

PURCHASING CARBON OFFSETS

A Guide for
Canadian Consumers,
Businesses,
and Organizations

This guide was published in 2009. A lot has changed in our understanding of carbon offsets and credits since based on international climate commitments, the latest climate science and the accelerating climate emergency. We do not currently recommend carbon offset or crediting programs as effective carbon-reduction tools. We are developing a position based on our revised understanding of research, lived experience and ecological, human rights and legal challenges that have emerged.



David
Suzuki
Foundation

SOLUTIONS ARE IN OUR NATURE



Sustainable Energy Solutions

PURCHASING CARBON OFFSETS: A GUIDE FOR CANADIAN CONSUMERS, BUSINESSES, AND ORGANIZATIONS

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Finally, we'd like to extend our sincere thanks to the offset vendors that participated in this survey.

This guide offers general information for individuals, businesses, and organizations interested in voluntarily using carbon offsets to mitigate their climate impact, and compares specific offset vendors on the basis of criteria established by staff from the David Suzuki Foundation and Pembina Institute. The results presented in this guide are meant only to illustrate the performance of the vendors with respect to these criteria at the time of the survey, and are not intended to replace due diligence on the part of individuals or organizations that wish to purchase offsets. The David Suzuki Foundation and the Pembina Institute disclaim liability for any loss that may arise from any person acting in reliance upon the contents of this document. Mention of specific vendors, products, or services in this guide does not necessarily imply endorsement of these vendors, products or services by either the David Suzuki Foundation or the Pembina Institute.

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You are invited to provide feedback on this guide by emailing: climate@davidsuzuki.org

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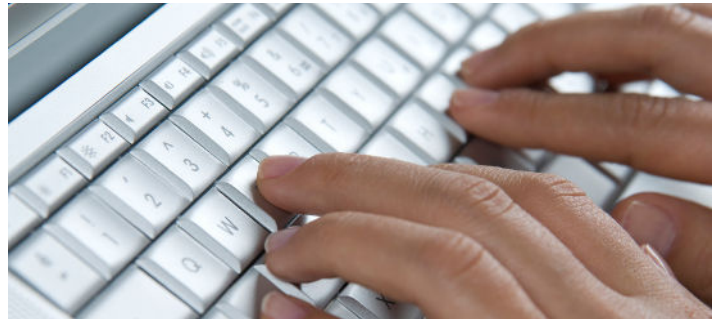
QUICK TIPS FOR BUYING CARBON OFFSETS

To get started, here are some tips¹ that summarize many of the considerations discussed in more detail later in the guide:

- ✓ Know your carbon footprint and understand what your largest sources of emissions are. Ensure that you include all of your major emission sources, such as electricity consumption, fuel use, and travel (vehicles and air travel). Use carbon calculators from the websites of reputable offset vendors, especially those that allow you to enter detailed information, such as the make and model of your vehicle, as this will produce more accurate results.
- ✓ Before purchasing carbon offsets, first reduce your own carbon footprint as much as possible. We all need to make changes at work and at home to achieve the global emission reductions needed to solve the problem of climate change. Making reductions will also add credibility to your offset purchase and save you money on offsets should you decide to become carbon neutral. See the *Resources* section for ideas on how to reduce your carbon footprint.
- ✓ Put climate protection first. Carbon offsets need to be high quality in order to have any benefit for the climate. It's better to buy fewer, higher-quality offsets, rather than a greater amount of lower-quality ones. In particular, it's important that offsets be “additional”²: i.e., they must be projects that would not have happened anyway.
- ✓ Look for offsets that meet relatively strong, independent standards, such as the CDM or The Gold Standard, which can help ensure that key quality criteria, including additionality, are met.
- ✓ Prioritize offsets from renewable energy and energy efficiency projects. These offsets avoid or reduce the burning of fossil fuels (the largest man-made cause of climate change), creating a permanent climate benefit and helping to move us towards a sustainable energy economy.

- ✓ Be an informed purchaser. Consider vendor claims of offset quality carefully. Look for vendors that have detailed information about their offsets on their website, so you know what you are purchasing. Don't hesitate to ask for any information that is not publicly accessible on the vendor's website. See the sample questionnaire on the next page, which you can send to vendors for their responses.
- ✓ To ensure any offsets you purchase are only sold once, choose vendors who guarantee to "retire" the offset from the market on your behalf, and who use a third-party, publicly accessible registry that tracks ownership of the offset over its lifetime.
- ✓ Seek independent information. You can consult other expert reviews and analyses of carbon offsets, vendors, and the voluntary carbon market, and/or seek advice from a reputable environmental organization or greenhouse gas consultant.

Further resources on carbon offsets, offset quality, and reducing greenhouse gas emissions, as well as a *Glossary* of key terms, can be found at the end of this guide.



QUESTIONS TO ASK AN OFFSET VENDOR

Because the survey of offset vendors in this guide is just a snapshot of practices at the time of the survey, prospective buyers are encouraged to do some research before making a purchase. Below are some sample questions³ to address to vendors, or to answer using the information on vendor websites:

1. What is/are the specific offset project type(s) (e.g. wind farm, methane recovery, etc.) in your portfolio, and where are the carbon offset projects located?
2. 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 the standard(s).
3. What steps have you taken to ensure that the carbon offsets you are selling are additional?
4. How do you ensure that the greenhouse gas reductions that your carbon offsets represent were quantified accurately?
5. Are 100 per cent of your offsets validated and verified by accredited third-party auditors?
6. If you are selling offsets that will be created in the future (i.e., through forward crediting), what mechanisms (insurance or otherwise) have you put in place to ensure those offsets will actually be delivered?
7. What percentage of your portfolio (by tonnes of CO₂e) 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 attempt to address permanence risks?

8. Do you use a publicly accessible registry to track and retire your offsets? If yes, please list the website. If not, how do you ensure that your offsets are only sold to one buyer?
9. What is your organization doing to educate consumers about climate change and the need for government policy to deal with it?
10. Are you a member of the International Carbon Reduction and Offset Alliance (ICROA), which has a Code of Best Practice that members must adhere to?

The discussion in *Section 3* and *Section 4* of this guide can be used to help assess the information obtained.



EXECUTIVE SUMMARY

Climate change is a growing public concern. And, for the foreseeable future, it will remain an important challenge that will long outlast the current economic downturn.

Shifting away from the use of fossil fuels and other practices that are causing our climate to deteriorate requires government leadership and action, but we can all make an important contribution. There are many actions that everyone can take – at home and at work – to reduce greenhouse gas emissions from everyday activities. Just a few examples include driving and flying less, purchasing energy-efficient appliances, making buildings more efficient, and using renewable energy.

To deal with the emissions that remain after these reduction efforts (often called a “carbon footprint”), and to demonstrate leadership on climate change, many individuals, businesses, non-governmental organizations, government agencies, and others are turning to carbon offsets. Carbon offsetting is essentially a service: the purchaser pays someone else to create greenhouse gas reductions on his or her behalf.

A typical example of an offset project is investing in new renewable energy, like a wind farm. The rights to the emission reductions from these projects can be sold as carbon offsets. A purchaser can visit a carbon offset vendor’s website, use the vendor’s calculators to estimate their emissions, and then make a purchase. Many airlines are also giving their customers the option of buying offsets when booking flights. Business purchasers may buy larger volumes of offsets through direct arrangements with vendors. These carbon offsets can then be applied to the purchaser’s carbon footprint to reduce their net emissions. If enough carbon offsets are purchased to offset the purchaser’s entire carbon footprint, the purchaser is said to be carbon neutral.

In Canada alone there are at least 14 retail offset vendors now selling offsets from a variety of projects, including wind farms, landfill gas recovery, tree planting, and others. The offset projects are located in Canada and in other countries around the world. The offset vendors and buyers take part in what

is known as the voluntary carbon market, which sells offsets to individuals and organizations that wish to voluntarily take responsibility for their climate impact. High-profile purchasers of offsets include Google, TD Bank, the Vatican, and Nike, as well as sporting events like the Super Bowl and the Olympics. Worldwide, the voluntary carbon market accounted for CAD\$460 million in transactions in 2008.⁴

Because the voluntary market for carbon offsets is largely unregulated and is still relatively new, the quality of offsets on the market and the reliability of vendors can vary considerably. This is one reason that the use of carbon offsets has sustained some criticism, particularly in the media. As a result, buyers need to proceed carefully and assess whether offset vendors are selling offsets that actually deliver a climate benefit. High-quality carbon offsets create real reductions in greenhouse gas emissions while minimizing other related environmental concerns, but some carbon offsets on the market likely have little or no climate benefit.

The David Suzuki Foundation and the Pembina Institute have prepared this guide to help Canadian consumers, businesses, and organizations assess the quality of carbon offsets and the reliability of the vendors that sell them. To help shed light on how Canadian vendors are performing with respect to promoting and delivering high-quality offsets, we conducted a survey of 14 Canadian offset vendors, as well as six popular international offset vendors.

To assess the offset vendors included in our survey, we relied on four key offset quality criteria: additionality, auditing, permanence, and unique ownership. These, in our view, are among the minimum criteria necessary to provide an indication of whether offsets are delivering real reductions in greenhouse gas emissions. We also assessed vendor websites on transparency and the extent to which they provided the public with credible information about climate change and solutions.

Purchasers can use the results of the vendor survey as a starting point for identifying vendors of high-quality offsets. However, because vendor practices and offset portfolios can change over time, purchasers also need to understand how to assess offsets and vendors themselves. It is our hope to complete another survey next year to see how the voluntary carbon market in Canada has evolved.

