #19 stated, “[S]elling offsets is only half of our business; the other half is educating our customers and people on understanding climate change and how to reduce their impact.” Despite the proactive strategies summarized in Table 10, many respondents described relying to some degree on the customer’s predetermined understanding of the issues.

**Discussion**

Several major themes emerged from the findings: the involvement of the hospitality and tourism industry, financial commitment, confusion in the marketplace, transparency, and lack of education. We discuss each of these issues below.


**Involvement of the Hospitality and Tourism Industry**

In multiple questions, several respondents highlighted the importance of the tourism and hospitality industry for carbon-offset discussions. Furthermore, according to Bows et al. (2009), climate-change mitigation is an essential activity for the tourism and hospitality industry due to its high carbon emissions (see also Gössling & Hall, 2008). Two main sectors of the industry purchase offsets: travel and events/festivals.

The offsets needed for travel are, at the first order, straightforward to calculate by multiplying the distance travelled by the average amount of fossil fuel needed for each kilometer for a given transport mode. Alternatively, companies know how much fossil fuel or electricity each transport mode uses and are able to divide that amount by the number of passengers. Neither method accounts for the full life cycle of the transport mode, which includes such factors as maintaining aircraft or constructing rail tracks, or includes different weights of passengers and their luggage. In addition, they do not directly incorporate specific journey details such as the actual bus or airplane used or any transfers that might be required.

Promoters of events and festivals also face substantial difficulty calculating actual carbon use. For instance, organizers do not usually factor in the carbon emissions from people traveling to participate, although some offer attendees the opportunity to offset emissions from people traveling to participate.

The respondents identified cost as a major barrier to customers supporting carbon offsets, a factor that might have been influenced by the economic downturn, but it matches Trexler & Kosloff’s (2008) discussion on this topic. Cost is not necessarily easy to calculate. Meta-analyses of cost estimates of carbon-offset projects show that calculations can vary by more than an order of magnitude, depending on the factors considered for the calculation (van Kooten et al. 2004; Manley et al. 2005).

As well, when discussing the tourism and hospitality industry, the respondents indicated that a significant proportion of their customers were small- and medium-sized enterprises that were concerned about any extra costs that they or their customers might incur. Irrespective of whether the interest is there in principle to implement carbon offsets, the financial commitment might sometimes reduce the practical viability of doing so.

**Confusion, Skepticism, and Volatility**

Customer confusion about why they should purchase carbon offsets, from whom, and which options to select was a recurring theme mentioned by the respondents. These insights corroborate findings reported by Dodds et al. (2008) demonstrating that Canadian carbon-offset companies are beginning to realize the extent of the confusion facing their customers. Lack of education, need for regulation, number of standards, voluntariness of the standards, and transparency all contribute to perplexity. Given such challenges, Broderick (2008) questions whether carbon offsetting for tourism could be credible.

The relative youthfulness of the industry likely contributes as well. Companies are still finding their market and exploring how to deal with current and potential customers (Trexler & Kosloff, 2008). Given the frequency of mergers, takeovers, and closures among carbon-offset companies that this study experienced over a short time period, the industry is clearly still working out how to sustain itself. Such a situation is not helpful to customers, since a firm
from which they purchased their holiday offsets in one year might not be around the next year. Meanwhile, customers will not find a single unified industry body or set of guidance standards or regulations to help them select an offsetting company. Instead, there are more than fourteen voluntary standards. Information that customers need to understand the industry and to make offsetting decisions could be better detailed and easier to find and interpret.

The reluctance of many companies to participate in our survey could indicate insecurity in terms of their place in the market or uncertainty regarding their own knowledge. An example is Respondent #7 who did not know the meaning of additionality. As well, some companies noted that they do not often have on staff, or engage with, active scientists. Instead, their information sources, and their perception of their customers’ information sources, tend to focus on reports published by nongovernmental organizations (NGOs) or government bodies. As Respondent #16 described, this information is not necessarily the most objective in terms of project choices, companies for offsets, or overcoming marketplace challenges.

The companies’ confusion—and possibly that of the customers—is compounded by the rapidly changing international scene. As a successor to the Kyoto Protocol continues to be negotiated, provisions might or might not be in place at some point that link carbon-offset projects to binding international treaties. Topics such as clean-energy initiatives and emission-reduction programs from deforestation and forest degradation are part of the international negotiations. As seen with the Kyoto Protocol, signed in December 1997 but not in force until February 2005, even the presence of a ratified, binding international agreement does not necessarily lead to implementation and enforcement. Consequently, carbon-offset companies are working in a vacuum regarding international regulations and options for projects that are legally mandated, monitored, and verified.

The rapid changes in the carbon-offset industry, along with the many sources of confusion, lead to understandable skepticism among customers. The companies selling carbon offsets struggle to overcome this uncertainty and to provide the information needed in a manner that is not so overwhelming as to scare customers away—such as by admitting that, ultimately, reducing consumption is the only way to tackle climate change (e.g., Assadourian, 2010).

**Transparency**

Eight respondents out of twenty suggested transparency in the carbon-offset industry as a measure to reduce customer and seller confusion, yet only two out of sixteen thought that lack of transparency was a barrier to customers purchasing carbon offsets. Attention related to improving transparency was not always clear, shown by the reluctance of several respondents to reveal information about their business, thereby reducing the data available for this study.

That reticence might be justifiable from a business perspective, but it is not transparent. For example, transparency would involve revealing the companies’ financial status and giving full information regarding the carbon-offset projects that they support, why those decisions are made, and the advantages and disadvantages of the choices. However, public exposure of these kinds of details could impair business, particularly if some carbon-offset companies were fully transparent and others were not.

One possible approach to transparency would be setting standards, either voluntary or regulated by government. Voluntary standards would likely run into similar problems of contributing to marketplace confusion as detailed above. Government regulations could be opposed by businesses as being unnecessary bureaucracy and potentially giving an advantage to competitors elsewhere, especially if, for example, the regulations were different in Canada and the United States. Transparency could be an insoluble carbon-offset challenge.

**Lack of Education**

At the time of this study, few of the respondents incorporated elements of customer education into their business strategies, even when they were undertaking customer-education actions. The carbon-offset companies also faced two different target audiences: individual and organizational customers. Determining the target audience(s) is further complicated by the organizational customers often passing the onus of purchasing offsets to that organization’s own individual or organizational customers. Consequently, the carbon-offset companies must consider how to get their organizational customers to, in turn, educate their customers.

One example of the challenges emerging when the carbon-offset company faces two different target audiences is dealing with the passenger-airline industry, because the decision to purchase carbon offsets is usually shifted onto an airline’s customers. In December 2010, when reserving a flight with Air Canada, passengers (not the airline) could choose to purchase offsets from the company chosen by Air Canada, Zerofootprint. Then, the customer (not the airline) could choose from among three specific projects: forest restoration in Maple Ridge, British Columbia; landfill-gas recovery in Niagara Falls, Ontario; or tire recycling with a Quebec company. Air Canada gave no explanation for why this particular set of projects was selected. Members of Air Canada’s frequent flyer club, Aeroplan, could also...
choose to donate their miles directly to carbon offsetting.

At the same time, the American company United Airlines permitted customers to donate to carbon offsetting separately from booking flights—and even without making a reservation. United Airlines was, at the time of the research, working with Conservation International and Sustainable Travel International on carbon offsetting. Possible programs related to international reforestation, United States-based renewable energy, and international renewable energy and energy efficiency.

Another Canadian airline, WestJet, formerly took a different approach. If visitors entered “Offsetters” (a company’s name) into the promotional code field when booking their flight through the company’s website, WestJet would donate a portion of the price to purchasing carbon offsets. This initiative was not well publicized, so the customer was poorly educated regarding the options. In the booking process of purchasing a WestJet flight, the customer would not be informed that carbon offsets could be purchased, but just had to know what to do. In December 2010, that option was no longer available. The promotional code field would not accept a string as long as “Offsetters” and a search of WestJet’s website for “carbon,” “offset,” and “Offsetters” yielded no results. In December 2010, the company website of Offsetters did not list WestJet as a client.