Results of Offset Vendor Survey

ASSESSMENT CRITERIA & RELATIVE WEIGHTING

Vendor	Vendor Location	Type of Project(s)	Location of Project(s)	20%	20%	15%	20%	15%	10%	100%
				Additionality	Auditing	Unique Ownership	Permanence	Vendor Transparency	Public Education	TOTAL SCORE
Less www.less.ca	Canada	Renewable energy	International	20	20	7.5	20	9	8	85
ClimateCare www.jpmorganclimatecare.com	UK	Renewable energy, energy efficiency, fuel switching, methane capture, afforestation/reforestation	International	16.1	17.6	7.5*	19.8	13.5	10	84
Climate Friendly www.climatefriendly.com	Australia	Renewable energy	International	17.5	20	8.3	20	10.5	8	84
Atmosfair www.atmosfair.de	Germany	Renewable energy, energy efficiency	International	20	20	7.5*	20	10.5	6	84
Planetair www.planetair.ca	Canada	Renewable energy, fuel switching, energy efficiency, methane capture	International	20	13	11.3	20	11	8	83
CarbonZero www.carbonzero.ca	Canada	Energy efficiency, renewable energy	Canada	15	18.4	14.4	20	6	8	82
LivClean www.livclean.ca	Canada	Renewable energy, fuel switching, methane capture	International	13.4	20	10	20	10.5	8	82
TerraPass www.terrapass.com	USA	Methane capture	International	15	9.7	15	20	11	7	78
Offsetters www.offsetters.ca	Canada	Fuel switching, energy efficiency, renewable energy	Canada	15	20	6.2	20	10.5	5	77
Borealis www.borealisoffsets.com	Canada	Renewable energy, methane capture, fuel switching, afforestation/reforestation	Canada & International	15.7	18.3	10.7	20	9	2	76
The Carbon Neutral Company www.carbonneutral.com	UK	Renewable energy, methane capture, forestry management	International	16.9	14.2	9	18.4	12.5	5	76
Native Energy www.nativeenergy.com	USA	Renewable energy, methane capture	International	12.9	10*	7.5	19.8	7.5	9	67
ZeroGHG www.zeroghg.com	Canada	Renewable energy, energy efficiency, methane capture	International	17	10*	0	20	9	9	65
Coolaction.com www.coolaction.com	Canada	Methane avoidance	Canada	10	20	0	20	7.5	6	64
EcoNeutral www.econneutral.com	Canada	Afforestation/reforestation	Canada	15	10	15	0	7.5	8	56
ZeroFootprint www.zerofootprint.net	Canada	Afforestation/reforestation, methane capture, fuel switching	Canada	15	11.7	8.8	3.4	12	2	53
Carbon Footprint Offsetters www.offsetco2.ca	Canada	Renewable energy	International	7.5	10	0	20	5	6	49
Carbon Friendly Solutions www.carbonfriendly.com	Canada	Afforestation/reforestation	Canada & International	15	0	0	0	9	8	32
Tree Canada www.treecanada.ca	Canada	Afforestation/reforestation	Canada	5	0	7.5	0	6.5	5	24
ZeroCO ₂ www.zero20.com	Canada	Afforestation/reforestation	Canada	0	10	0	0	1.5	8	20

Key: ■ Strong performance ■ Average performance ■ Weak performance

* Responses received from the vendor were not sufficient to assess some of the requirements for this criterion. In these instances, zero points were awarded for those requirements.

Revised August 26, 2009

The results are summarized in the table on the previous page.

It is worth noting that the results of our survey show a correlation between a high score and the use of relatively strong offset standards, like CDM and The Gold Standard. This should not be surprising, as standards are designed to ensure the quality of offsets. As a result, the safest approach when shopping for offsets is to look for ones that meet relatively strong standards, as these have been certified by independent auditors and are likely to be of high quality.

Of course, it is possible to have high-quality offset projects that have not been certified to a strong standard. In fact, many of the leading global offset standards (including the CDM and The Gold Standard) are not even available for offset projects based in Canada. In these situations, buyers must be prepared to do some extra homework to evaluate the offsets they are considering.

To begin, purchasers can review the issues associated with different types of offset project types (e.g., wind farms, tree planting, etc.), and consider which offset project types they wish to support, as this will help narrow their initial search. Renewable-energy and energy-efficiency projects are generally most likely to offer high-quality offsets, and also help support the transition to a clean-energy economy. (This is the case for both offsets certified to standards and those that are not.)

Next, purchasers should look at whether these offset projects meet key quality criteria, including additionality, accurate quantification, auditing, unique ownership, permanence, leakage, sustainability considerations, stakeholder consultation, and timing. It is also helpful to consider other offset and vendor criteria, including price, the location of the offset project itself (e.g., Canada or a developing country), and whether the vendor is being transparent about its practices.

The current lack of regulation and widely varying practices among vendors and project developers underscore the need for a strong standard that can be applied to voluntary offset projects developed in Canada. Although the federal government has released a draft offset standard for the compliance carbon market as of this writing, until it finalizes the rules we won't know whether they will be rigorous enough to ensure key offset quality criteria are met, including additionality.

Another option is that a separate standard could be developed for the voluntary carbon market in Canada. Either way, Canadian offset vendors and project developers would benefit from having a clear quality benchmark to meet, and a strong national standard would help take the guesswork out of carbon offset purchases for businesses and individuals interested in carbon offsets from Canadian projects.



INTRODUCTION

Climate change remains high on the list of public concerns, as a fundamental long-term challenge for the future that will long outlast the current economic downturn. Businesses, individuals, non-governmental organizations, government agencies, and others are all looking for ways to lessen their climate impact. This can include driving and flying less, making buildings more efficient, and using renewable energy where available. However, even with our best efforts, it will be impossible to shrink our carbon footprints⁵ to zero. A way to address this remaining climate impact is to pay for greenhouse gas reductions to be made somewhere else. This is known as “carbon offsetting” (or offsetting, for short), and involves investing in projects such as wind farms, tree planting, and landfill gas recovery systems that avoid, reduce, remove, or destroy harmful greenhouse gas emissions.

The rights to the reductions from these projects are sold as carbon offsets to purchasers, who can then apply them against their own emissions and reduce their net climate impact. Purchasers use carbon offsets for a variety of reasons, such as to take responsibility for emissions that cannot be reduced, to promote innovation by supporting clean-energy projects, and to demonstrate leadership on climate change solutions.

In Canada alone, there are currently at least 14 offset vendors selling carbon offsets; internationally, it has been estimated that there are about 140 vendors involved in the voluntary carbon market.⁶ These vendors sell offsets from offset projects located in Canada and around the world. Because there is such a wide variety of carbon offsets available on the market, in different locations and at varying prices, it can be very difficult for purchasers to decide which offsets deliver the most benefit for the climate, and which vendor they should buy from. To further complicate matters, neither the growing number of offset vendors in Canada or elsewhere, nor the offsets they sell, are regulated by government, leading to regular media stories that liken the offset market to the “Wild West”.

Several voluntary carbon offset standards have emerged in recent years

in an attempt to ensure that offsets meet basic quality criteria, but not all offset project developers make use of them, and, as discussed later in this guide, many of the leading standards cannot be used in Canada. In addition, some of the standards only partially address offset quality. As a result, it is important for purchasers to perform some due diligence when shopping for carbon offsets.

WHY WE WROTE THIS GUIDE

As environmental organizations that many Canadians consult for information on climate change solutions, both the David Suzuki Foundation and the Pembina Institute receive frequent questions about carbon offsets from prospective purchasers. These individuals and the organizations they represent



want to get involved in solving climate change, but they are often busy and don't have the time, or background knowledge, to effectively assess vendors or their offset offerings.

We've written this guide to help take the guesswork out of offset purchasing. There are good, high-quality carbon offsets available on the market, but unfortunately there are also many low quality offsets, and the negative publicity received by the latter has resulted in skepticism around offsets in general. Our goal is to equip purchasers with the background knowledge to make informed offset choices. This includes how offsets work, where they can be purchased, and what to look for when shopping for them. We think that if we provide consumers with this information, they will be in a better position to purchase offsets that have a real climate benefit, and this will help shift the Canadian carbon marketplace toward greater quality and transparency. A second, related goal is to stimulate public discussion among stakeholders around the need for a strong voluntary offset standard for Canada.

It is our view that the simplest way to ensure that offsets have a real climate benefit is to buy offsets that are certified to a relatively strong standard, like The Gold Standard (see *Section 3* for more details on this and other standards). However, because there is not yet a strong, nationally applicable offset standard for projects developed in Canada, buyers need to assess offsets based on recognized quality criteria (including additionality, third-party auditing, and permanence), keeping in mind the issues associated with different offset project types. Further criteria that can be considered when buying offsets include price, offset project location, and vendor transparency.

We've also included a survey of Canadian offset vendors to see how each of these vendors currently measures up in terms of several key offset quality criteria. Although a number of excellent offset vendor surveys have been done in the past,⁷ to our knowledge this survey is the first to focus on Canadian vendors, although it also includes other popular international vendors that market their offsets to Canadians.

The guide is divided into six sections. *Section 1* looks briefly at the problem of climate change and then explores how offsets work and some of the issues related to offsetting. *Section 2* discusses the different types of offset projects available, and the issues associated with each. *Section 3* focuses on offset quality, including why it's important and what to look for. *Section 4* explores other criteria that can be used to evaluate offsets and vendors, including offset project location. *Section 5* is a survey of Canadian and international carbon offset vendors, and *Section 6* proposes quality requirements for a Canadian offset standard. The guide concludes with further resources to help purchasers reduce and offset their carbon footprint, as well as a *Glossary* that explains key terms used throughout the guide. *Appendix A* explains in more detail the rating system we used to evaluate the offset vendors included in our survey.



SECTION 1: AN OVERVIEW OF CARBON OFFSETS

CLIMATE CHANGE AND THE NEED FOR ACTION

Carbon offsetting is a market-based tool that has been developed to tackle climate change resulting from human activity. Climate change is caused by a build-up in our atmosphere of carbon dioxide and other greenhouse gas emissions from many of our everyday activities, such as driving and heating our homes and offices. These emissions are creating a heat-trapping blanket around the Earth that is raising the temperature of our planet. In Canada, we are already beginning to feel some of the impacts of higher temperatures, like the pine beetle epidemic that has devastated forests in B.C., melting permafrost in the North, and reduced fresh water availability as a result of retreating glaciers. It's important that we take action now, in Canada as well as internationally, to reduce our greenhouse gas emissions and slow down climate change.

The problem is that even though the human causes of climate change are clear, and the negative impacts are becoming ever more apparent, economies throughout the world remain heavily dependent on burning fossil fuels and other activities that produce greenhouse gas emissions. As a result, we need strong, concerted leadership at the national and international levels to set firm, science-based targets for reductions and to put in place policies and regulations that place a price on carbon to enable our economies to transition to clean sources of energy. Carbon offsets can help promote this transition at the grassroots level by stimulating the market for clean energy technologies and energy-efficiency practices, educating consumers and businesses about greenhouse gas measurement and management, and by creating reductions in greenhouse gas emissions in addition to those mandated by regulation.

WHAT IS A CARBON FOOTPRINT?

Every person, business, and other organization has a carbon footprint, which is the total of all of the greenhouse gas emissions emitted as a result of their various activities. Some of these activities include transportation (e.g., driving



or flying) and the use of fuel for heating and electricity—essentially anything that uses fossil fuel energy sources. Burning fossil fuels like coal, natural gas and gasoline to create energy releases carbon dioxide, the most common long-lived greenhouse gas. Other greenhouse gases like methane and nitrous oxide are primarily produced by livestock, rice cultivation and agricultural fertilizers. Clearing forests also leads to greenhouse gas emissions when trees are burned and carbon-rich soils degrade. Manufacturing processes also produce greenhouse gases. Even waste that is discarded in landfills decomposes into the greenhouse gases methane and carbon dioxide.

Below is a list of three common activities⁸ and their corresponding greenhouse gas emissions in metric tonnes of CO₂e.⁹

- Power the average clothes dryer in Ontario for one year: **0.2 tonnes CO₂e**
- Fly from Vancouver to Toronto by airplane: **0.4 tonnes CO₂e**
- Drive a mid-sized car for one year: **4.2 tonnes CO₂e**

Overall, Canada’s per capita emissions are 22.7 tonnes CO₂e per year. To put this in perspective, global per capita emissions are only 7.7 tonnes CO₂e per year. Clearly, given that Canadian per capita emissions are nearly three times the global average, Canadians have a responsibility to take significant action to shrink their carbon footprints and their climate impact.

REDUCING EMISSIONS: THE #1 PRIORITY

This guide is about carbon offsets, but carbon offsets need to be understood in the broader context of climate change solutions. The problem of climate change can only be solved if individuals, businesses, and organizations make substantial cuts in their own direct greenhouse gas emissions wherever they can, throughout their activities. Offsets can be used as a supplement to this action, but they shouldn’t replace efforts to make direct reductions.



In most cases, it will be impossible to completely erase our carbon footprints (i.e., reduce our emissions to zero), particularly when we all rely on goods and services that have their own embodied carbon footprints. However, the good news is that there are many relatively simple and inexpensive ways to make a carbon footprint a few sizes smaller. One of the benefits of making direct reductions, like cutting back on energy consumption, is that this type of measure frequently saves money, year after year into the future. As well, organizations and individuals that make their own reductions can monitor the results, and be creative about finding further ways to reduce. And finally, making efforts to reduce emissions first

can add credibility to the use of offsets.

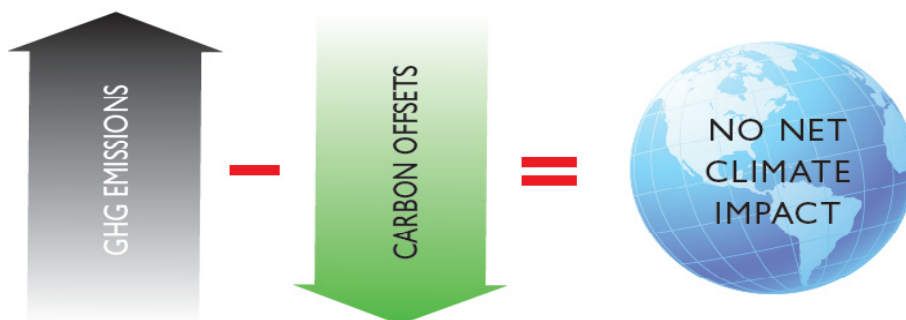
The *Resources* section at the end of this guide has a number of tips for making reductions, and links to more detailed resources, including online carbon calculators for measuring your personal or organizational carbon footprint.

WHAT ARE CARBON OFFSETS, AND HOW DO THEY WORK?

Carbon offsets are an innovative, market-based way to take responsibility for the carbon footprint that remains after efforts have been made to reduce emissions. Carbon offsets are simply credits for reductions made at another location, such as wind farms that create renewable energy and reduce the need for conventional sources of electricity like coal-burning generators. As a result, they are sometimes referred to as “carbon credits”. Anyone can purchase carbon offsets and use them to balance their own emissions. If you purchase enough offsets to balance all of your emissions remaining after reduction efforts, your net emissions will be zero. This is often referred to as becoming *carbon neutral*.

The idea behind carbon offsets is that greenhouse gas emissions spread very quickly around the planet, and it doesn’t make a difference from the point of view of the climate whether a tonne of CO₂ is emitted – or reduced –

DIAGRAM 6: USING CARBON OFFSETS TO BECOME CARBON NEUTRAL



Using Carbon Offsets to Become Carbon

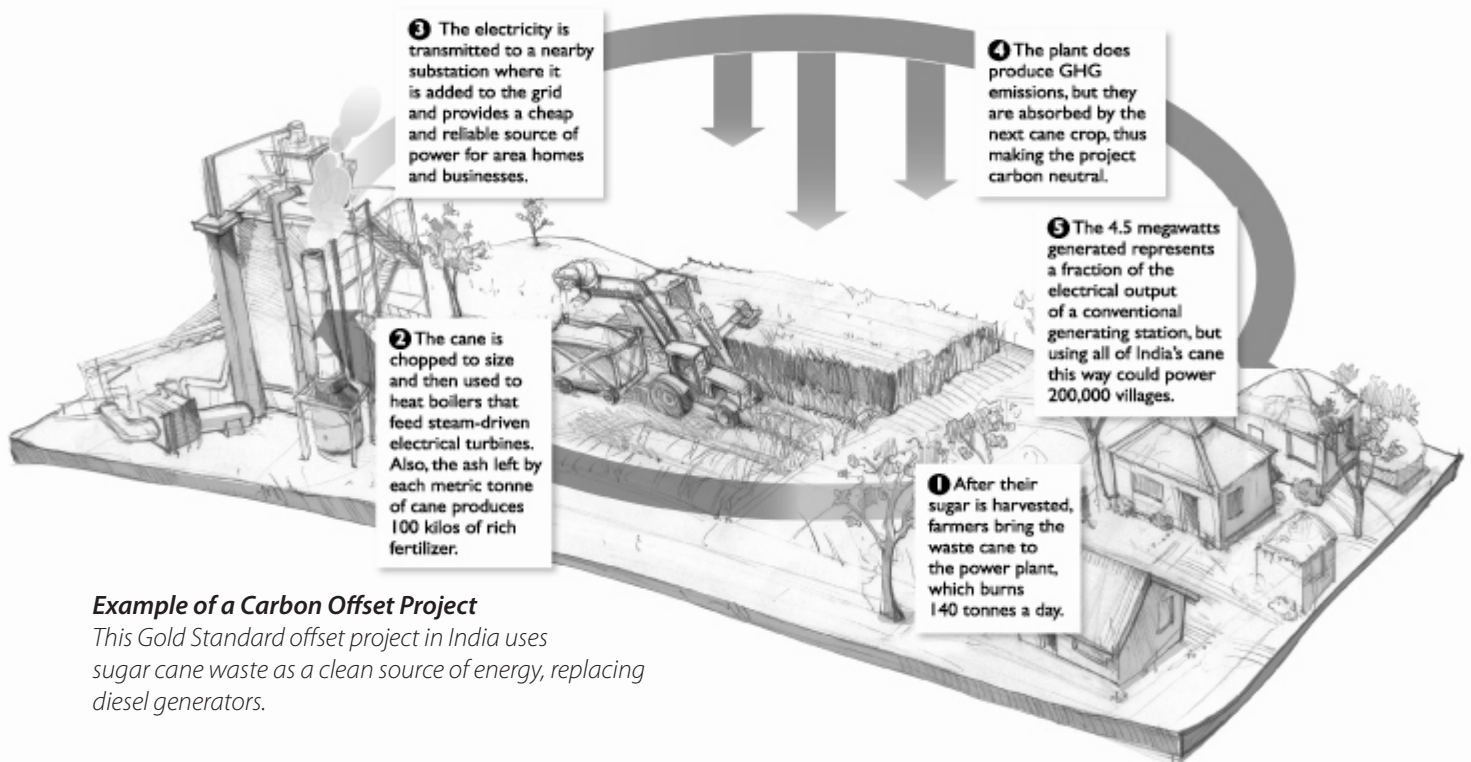
in Canada or elsewhere in the world. And so, while the opportunities for reductions in one location might presently be limited by cost or technology, the next best option may be to pay for reductions to be made in another location.

There are many different types of carbon offset projects. Some of the most common include renewable energy projects like wind farms, small hydro

projects, and biomass projects, along with energy efficiency projects like retrofitting office buildings or introducing more energy-efficient heating technology. Still other projects involve capturing and burning methane from landfills or livestock, preserving forests, and planting trees. (See *Section 2* for a list of common offset project types, as well as some of the issues associated with each type).

Carbon offsets are quantified and sold in metric tonnes of carbon dioxide equivalent (CO_2e). Buying one tonne of carbon offsets means that if the carbon offset is high quality, there will be one less tonne of carbon dioxide (or an amount of other greenhouse gases that would produce an equivalent effect) in the atmosphere than there otherwise would have been. Below are some examples of typical offset projects, and approximately how many tonnes of offsets they generate in the course of one year¹⁰:

- 1.2 MW wind farm in Madagascar = **1,790 tonnes** of CO_2e reduced/year
- 4.5 MW biomass energy plant in India = **10,550 tonnes** of CO_2e reduced/year
- Switching fuels to heat a commercial greenhouse in British Columbia = **1,600 tonnes** of CO_2e reduced/year



Example of a Carbon Offset Project

This Gold Standard offset project in India uses sugar cane waste as a clean source of energy, replacing diesel generators.

To determine how many tonnes of carbon offsets you need to purchase, it's first necessary to calculate the amount of emissions that you or your organization is producing. There are many easy-to-use online carbon calculators that can calculate emissions from various activities, including flying, driving, heating and electricity use. These calculators use basic information, such as the locations you are flying to and from, the type of car you drive, and utility bill records to calculate your emissions. Generally, the more detailed the information you are able to enter into the carbon calculator (e.g., the model, make, and year of your vehicle, plus the distance driven), the better, as this will allow you to measure your emissions more accurately, thereby ensuring that all of your emissions can be offset. We suggest testing out several calculators to compare the differences in the estimated emissions. See the *Resources* section at the end of this guide for links to some carbon calculators available online.

WHO'S BUYING CARBON OFFSETS, AND WHERE ARE THEY SOLD?