With these difficulties for just one industry on one continent, the carbon-offset companies do not have an easy task in determining whom to educate and how. With WestJet no longer offering a carbon-offset option and no explanation regarding why, the carbon-offsetting companies have lost a customer. They might not be able to respond to individual customers who wish to use that airline while carbon offsetting, but who also wish to know why their airline does not offer a carbon-offset option.

The marketplace confusion, complications, and lack of education surrounding North American airline-related carbon offsets are mirrored in studies in other locations (e.g., Gössling et al. 2009; Cohen & Higham, 2011; Mair, 2011). The airline industry exemplifies many of the challenges that emerged through interviewing the offsetting companies. Numerous links in the education chain exist, not all of which are transparent, thereby exacerbating confusion among both offsetting companies and customers.

**Recommendations and Conclusion**

This article contributes to the literature on understanding the perspectives of carbon-offset businesses with respect to challenges and potential changes for addressing identified problems. Barriers to selling carbon offsets include legitimacy of carbon offsets, financial commitment, customer perception, customer education, transparency, lack of communication, and confusing standards. These barriers match what the literature previously suggests as major obstacles (e.g., Gössling et al. 2007; Kollmuss et al. 2008).

Three main recommendations emerge for trying to minimize the overall level of confusion within the carbon-offset market in Canada and the United States: standardization, education, and further engagement among the industry, its customers, and researchers. Each recommendation has advantages and disadvantages for selling carbon offsets, but the questions raised form the basis for a future research agenda.

**Standardization**

Given that fourteen different standards were used among the eighteen respondents, more harmonization of the rules would encourage increased transparency in, and less marketplace confusion for, the industry. Seeking a common global standard, though, is a daunting prospect and might not be realistic. To achieve that, the wide diversity of governments, businesses, and interest groups involved would need to agree on all the details—an unlikely prospect given differences in accepting how much industry should be regulated and the effectiveness of carbon offsets.

One possibility might be including standards for carbon offsetting in the global climate-change agreement to replace the Kyoto Protocol—if such an accord can ultimately be reached and implemented. Conversely, companies wishing to avoid the international standard could register in locations that do not subscribe to that agreement, conducting their business via the Internet.

No approach to standardization is a panacea. A structure between global standardization and the current situation should be sought to increase transparency and to reduce customer and industry confusion (see also the discussion in Gössling et al. 2007; Kollmuss et al. 2008; Lokey, 2009).

**Education**

Some carbon-offset companies are already instructing their customers, calling for increased education, and, in some cases, indicating how to do so. In tandem, expanded education for the industry regarding offsetting would be useful to ensure that the firms selling offsets understand and can explain the associated technical issues, such as leakage, permanence, and additionality.

Education on carbon offsets can have advantages and disadvantages (see also Trexler & Kosloff,
2008). The respondents implied that education would improve the industry, especially in terms of convincing more customers to purchase offsets. Simultaneously, transparent education should include all the challenges and limitations with offsetting. That could result in customers concluding that offsets should not be bought because they frequently cannot be monitored, do not address the root cause of the climate change problem, and are subject to accusations that they cause more harm than good.

From a normative perspective, education of the industry and customers is needed to ameliorate marketplace confusion and to increase transparency. From a business perspective, increased education could reduce business. Balancing different approaches, and understanding their consequences, should be part of a future research agenda.