Demand for carbon offsets around the world has led to a large and growing carbon market. Players in the carbon market include businesses, governments, financial institutions, non-profit organizations, and individuals that develop, broker, buy, sell, and trade carbon offsets. It has been estimated that over CAD\$139 billion was transacted in the global carbon market in 2008—almost double the amount for 2007.¹¹

The carbon market itself is divided into two segments. The first is the compliance carbon market, which includes government-regulated programs (such as the Kyoto Protocol and the European Union Emission Trading System) that require countries and large industries to reduce their emissions. Carbon offsets sold through these programs are regulated to ensure a certain level of quality and to enforce restrictions on project types and locations.

The second is the voluntary, or retail carbon market, which is the focus of this guide. As its name suggests, the voluntary market covers carbon offset trading that is not required by government regulation as a part of mandatory greenhouse gas reduction programs.¹² The voluntary market serves individuals, businesses, and organizations that aren't legally required by governments to reduce their emissions, but choose to voluntarily take responsibility for their climate impact. Globally, businesses are the leading buyers in the voluntary market, accounting for about 66 per cent of total transactions, followed by individuals, governments, and non-governmental organizations (NGOs).¹³ Large businesses typically make purchases through a broker or an offset project developer, while smaller organizations and individuals usually purchase offsets through online retail vendors. Although still small compared to the compliance market – and also relative to the scale of the emission reductions that need to be made to address climate change



– the voluntary market has increased rapidly in size, from CAD\$305 million in 2007 to CAD\$460 million in 2008.¹⁴

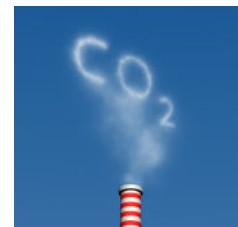
Many well-known businesses and organizations are voluntarily purchasing carbon offsets to reduce their carbon footprint. These include Google, TD Bank, HSBC, News Corp, the Vatican, Nike, Vancity, the Montreal International Jazz Festival, and Ben & Jerry's – to name just a few. Some airlines also

routinely offer their passengers the option to purchase offsets at the time of booking to offset the emissions of the flight. High-profile sporting events purchasing offsets have included the Super Bowl, FIFA World Cup, and the Olympics. The popularity of carbon offsets is only expected to grow as more and more people look for ways to reduce their climate impact.

Internationally, it has been estimated that there are about 140 offset vendors in the voluntary carbon market. Currently in Canada there are at least 14 offset vendors. Canadian vendors usually own or represent a portfolio of carbon offsets from a variety of offset projects, and the projects themselves can be located in Canada or abroad. Some of these vendors also offer other services, such as calculating the greenhouse gas emissions of a business, or energy and sustainability consulting.

WHY USE CARBON OFFSETS?

Offsets are not a replacement for direct action by individuals, businesses and organizations to reduce their own carbon footprints, but if used as a complementary measure, they can offer a number of benefits. Along with their key benefit – creating reductions in greenhouse gas emissions – voluntary carbon offset purchases also have the potential to:



- Give individuals, businesses and organizations the ability to take responsibility for their own climate impact, and to demonstrate leadership on climate change by going beyond existing government regulations or incentives.
- Make it possible to take responsibility for an entire carbon footprint, including emissions that can't be reduced, and even those that cannot directly be controlled, such as those from suppliers (in the case of businesses).
- Provide a way to address the greenhouse gas emissions from economic sectors (e.g., international air travel) that aren't effectively covered by existing government regulations.

- Allow greenhouse gas reductions to be made wherever it is most cost-effective by using the flexibility of the carbon market.
- Act as an interim measure that allows time to find ways to make further direct reductions, while still taking responsibility for one's climate impact.
- Help to make greenhouse gas reduction projects more economically viable, by providing another income stream for project developers.
- Promote innovation, and bring environmental and economic co-benefits to communities where the offset projects take place.
- Put a price on the carbon emitted by a business, organization, or individual. This extra expense (e.g., on a business's balance sheet) can provide an incentive to make further emission reductions in the future. It can also build support for government regulations that put a price on carbon.
- Contribute to a better understanding of the magnitude and cost of greenhouse gas emissions, the need to make reductions, and where reduction efforts can best be targeted. Calculating emissions in order to purchase offsets is often the first opportunity for many organizations and individuals to gain an understanding of these issues.

Despite these potential benefits, carbon offsets have been criticized by some commentators as being akin to “papal indulgences”, “just a way to buy your way out”, or as a right to pollute for those who can afford it. However, these criticisms are unjustified, considering that carbon offsets can result in real reductions in greenhouse gases. Offsetting can be seen as a voluntary application of the “polluter pays” principle, whereby those who produced the pollution take responsibility for cleaning it up. It should also be noted that offsetting is similar to any other service available in a market-based economy, such as financial accounting or a telecommunications (e.g., phone) service, where factors like a need for specialized expertise or economies of scale lead to the out-sourcing of some activities. Purchasers pay for the service because they lack the time, resources, or expertise to do it themselves.

It is important to recognize that carbon offsets are not a silver bullet for climate change, and that no voluntary approach to greenhouse gas emissions should ever delay or take the place of effective government regulations that set firm reduction targets and put a price on emitting carbon. However, the problem of climate change is so large and urgent that it requires a whole range of solutions, and voluntary carbon offsets can make a contribution.



SECTION 2: CARBON OFFSET PROJECT TYPES

Carbon offsets can be created by a number of different offset project types, all of which do one of the following: avoid, reduce, remove, or destroy greenhouse gas emissions. The share of different project types in the voluntary market is constantly evolving, based on demand and project availability

Two of the most common project types are renewable energy and energy efficiency projects. Renewable energy projects, such as wind or solar, *avoid* the greenhouse gas emissions associated with burning fossil fuels to generate electricity or heat. Energy efficiency projects, like installing more efficient lighting systems, use less energy and thus *reduce* greenhouse gas emissions.

Projects like tree planting or soil-management techniques, on the other hand, *remove* carbon from the atmosphere and store it in living plants and soils. Still other types of projects include livestock-waste management and landfill gas recovery, both of which capture and *destroy* methane, a potent greenhouse gas.

The table below describes some of the most common offset project types available in the voluntary carbon market, and outlines some of the risks and benefits associated with each project type that buyers should be aware of.

Carbon Offset Project Type	Example	Project Description	Issues to Consider
Renewable Energy	Wind	Wind turbines can be large or small. They can be part of wind farms or installed on commercial or residential properties. They are usually used to generate electricity, replacing conventional sources of electricity like gas- or coal-fired generators.	Renewable energy projects can create high quality carbon offsets. They avoid emissions from burning fossil fuels, which is the largest contributor to global warming. These projects also help support the transition to a sustainable energy economy.
	Solar	Solar projects can take the form of large-scale farms or an aggregate of individual solar panels. Solar panels can be either photovoltaic (generating electricity) or thermal (generating heat).	Other issues to consider: <ul style="list-style-type: none"> Emission reductions from renewable energy projects are permanent. For example, even if a wind farm were damaged and could create no further reductions, the reductions that it had already created would not be affected. This is in marked contrast to

Carbon Offset Project Type	Example	Project Description	Issues to Consider
	Hydro	Hydro projects generate electricity. Offsets are usually from small hydro or “run-of-river” projects.	<p>carbon stored in trees or soils, which can be re-released into the atmosphere in the event of fire or other disturbances.</p> <ul style="list-style-type: none"> Projects may result in other unintended environmental consequences if not designed carefully. For example, large hydro projects can displace communities and flood large areas that may have natural or agricultural value. Even small run-of-river hydro projects may involve land disturbance related to the construction and operation of the plants, and can also impede the passage of fish and other species that travel up and down waterways. In the case of biomass projects, steps need to be taken to ensure that the burning of biomass does not lead to the release of other types of harmful emissions, such as particulates, into the atmosphere. Renewable energy projects can have issues with respect to additionality and double counting¹⁶. For example, if projects are located in jurisdictions with legislated requirements or adequate incentives for renewable energy production, the projects likely would have happened anyway and would not be additional. Ensuring unique ownership of the emission reductions may also be problematic. For example, the reductions from a wind farm could potentially be claimed by an electrical utility, the province the wind farm is located in, and the purchaser of the electricity – meaning the reductions would be counted and claimed more than once. Renewable energy certificates (RECs) should not be confused with carbon offsets. RECs are a convenient way to purchase the environmental benefits of renewable energy when renewable energy is not available directly. However, despite some similarities, the minimum requirements for RECs are less restrictive than those for offsets. Before using RECs to offset greenhouse gas emissions, purchasers should ensure that a credible method has been used to qualify them as carbon offsets, and in particular to demonstrate additionality and ensure unique ownership of the emission reductions.¹⁷ Because of the potential for plant-based biomass to displace food production, it should ideally be made from waste by-products (e.g. corn stalks, husks, and cobs).
	Geothermal Power ¹⁵	These projects access steam from below the earth’s surface and use it to generate a renewable source of electricity production.	
	Ground-source heat pumps	These projects set up systems that use pumps to transfer heat to or from the earth, thereby cooling or heating a building.	
	Biomass	Biomass projects use plant or animal matter to generate energy. Plant-based biomass projects include burning agricultural or forestry waste to produce heat and electricity. Livestock waste (from cows, pigs, and chickens) can also be collected and used for heat and electricity generation, through anaerobic digestion or through de-hydration and combustion.	
Energy Efficiency	Energy efficient technologies and investments	Energy efficiency projects include switching to low-energy stoves, appliances or lighting in municipal or community projects, and also larger projects such as industrial energy efficiency or cogeneration.	<p>Energy efficiency offset projects are generally considered to be of high quality because they reduce emissions from fossil fuel sources and create permanent reductions in greenhouse gas emissions. Successful energy efficiency projects also reduce the overall demand for energy.</p> <p>Other issues to consider:</p> <ul style="list-style-type: none"> There may be environmental co-benefits. For example, the use of more fuel-efficient wood-burning stoves in developing countries may both reduce emissions and slow deforestation. Energy efficiency projects require careful verification. For example, it’s important to check that a project that installs fluorescent light bulbs has procedures in place to ensure that the bulbs are actually installed and used in the quantities and for the duration required by the project.

Carbon Offset Project Type	Example	Project Description	Issues to Consider
			<ul style="list-style-type: none"> • Projects that depend on human behaviour to reduce energy consumption (for example, taking public transit instead of driving) only rarely qualify as offset projects because of uncertainties about additionality, double counting, quantifying the reductions, and verifying that individuals carried out the actions they committed to. • Energy efficiency projects may have a rebound (or leakage) effect: i.e., the energy saved may lead to more energy being used for activity outside the scope of the efficiency project. This needs to be evaluated carefully so that the net benefit of the energy efficiency project can be calculated. • Offsets from projects that improve the efficiency of unsustainable processes (such as the combustion of coal) should be avoided.
Fuel Switching	Switching to lower-carbon fuels	Fuel switching projects involve substituting a cleaner fuel that emits less carbon dioxide for another fuel (e.g., substituting natural gas for coal to generate electricity, or using biomass instead of natural gas to heat a greenhouse), usually in energy generation or industrial or commercial processes.	<p>The reductions from fuel-switching projects are usually relatively easy to quantify. They are also permanent.</p> <p>Other issues to consider:</p> <ul style="list-style-type: none"> • Fuel-switching projects need to include a careful examination of the emissions associated with both fuels, particularly in the case of biofuels, where the greenhouse gas emissions associated with production are typically underestimated. • Switching to natural gas from coal or diesel fuel can create an environmental co-benefit in the form of reduced particulate emissions. • It is important that the substitute fuel not have other environmental issues. For example, although burning used tires or municipal waste to power cement kilns might reduce greenhouse gases, it can lead to air pollution issues.
Methane Recovery	<p>Landfill methane recovery</p> <p>Livestock waste management</p>	<p>These projects either flare the methane released from rotting organic waste in landfills or capture the methane and use it to generate heat and/or electricity.</p> <p>These projects capture methane generated from animal waste and either flare it (converting it to carbon dioxide and reducing the global warming potential) or combust it to generate heat and/or electricity.</p>	<p>Methane capture is often seen as “low-hanging fruit” in the offset industry, particularly in the case of landfill gas capture projects. This is because it generates a higher number of offsets due to the greater global warming potential¹⁸ of methane, and because these projects are relatively inexpensive to implement. However, in many cases regulations already require the combustion of landfill gas (e.g., to mitigate odours), making these projects “business as usual” and therefore not additional (i.e., not qualifying for offsets). Some would argue that regulation is the most effective way to deal with methane from landfills.</p> <p>Other issues to consider:</p> <ul style="list-style-type: none"> • Verification of these projects is straightforward as the reductions are easily measured and quantified. • Offsets from landfill methane should not be used to justify existing landfilling practices or promote new landfills. It is preferable for municipal waste to first be reduced (e.g., through efforts to compost and recycle), and then processed in a digester before being landfilled – in which case the landfill will release very little methane.

Carbon Offset Project Type	Example	Project Description	Issues to Consider
Biological Carbon Sequestration	Afforestation	These projects involve planting trees in an area where the land-use has been non-forest for a specified period of time (usually greater than 10 years)	<p>Afforestation or tree planting projects have the potential to create a number of co-benefits, including the promotion or re-establishment of native biodiversity, reduced soil erosion, and the purification of water supplies. However, there are a number of significant risks associated with these projects¹⁹:</p> <ul style="list-style-type: none"> • First, while trees can be long-lived, they inherently lack permanence. Large amounts of carbon stored in trees can quickly be released as a result of forest fires, logging, or disease. For the carbon in a tree to be able to offset other emissions and help limit the impacts of climate change, it must stay locked up in that tree for at least 100 years – something that is difficult to ensure. As well, scientific studies show that trees are themselves being adversely affected by climate change, with warming temperatures contributing to increased rates of drought-related stress, which in turn causes more forest fires and insect-related deaths. In fact, some forests are already becoming net sources of emissions. <p>While a number of approaches have been developed to try to address these permanence risks – for example, putting in place legal guarantees such as land conservation easements that require the land to remain forested in perpetuity, creating buffer pools (i.e., holding back some of the offsets from a project so that they can be used to replace ones that fail), substitution (replacing failed offsets with those from different offset projects), or issuing temporary credits – ensuring that these mechanisms remain in place over the longer term, along with effective monitoring of the forests, is still problematic. This is especially the case as many of the standards bodies that certify tree-planting projects are very new and the efficacy of their insurance schemes over the longer term has not been proven. Further, the lifespan of an offset standard body or vendor is likely to be shorter than the 100 years or more for which the carbon needs to be stored to address climate change. As a result, it may be difficult for buyers of these types of offsets to be assured that the trees will continue to exist or be replanted if they die.²⁰</p> <ul style="list-style-type: none"> • Trees also take many years to reach maturity, and during their early years as saplings, trees can only absorb a limited amount of carbon from the atmosphere, meaning that carbon offset projects from tree planting projects usually do not deliver actual emission reductions in the atmosphere for many years – possibly decades – after the trees are planted. Some project developers will plant a seedling and sell offsets representing the carbon the tree would store over its lifespan if it lived to maturity. Purchasing offsets from this type of project means assuming significant, long-term risks. • In some cases, areas used for tree planting would have regenerated forests naturally over time (e.g., in previously logged areas), making the project non-additional. • Some of the fastest-growing tree planting projects consist of a single tree species, or even clones of a single tree, resulting in unstable and artificial forests with little biodiversity. Only planting of native trees should be considered.

Carbon Offset Project Type	Example	Project Description	Issues to Consider
	Reforestation	These projects involve planting trees in a location where a forest has been cleared.	The issues related to reforestation projects are similar to those discussed for afforestation projects above.
	Forest protection (avoided deforestation)	These projects preserve forests in highly valued conservation areas from conversion to other land uses, such as agriculture, being flooded for large hydro dams, or urbanization.	The loss of forests is a significant contributor to greenhouse gas emissions in the tropics—for example, in Brazil deforestation accounts for over half of the country's emissions. Protecting existing forests has the advantage of storing very large amounts of carbon from the very start of the offset project. As well, naturally forested areas are often reserves of biodiversity, particularly in the tropics. However, for forest conservation projects to be additional, it should be demonstrated that the forested area in question would disappear in the short to medium term if the area were not protected. Further, it is important to ensure that protecting one forested area does not simply lead to clearing another area of the forest, a problem known as leakage. Forest-conservation projects are also vulnerable to permanence risks (see 'Afforestation' above).
	Forest protection (avoided degradation)	These projects preserve forests that would otherwise be degraded or damaged by activities such as logging, but that would be replanted or allowed to regenerate naturally (i.e. they would not be completely converted to other land uses such as agriculture, large hydro or urbanization).	When forests are logged or degraded in other ways, some of the stored carbon is permanently lost (from soils, for example), even when the forest is replanted or is allowed to regenerate naturally. Avoiding logging or other degradation of a forest can thus be a way to reduce greenhouse gas emissions, and to generate carbon offsets. However, accurate quantification of the reduced emissions can be difficult; for example, after logging, some of the carbon remains on site in woody debris, or may be stored in resulting lumber products for some period of time. In addition, many of the emissions associated with degradation are re-sequestered in young, growing trees that are planted or establish naturally. Other issues to consider: <ul style="list-style-type: none"> • Aside from challenges with respect to quantification, avoided degradation projects are vulnerable to permanence risks (see 'Afforestation' above), and to issues with respect to leakage.
	Soil-management (agricultural sequestration)	These projects involve modifying soil-management practices, such as tilling the soil less frequently, in order to reduce the amount of carbon released back into the atmosphere through soil disturbance. There are also projects that involve changing animal grazing practices to allow a greater accumulation of carbon in pasture land.	Storing carbon in soils through low tillage or other practices means that the practices must continue indefinitely in order to maintain the stored carbon. Moreover, the soil must not be subject to any other form of disturbance, natural or man-made. This creates uncertainty about the permanence of these types of projects. While lower tillage rates for agricultural lands can help soil erosion and degradation, this approach is often associated with increased use of herbicides. Further, if low tillage is business as usual and would have happened anyway, then the project is not additional.

Based on a consideration of the issues associated with each of the above project types, the Pembina Institute and the David Suzuki Foundation are of the opinion that renewable energy and energy efficiency projects are generally most likely to offer high quality offsets, although other project types can also provide high quality offsets. Renewable energy and energy efficiency projects not only result in a measurable and irreversible (i.e., permanent) climate benefit, but they also avoid or reduce the burning of fossil fuels, which is the largest man-made cause of climate change. These projects also support the transition to a sustainable energy economy, something that is urgently needed if we are to address the problem of climate change.



SECTION 3: USING QUALITY CRITERIA TO COMPARE CARBON OFFSETS

ARE ALL CARBON OFFSETS THE SAME?

As discussed, there are a number of potential benefits to using carbon offsets. But while purchasing carbon offsets can be as simple as logging onto a website and entering your credit card information, buyers should be aware that, as with any other product or service, there is a wide range of quality in the carbon market. This fact is highlighted in the very different scores received by offset vendors in this survey (see *Section 5*). In fact, some of the offsets available for sale on the market likely have no climate benefit at all, which has contributed to public skepticism and a media backlash around offsets.

In order to ensure that carbon offsets represent real reductions in greenhouse gas emissions, only high-quality offsets should be purchased. However, some vendors offer scant information on their websites about their offsets. And even when vendors do provide detailed information, it can be difficult for the average purchaser to understand and compare the often baffling list of offset criteria, such as additionality, permanence, and unique ownership. Furthermore, unlike for some goods or services, there is no guarantee that higher offset prices will necessarily be associated with higher quality (although there is some correlation).

To overcome these obstacles and be able to assess offset quality, purchasers will find it helpful to understand the issues associated with different offset project types, as discussed in the previous section. As well, it is important to be familiar with the key offset quality criteria, which are described below. Finally, purchasers can have more confidence that the carbon offsets they are buying meet these quality criteria by looking for offsets that have been certified to a recognized independent standard, like The Gold Standard. More information on standards is found at the end of this section.

THE CRITERIA THAT MAKE A HIGH QUALITY OFFSET

Like most items for sale in the marketplace, carbon offsets can be assessed using a number of criteria. If these criteria are met, there is a good chance that the offset is of high quality and will result in real reductions in greenhouse gases. To help ensure that their offset purchase has the most benefit for the climate, buyers should have at least a basic understanding of these criteria.

Below are the most common quality criteria that apply to carbon offsets: additionality, accurate quantification, auditing, unique ownership, permanence, leakage, sustainability considerations, stakeholder consultation, and timing.²¹

Additionality

Additionality is one of the most important things to look for when assessing carbon offsets. To be additional, an offset project must not have happened without the incentives arising from the offset market. It is essential that the reductions aren't simply reductions that would have happened in the "business as usual" scenario – otherwise, the offset has no net climate benefit.