Further Engagement among Industry, Customers, and Researchers

The respondents provided many useful suggestions regarding improvements for the carbon-offset industry. A literature base is now being built up whereby researchers survey carbon-offset companies or customers to determine their interests, knowledge, and needs. In particular, further exploration should be made regarding how it might be feasible to increase the response rate that informs these studies. While the nonresponding companies might simply not have wished to engage in the survey, the respondents’ comments noted earlier suggest that it was more likely that 1) they did not see the immediate value of the study for themselves or the industry or 2) they could not or would not share information about their clientele because they regarded this information as confidential or proprietary. Future studies could be improved by immediately and directly indicating what the companies would gain from participating, while initially avoiding any clientele questions until rapport has been established. It could then be determined how much information a company would be willing to provide.

Part of this process would be to examine whether or not companies that declined to participate share certain characteristics, thereby skewing the results of those who do respond. Continued work along similar lines (and considering countries other than Canada and the United States) would help to expand this knowledge base while establishing trends to indicate how the industry is evolving and should evolve.

Further information from the companies would also permit a deeper, more verifiable comparison. Many of our respondents declined to provide information on the price per ton of carbon reduced. Within the bounds of ethical research, it might be feasible to try purchasing carbon offsets from companies to obtain a price comparison—at minimum for those firms selling carbon offsets to the public. However, often the price to the consumer masks the real price of the carbon offset; companies typically consider such information confidential. Nonetheless, further research and collaboration with the industry over the long term might yield mechanisms for reporting this information with the companies’ permission.

Whether or not that information is fully useful is an open question, since one of the largest challenges in this field is the rapidity of changes. With so much uncertainty regarding the post-Kyoto Protocol agreement, coupled with the industry’s relative youth and volatility—in terms of companies forming, merging, and disbanding—the industry could use researchers who have longer-term perspectives and data sets to understand how different factors affect demand.

Such analyses offer no guarantee of supporting the need or market for carbon offsets. The carbon-offset industry is not likely to disappear, but it remains unclear whether or not it will contribute meaningfully to climate-change mitigation.

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Appendix: Final Survey Questions

1. How many years have you been selling carbon offsets?

2. Approximately what percentage of your total carbon offsetting sales/revenue are based on individual consumers and what percentage are based on companies?

3. Of the corporate based offset purchases, which industry is the most prominent?

4. What types of carbon offsets do you offer (check all that apply)?
   1. Energy Efficiency
   2. Renewable Energy
   3. Industrial Gases
   4. Methane Capture
   5. Biological Sequestration
   6. Other, please specify
|   |   |
|---|---|
| 5. | What is the most popular type of carbon offset purchased through your organization? |
|   | 1. Energy Efficiency |
|   | 2. Renewable Energy |
|   | 3. Industrial Gases |
|   | 4. Methane Capture |
|   | 5. Biological Sequestration |
|   | 6. Other, please specify |
| 6. | How many tonnes of CO₂ have been offset by your company in the 2008 fiscal year? What percentage of these have been purchased by hospitality and tourism companies? |
| 7. | Have your carbon offsets been certified to a recognized standard (Gold Standard, CDM, VCS, Climate Action Reserve, Green-e Climate Protocol for Renewable Energy, etc.) to ensure quality? If so, please list which standard(s) you abide by. |
| 8. | What steps have you taken to ensure that the carbon offsets you are selling are additional? |
| 9. | How do you ensure that the greenhouse gas reductions that your carbon offsets represent are quantified accurately? |
| 10. | Are 100% of your offsets validated and verified by accredited third parties? |
| 11. | What percentage of your portfolio is made up of offsets from tree planting or agricultural soils projects? If it is a significant percentage (more than 20% of your portfolio), how do you address permanence risks? |
| 12. | Due to the economic downturn, has your company seen a decline in offset purchases? If yes, by how much (approximately)? |
| 13. | How important do you feel carbon offsetting is in mitigating climate change? |
|   | 1. Not important |
|   | 2. Slightly Important |
|   | 3. Neutral |
|   | 4. Important |
|   | 5. Very Important |
| 14. | How can carbon offsetting companies reduce the level of confusion in the marketplace? |
| 15. | What are you doing to educate your buyers about climate change and the need for climate change policy? |