While the concept of additionality is not that complicated, determining in practice whether a project is additional can be quite technical. The best assessments of additionality rely on a combination of tests. One of the most

An example of the investment test for additionality

Scenario 1: A business decides to upgrade its equipment to produce a different product line. The new equipment that it purchases also happens to use less energy, although this wasn't a factor in the decision to purchase the equipment. Because the business now uses less energy, it has reduced its greenhouse gas emissions. **Should the business be able to sell the reductions as offsets? Answer: No.** The decision to purchase the equipment was made regardless of the reductions in greenhouse gas emissions or any potential income from offsets. The emission reductions would have occurred regardless of the sale of offsets.

Scenario 2: A public housing project would like to install solar panels on its roof, but it can't afford them. The solar panels would reduce its greenhouse gas emissions. **Can it sell offsets for the reductions to help fund the project? Answer: Yes,** if the revenue from the sale of offsets will be a significant factor in determining whether the project will go ahead, and the offsets meet other basic offset quality criteria, such as accurate quantification, unique ownership, and others.

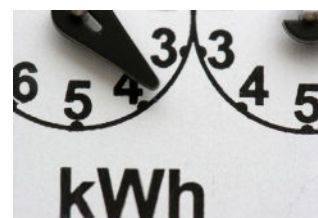
basic tests looks at whether the project achieves more than what is legally required. For example, are there already laws requiring methane recovery at landfill sites? If so, then the methane recovery project is not additional. Beyond this initial threshold, one of the most common tests – sometimes referred to as the “investment test” or the “financial test” – poses a simple question: would a project that creates reductions in greenhouse gas emissions have been implemented without the extra revenue from selling offsets? If the project requires offset revenues to be financially viable, it is most likely additional. Other tests include whether there are specific non-financial barriers (like a lack of relevant technical expertise in the region) that the project would have to overcome, or whether the project goes beyond “common practice” in the region where it is being developed.

The most widely recognized and strictest series of tests (or “screen”) for additionality to date is the one created under the Kyoto Protocol’s Clean Development Mechanism (CDM), known as the CDM additionality tool. Offsets that qualify under the CDM must pass this screen, and it is also used for offsets that qualify for The Gold Standard. In both cases, United Nations-accredited auditors apply the screen, and an independent review panel confirms the results. Another additionality screen is used by the Voluntary Carbon Standard, which has auditors apply its additionality tests but does not have a separate panel review the auditors’ results. Because additionality testing can be subjective, the double review process (auditors and independent panels) under the Kyoto Protocol and The Gold Standard is currently the most rigorous approach. However, even though the CDM additionality tool is the strictest additionality screen developed to date, substantial volumes of non-additional projects have nonetheless been credited under the CDM.²² This highlights the need for the greatest possible scrutiny of additionality testing in the voluntary offsets market.

Accurate quantification

For a carbon offset to be real, it is essential that the emission reductions it represents be quantified accurately. For instance, if a wind farm is built, before it can sell offsets it is necessary to calculate how many tonnes of CO₂e the project is responsible for avoiding. The process of quantification includes

using a credible approach to estimate the “baseline” scenario, which refers to the emissions that would have occurred in the absence of the project. Once the baseline has been determined, project developers must use recognized quantification methodologies (which are specific to each offset project type) to estimate the emission reductions that result from the offset project. The entire process of quantifying greenhouse gas reductions should be guided



by generally accepted accounting principles. An international standard applicable to the quantification of emission reductions has been developed, and is available in Canada: ISO 14064-2. It should be emphasized that accurate quantification is a very technical process requiring specialized expertise and meticulous accounting, monitoring and reporting.²³

Related to both accurate quantification and additionality is the issue of how many years the offset project can generate offsets, or its “crediting lifetime.” The longer this period is, the greater the risk that the baseline has become outdated and inaccurate, and that the project is no longer additional. We would suggest a crediting period of eight years as a reasonable balance between certainty for investors and environmental integrity—after which additionality and baseline determination must be repeated.

Auditing (validation and verification)

Auditing in the form of validation and verification provides assurance that statements made about an offset project’s emission reductions are true and correct. Validation takes place before the project activity is underway, and is an independent assessment of the project design. Its purpose is to review the baseline and all calculations for accuracy, and to confirm that the emission reductions will be additional and achievable. Verification occurs after the project has been implemented and has generated reductions, and provides independent confirmation that those reductions actually took place or if they are more or less than originally anticipated. Verification does not ensure that offsets are additional, only that a certain number of reductions have occurred. To promote objectivity, both validation and verification should be performed by credible and qualified third-party auditors not related to the project developers or the offset vendors. Further, to avoid conflicts of interest, validation and verification for the same project should ideally not be performed by the same third-party auditor.

Unique ownership

Because offsets are an intangible commodity, it is especially important that clear ownership rights are established to the greenhouse gas reductions that the offset represents. Otherwise, more than one individual or organization might claim the benefit from the reduction, a problem known as “double counting”. From the point of view of the climate, however, the reduction has only occurred once, so counting the same reductions more than once reduces the overall level of reductions – and climate benefit – that will be achieved.

To avoid this problem, offsets should be backed by legal instruments that clearly demonstrate exclusive, enforceable ownership rights of the reductions.

We consider it best practice for offset vendors to register offsets on a publicly accessible (e.g., online) registry and “retire” them when sold, which means taking the offsets out of circulation permanently so that they are not sold again.

Vendors can also obtain independent audits of their business processes (not to be confused with the validation and verification of the offset project) to provide assurance that they are retiring offsets as they are sold and that each offset is only sold to a single buyer.

Permanence

Permanence refers to the durability of the climate benefit from an offset project, and varies depending on the offset project type. For example, in the case of offset projects from renewable energy, energy efficiency, or methane destruction, there is no risk of reversal and permanence is not an issue. For instance, even if a wind turbine were damaged and could create no further reductions, the reductions that it had already achieved by replacing fossil fuel-burning energy sources would not be affected. By contrast, offset projects that rely on storing carbon, like tree planting or agricultural sequestration, can release some or all of their stored carbon back into the atmosphere at any time if the trees are killed by fire, disease, or logging, or if the agricultural soil is disturbed – thereby cancelling the climate benefit associated with the offset and rendering it worthless.



Attempts to address permanence for projects that rely on stored carbon need to ensure long-term monitoring, and have a mechanism to replace any unintentional releases of stored carbon. While a number of approaches have been developed – for example, putting in place legal guarantees such as land conservation easements that require the land to remain forested in perpetuity, holdback or “buffer pools” (not selling all of the offsets from a project so that they can be used to replace ones that fail), or substitution (replacing failed offsets with ones from different projects) – there does not yet appear to be any effective way to ensure long-term monitoring. According to the latest science, we should be aiming to store the carbon for at least the next 100 years, and likely much longer, because this is the foreseeable period during which there will continue to be too much carbon in the atmosphere. This creates an accountability problem for offset projects that rely on storing carbon in biological reservoirs, because it is difficult to establish companies

or contractual relations that will reliably exist for such long periods.²⁴ By way of illustration, at least two of the offset vendors that were initially contacted for the survey in this guide had ceased to exist by the time the guide was being finalized. Moreover, the risk factors for biological carbon sequestration continue to increase as the climate warms.

Leakage

Leakage refers to a situation where a greenhouse gas reduction in one region causes an increase in emissions somewhere else. It is also of particular concern for projects that involve protecting forests. For example, protecting a forest in one location could simply shift logging to another forested area in a new location. Energy efficiency projects might also lead to leakage; for example, the money saved through reduced energy consumption might be used to pay for something else that will have corresponding greenhouse gas emissions.²⁵

Offset project developers and vendors should be able to show that any leakage associated with their offset projects has been dealt with at the project design stage, by assessing the likely leakage of the project, and taking steps to minimize it. Any leakage that remains should be subtracted from the reductions achieved by a project, as part of the process of determining the amount of offsets created.

Sustainability (social and environmental) considerations

At a minimum, carbon offset projects should comply with all relevant social and environmental regulations. Better yet, offset projects should be designed so that they do not have negative environmental or social impacts (for example, impacts on wildlife or on indigenous peoples), whether they are covered by regulations or not. This is particularly the case in developing countries, which often have relatively weak regulations or poor enforcement of regulations.

At the other end of the spectrum, it's also possible to develop carbon offset projects that create broader sustainability benefits. These could include, for example, job creation and the alleviation of poverty, enhancement of biodiversity, reduction of air pollution, and other benefits. However, it must be noted that these broader sustainability benefits should be above and beyond the reductions in greenhouse gas emissions achieved by the project. Without emission reductions, the project should not sell carbon offsets, regardless of how many other sustainability benefits it creates.

Some offset standards, such as The Gold Standard and Climate, Community

and Biodiversity Project Design Standards, for example, promote sustainability benefits by requiring offset projects to pass a sustainable development screen at the project design stage.

Stakeholder consultation

Evidence of stakeholder consultation – locally and with offset project experts from around the world – can provide greater assurance that the project does not have adverse social, environmental, or economic impacts, particularly on the community where it is developed. Obtaining stakeholder buy-in can help to ensure that any issues that may arise are addressed before the project begins. Stakeholder consultation can take the form of a public forum, or even a simple questionnaire for stakeholders to complete. If stakeholders foresee problems with the project, this feedback should at least be considered and addressed by the project to the degree that is possible.

Some offset standards, such as The Gold Standard and the Climate, Community and Biodiversity Project Design Standards, have specific requirements and procedures for stakeholder consultation. Purchasers who are considering offsets that don't meet standards with provisions for stakeholder consultation should ask vendors for specific information about this, such as whether stakeholders were consulted, who they were and what their feedback was.

Timing

Some vendors sell offsets for reductions that haven't yet been achieved, but are planned to be achieved in the future. This is sometimes referred to as “forward crediting”, and the buyer pays for and also receives the offsets up front.

This practice can create two problems. First, there is the risk that the reductions won't ever be achieved if the project that was supposed to create the reductions fails prematurely. For example, a wind farm might not be able to obtain financing to be built, or trees planted might die before growing to maturity and storing the carbon that has already been sold (and used) as offsets. The second problem is that the offsets may be out of synch, time-wise, with the emissions they are supposed to offset. While a delay of a year or two is probably not significant, the purpose of carbon offsets is to counterbalance the effect of greenhouse gases that are currently being emitted somewhere



else. Putting reductions off to the future might be seen as defeating this purpose, akin to purchasing an IOU that promises to make reductions at some point decades into the future.

A similar but less risky practice is called “forward purchasing”, whereby the buyer invests the money up front but does not receive the credits until they are actually generated. If done with proper safeguards to ensure that the reductions are actually created, forward purchasing can be a good thing, by contributing to up-front financing for projects. However, similar concerns apply about the length of delay between the purchase and the delivery of the offsets, as discussed above.

The bottom line is that there remains some uncertainty for purchasers who are buying offsets that have not yet been generated, even if there is a commitment by the vendor to provide verified offsets. Offset vendors should be explicit about when the reductions they are selling as carbon offsets are actually occurring so that purchasers can decide whether the timeframe meets their goals to address their own climate impact. Vendors should also be willing to guarantee any future purchase that is sold but that doesn’t occur – for example, if an offset project fails prematurely. Purchasers would be advised to discuss these issues with vendors, and consider factors like how far into the future the offsets are projected to be achieved, whether the risk is partially mitigated through a portfolio approach by the vendor, and, how likely it is that the vendor will follow through on any commitments to verify offsets once they have been achieved at some future date. Finally, purchasers should look for an offset “vintage” (e.g., 2010) that matches as closely as possible the year in which the greenhouse gas emissions being offset occurred.

CARBON OFFSET STANDARDS

Because assessing offsets according to the criteria above can be difficult for the average purchaser to do by themselves (especially since the information required often isn’t available on a vendor’s website), a number of offset standards have been developed. Standards in the marketplace are designed to help purchasers judge the quality of a product. For example, it’s hard to pick up a bottle of milk at the store and decide if it is organic or not without a recognized organic certification label on the bottle. It works the same way for offsets. Certification to an independent standard means that the offsets have already been checked by a qualified third-party auditor that has determined that they meet all the quality requirements of the standard.

Standards are particularly important in the voluntary carbon market because there is little or no government oversight of offsets in the voluntary market, including in Canada. While there have been some worthwhile initiatives

by the offset industry to regulate itself, these often amount to guidance on how an offset vendor should conduct its business, rather than being an actual standard that the carbon offsets themselves must meet. For example, the International Carbon Reduction and Offset Alliance (ICROA) is an association of a number of offset vendors that has established a “Code of Best Practice” for member companies. The code includes requirements that all offsets be verified by an independent third party auditor, and be stored and retired in an independent registry. It also requires that all members sell only offsets registered to specific standards, several of which are discussed below in more detail.²⁶

Globally in 2008, there were approximately seventeen standards for carbon offsets sold in the voluntary market.²⁷ These included the Clean Development Mechanism (CDM), The Gold Standard, the Voluntary Carbon Standard, the Climate Action Reserve Protocols, the Green-e Climate Protocol for Renewable Energy, and the Climate, Community and Biodiversity Project Design Standards, among others. Of these, the CDM is the most widely used standard in the compliance market, and The Gold Standard and the Voluntary Standard are currently the most popular standards in the voluntary market. Below are some further details about these three standards:

- (1) The **Clean Development Mechanism (CDM)** was developed for compliance with the Kyoto Protocol, and CDM carbon credits are reviewed by United Nations-accredited auditors. CDM credits must be located in developing countries, and are sold in both the voluntary and compliance carbon markets. While there have been concerns about some aspects of the CDM, it remains the model for quality assurance and the source of many of the methodologies used to quantify greenhouse gas reductions.²⁸
- (2) **The Gold Standard** was developed by the World Wildlife Fund (WWF) and other organizations²⁹ to address concerns that the CDM standard for offsets might not adequately promote sustainable development and protect the environment. It follows the CDM process but adds further requirements, and also limits eligible offset project types to renewable energy and energy efficiency. A version of The Gold Standard for voluntary projects (The Gold Standard—VER) has also been developed.³⁰ Both the Pembina Institute and the David Suzuki Foundation, along with over 60 non-governmental organizations from around the world (including Greenpeace International, WWF International, and the Rainforest Alliance) are supporters of The Gold Standard.³¹
- (3) **The Voluntary Carbon Standard (VCS)** was developed by an industry-led group of stakeholders. It was designed to be a relatively basic standard,

and is less rigorous than either The Gold Standard or the CDM with regard to basic quality criteria such as additionality, as discussed above in the sub-section “*Additionality*.”³² The VCS covers most offset project types, including renewable energy, energy efficiency, and forestry. The latest version of the VCS was released in late 2008, and the quality of VCS projects, in practice, will not be known until there has been an opportunity to assess a significant number of the projects being implemented.

Both the CDM and The Gold Standard are commonly used for offset projects around the world, but because of the global carbon accounting rules created by the Kyoto Protocol, offset projects located in countries like Canada that have Kyoto targets cannot be officially certified to either of these standards.³³ However, Canadian vendors often sell offsets from projects that are located in other countries that have been certified to these standards.



While there are some offset standards that are applicable to projects located in Canada, none provide both adequate quality assurance and applicability across the country. For instance, offset projects in Canada can use ISO-14064-2 for the accounting and auditing aspects of offset quality, but ISO 14064-2 does not have specific requirements about how to ensure the important offset criterion of additionality. In British Columbia, the provincial government has created regulations for offsets that will be funded through the Pacific Carbon Trust, but at present these offsets cannot be purchased by the general public, and the regulations are only applicable to projects developed within the province. Nor have the details of the standard been released to the public. Finally, the federal government has recently released the draft version of a federal offset system, but this system has not yet been implemented, nor is it clear that it will adequately address offset quality issues such as additionality. See *Section 6* for a more in-depth discussion of offset standard issues in Canada.

The lack of a strong national offset standard does not mean that there are no high-quality offset projects in Canada, but it does mean the onus is on the purchaser to assess offset quality, using the criteria discussed at the beginning of this section.

The next section explores further criteria that purchasers can use to assess carbon offsets and the vendors that sell them, including price, vendor transparency, and the location of the offset project itself.



SECTION 4: USING OTHER CRITERIA TO COMPARE CARBON OFFSETS AND VENDORS

Aside from the important offset quality criteria described in the previous section, purchasers can use a number of other criteria to evaluate the offsets they buy, and the vendors they buy from. This list is not exhaustive but will give readers an idea of some of the things they can look for.

- **Offset project type** – see the discussion in *Section 2* for the issues to consider with respect to different project types. Generally, renewable energy and energy efficiency projects are most likely to result in the highest quality offsets.
- **Price** – Offset prices vary from vendor to vendor and by project type, and also fluctuate with the market. It will be up to the purchaser to compare prices at the time they buy offsets. As previously noted, there isn't a strong correlation between price and quality, although higher quality offsets will likely tend to be in the more expensive price range. If there needs to be a trade-off between quality and quantity, we recommend favouring quality over quantity, instead of purchasing offsets that might not have any real climate benefit.
- **Proportion of offset price going to overhead** – Some offset vendors provide information about how much of their revenue goes to the offset projects themselves, and how much goes to overhead. This information may be of interest to purchasers, but it needs to be evaluated with caution. First, because this information is self-reported it may be difficult to verify its accuracy, and unless the vendor is purchasing directly from the project developer it may not take into account the costs of brokers and other intermediaries between the developer and the vendor. Also,

there might be worthwhile carbon offset projects that are more labour intensive and have relatively higher overhead costs. Some customers may be concerned about the idea of excessive profits being made through the sale of carbon offsets. Obtaining information about the portion of the price going to project developers may be useful for assessing this issue.

- **Public education** – While public education is not critical to the environmental performance of carbon offsets, vendors have the opportunity to use their websites and promotional material to educate customers about the causes of climate change and the ways they can reduce their carbon footprint. This in turn can help catalyze further action by customers to take responsibility for their own greenhouse gas emissions, and to develop a more vested interest in climate change solutions. This is important given that much of the criticism of offsets centres on the idea that purchasing carbon offsets is an excuse for not taking responsibility for one's emissions. In this emerging and unregulated market it is also important for vendors to provide customers with information about how carbon offsets are generated, and what makes a high quality carbon offset.
- **Organizational structure of offset vendors** – The voluntary carbon market includes both for-profit and not-for-profit offset vendors. There is potential value in having both types of organizations participate in the voluntary carbon market, but some purchasers might favour one type of vendor over another. For example, some purchasers might be more comfortable with the money devoted to a voluntary initiative going to a non-profit organization. Others might see the greater participation of profit-driven organizations in the field of carbon offsets as a way to promote competition and market efficiency.
- **Vendor transparency** – To allow customers to evaluate quality and other offset purchase criteria, vendors should be highly transparent about their offsets and their operations. Vendors should ideally provide, on their websites, information about their services, organizational structure, contact details, staff and executive team, and the proportion of their offset price that goes to overhead. With respect to the offsets they are selling they should make available information about the project locations and types, tonnes of offsets created by each project, the names of validators and verifiers, and when the offsets that are being sold were created. If they are selling a portfolio of offsets, they should also be clear about which projects are in the portfolio, and what percentage of the portfolio is allocated to each project.

- **Carbon calculators** – Carbon calculators provided on vendor websites are an important aspect of selling offsets, because purchasers often use the calculators offered by the vendor to determine the quantity of offsets they are going to purchase. It is therefore important that these calculators be easy to use and provide accurate results by using accepted methodologies. Customers should be aware that different calculators will produce different results, depending on the underlying methodology and assumptions used. Vendors should be transparent about these methodologies and assumptions by providing this information on their websites.³⁴
- **Carbon offset project location** – One further criterion for choosing offsets merits a more in-depth discussion: i.e., where the offset project itself is located. Should purchasers choose offsets from projects in their own country, like wind farms in Canada, or from projects in developing countries, such as solar stoves in Ethiopia? Purchasers are often faced with this question, and in fact most of the vendors included in this survey sell offsets either from projects based in Canada or from those in developing countries. Each approach has benefits, and these are discussed below:



Benefits of buying offsets from projects located in Canada:

- ✓ Canadians are among the highest per-capita emitters of greenhouse gas emissions in the world, and therefore have a responsibility to reduce their own emissions. Investing in Canadian offset projects is a way to do this.
- ✓ Offset projects located in Canada have the potential to educate Canadians about climate change solutions in their communities.
- ✓ Supporting offset projects in Canada keeps jobs, technical expertise, and financial benefits at home.
- ✓ Canada generally has stricter environmental regulations than developing countries, so offset projects are less likely to cause collateral damage to the environment.
- ✓ Offset projects in Canada can be more readily monitored to ensure that the emissions reductions do occur.

Benefits of buying offsets from projects located in developing countries:

- ✓ Two of the strongest standards for carbon offsets (e.g., CDM, The Gold Standard) are available for offset projects in developing countries, but

not for projects in Canada.

- ✓ Income from offset sales can provide financial help to some of the poorest communities in the world. Many developing countries are also expected to be hit hardest by climate change, which is unjust, considering that climate change was caused primarily by richer, industrialized countries.
- ✓ Offsets from developing countries are often less expensive than domestic offsets.
- ✓ Purchasing carbon offsets from projects in developing countries helps support the transition to clean, renewable energy in those countries, and to avoid the high emissions path of developed countries like Canada. Since developing countries are expected to dramatically increase their emissions in the near future, any investments made now (e.g. through offsets) to reduce emissions in those countries can have a benefit for the climate.
- ✓ Purchasing offsets from developing countries is in the spirit of the Kyoto Protocol, the international agreement to deal with climate change. Kyoto's Clean Development Mechanism (CDM) was explicitly created to allow industrialized countries like Canada to invest in emission reduction projects in developing countries.
- ✓ Carbon offsets from projects in developing countries avoid the issue of double-counting with respect to Canada's emission reduction targets under the Kyoto Protocol (see *Section 6* for a discussion of this).

One solution to the “Canada or developing country” dilemma is for buyers to purchase a portfolio of both international and domestic offsets, thereby sharing the benefits between Canada and other countries. Another option is to purchase offsets from projects in developing countries that are sold through Canadian-based vendors, so that some of the financial benefit stays in Canada.

While price, location and other matters may be factors in decision-making for purchasers, it is nonetheless important to remember that the most critical consideration remains the quality of the offsets themselves, as discussed in *Section 3*. If offset quality is not addressed, purchasing offsets will not have any climate benefit, no matter how attractive the price of the offsets or the website of the vendor.



SECTION 5: SURVEY OF CARBON OFFSET VENDORS

This section of the guide assesses and compares leading Canadian and international offset vendors. In doing so, it illustrates the process of evaluating carbon offsets and the vendors that sell them using the offset quality and other criteria discussed in the previous two sections.

Readers must keep in mind that this survey represents only a snapshot of vendors and their offsets at the time the survey was carried out, and the specific information may soon be outdated. In fact, we observed significant changes in operational procedures among Canadian vendors over the past year, and these will likely continue as the Canadian market continues to mature. Offset portfolios will also continue to change. As a result, purchasers are encouraged to always ask for the most recent information available from offset vendors. See the sample questionnaire on page 6, which can be used for this purpose.

It is also important for readers of this guide to understand that this survey is not meant to replace due diligence on the part of purchasers to ensure that the offsets they are purchasing from any given offset vendor are what the vendor warrants them to be. This applies whether the offsets are certified to a recognized standard or whether the vendor is simply claiming that the offsets are of high quality.

In the interests of full disclosure, we note that both the David Suzuki Foundation and the Pembina Institute have previously purchased carbon offsets from some of the vendors included in this survey. However, we do not have any financial or contractual links with any of the vendors, nor have we publicly endorsed any of the vendors. Both organizations are also supporters of The Gold Standard, and have purchased Gold Standard offsets. We have made our purchases based on our own best assessment of environmental integrity. However, we approached this survey as objectively as possible, and did not hesitate to deduct points from the results of any vendor that did not

meet the survey criteria we decided on.

In addition, at least one of the funders of this guide has purchased offsets from vendors included in this survey. However, none of the funders had any input into the design or conduct of the survey, nor did they have the opportunity to influence the results in any way.

WHO WAS INCLUDED IN THE OFFSET VENDOR SURVEY

We included 14 Canadian online retail offset vendors that we could identify within the time period when we were carrying out the survey, as well as six popular international online retail offset vendors (two U.S., two U.K., one Australian, and one German). These international vendors were included so that readers would have an idea of how Canadian offset vendors stack up against their counterparts in other countries, and because these vendors also market their offsets to Canadians through their websites. Contact information for all of these vendors is provided in the table on page 50. We acknowledge that some Canadian vendors may have been overlooked in this survey because there is no comprehensive directory of offset vendors in Canada.

Two of the organizations we contacted, Plug Into Green (Canada), and Carbonfund.org (USA) either declined to participate or did not respond to our survey questions.

We limited our assessment to web-based retail offset vendors and their offset portfolios. We did not include offset project developers, wholesalers, or brokers (unless any of these also had a retail operation). Nor did we include vendors that sell only Renewable Energy Certificates (RECs). We also did not include vendors of “carbon neutral” products or services, such as airlines or travel agencies that offer carbon offsets at the time of purchasing air travel tickets.³⁵

HOW THE SURVEY WAS CONDUCTED

The survey was conducted by the Pembina Institute over approximately an 18-month period, from January 2008 to July 2009.



The Pembina Institute contacted an initial list of vendors in the survey with an email questionnaire, which was then followed up where necessary with direct questions by email or telephone in the spring and summer of 2008.

As well, several more vendors came to the attention of the authors in the course of the research for this guide. In the interests of completeness, these vendors were included in the survey, but due to time constraints the

initial evaluation was based on information available on the website of each vendor.

Just prior to publication, all 20 vendors were sent a summary of the information they provided to us, along with a request for more detailed information with respect to certain aspects of their operations and practices. In addition to supplying new information, vendors also had the opportunity to confirm that previously submitted information was still accurate and to make any relevant corrections or updates.

It should be emphasized that we relied on the vendors for the accuracy and truthfulness of the information that they provided. We did not have the resources or opportunity to conduct any investigations directly into their operations or the projects generating the offsets that they sell. Wherever possible, we attempted to contact vendors to resolve any ambiguities, contradictions, or apparent misunderstandings in any of the responses.

The vendor scores in this guide were not provided to the vendors prior to the publication of the guide.

HOW WE ASSESSED THE VENDORS

Before providing a description of the evaluation methodology used in the survey, it must be acknowledged that there is no universally agreed-upon set of criteria for evaluating carbon offsets or offset vendors. We chose criteria for evaluating carbon offset quality and vendor performance based on our view of their importance, and how accessible the information required to assess the criteria was. Our overall approach is similar to approaches taken in previous offset vendor assessments performed by other organizations.

To evaluate the carbon offsets available for purchase from the vendors in this survey, the Pembina Institute and the David Suzuki Foundation agreed on six assessment criteria. Four of these are basic offset quality criteria: additionality, auditing, unique ownership, and permanence – which in our view are among the minimum criteria necessary to demonstrate that carbon offsets create real, measurable reductions in greenhouse gas emissions, and would provide a reasonable indication of the approach to offset quality being taken by the respective vendors.³⁶ To evaluate these criteria, we relied on vendors to provide accurate information about their offset portfolios. The two remaining assessment criteria we used, public education and vendor transparency, related specifically to the performance of vendors, and we assessed these by looking at vendor websites. All of these criteria are discussed in *Section 3* and *Section 4*.

The six assessment criteria are found below, along with specific things we

looked for, and what we actually found. A more detailed description of how points were awarded in each of these criteria can be found in *Appendix A*.



1. Additionality

What we looked for: We gave full points for offsets that meet recognized offset standards – such as the Clean Development Mechanism or The Gold Standard – because these standards require the use of the CDM additionality tool and also require both third-party audits and an independent approval process. We gave mid-range points for offsets that used the CDM additionality tool outside the CDM or Gold Standard process, or that were certified to the slightly less rigorous VCS. We also gave mid-range points for offsets that were registered with the Climate Action Reserve and the B.C. Emission Offsets Regulation, and from projects that had been validated through the Climate, Community and Biodiversity Standards (CCBS). We awarded lower points to vendors that claimed to use their own proprietary standard or additionality screens for offsets, or did not specify they assessed additionality, because of the uncertainty about the content of these internal policies and how they were being applied. A score of zero was awarded to vendors who did not use additionality testing for their offsets.

What we found: Overall there appeared to be a trend in the market toward a standardized approach to additionality. Many of the offset vendors surveyed are selling offsets certified to The Gold Standard or CDM, are using the CDM additionality tool outside the CDM process, or are selling offsets that have been tested for additionality through the standardized procedures of the VCS, the Climate Action Reserve, Pacific Carbon Trust, or CCBS. A minority of the offset vendors we surveyed were still lagging seriously on the assessment of additionality, and did not appear to have a good understanding of the concept or its importance, and thus their offsets present greater risks for offset purchasers in terms of providing the climate benefit they are meant to have.

2. Auditing (validation and verification)

What we looked for: Because of the importance we placed on this aspect of offset quality, we gave full points only where 100 per cent of a vendor's portfolio was stated by the vendor to be validated and verified by third-party auditors. Standards like the CDM, The Gold Standard, the VCS and the

Climate Action Reserve all require third-party validation and verification of projects, and specify the procedures to be followed by auditors.

What we found: The good news for offset purchasers is that many of the offset vendors surveyed claimed to have a high percentage of their projects validated by third-party auditors. Only a few of the offset vendors indicated that they did not sell offsets that were validated or verified (or intended to be verified) by third parties.

The rates of verification were considerably lower than those of validation. This may be due to the fact that some offset vendors are offering portfolios that include offsets that will be generated in the future – meaning they have not been verified yet (since verification usually takes place after the offset has been achieved). While this forward selling of offsets can be one way to secure financing for offset projects and may help to demonstrate additionality in certain cases, this does nonetheless expose the purchaser to a risk that the offsets will not be achieved. (see discussion under “Timing” in *Section 3*).

Some of the offset vendors noted that, as members of vendor quality initiatives like the International Carbon Reduction and Offset Alliance, they are committed to only selling offsets from projects that will be verified by third-party auditors, but that their portfolio still contained some offsets that have not been verified. In these cases, they received zero points for the offsets that had not yet been verified. As well, vendors that are forward selling the rights to offsets that will be registered to standards like the CDM, the VCS and The Gold Standard are effectively contracting with the purchaser to deliver offsets in the future that will be verified, because of the requirements of those standards. In these instances also, zero points were awarded for offsets that had not yet been verified. And finally, in several instances vendors were selling offsets that were claimed to have been verified before the offsets were actually achieved. This equates to “forward crediting” (also discussed under “Timing” in *Section 3*). We did not award any points for this type of verification claim.

3. Unique ownership

What we looked for: As an indicator of unique ownership, we looked for the use of publicly accessible (e.g., online), third-party registries that track the ownership and retirement of offsets. We awarded points to vendors based on the percentage of their offsets that were posted on these registries. We also looked at whether vendors undergo third-party “sales and supply” audits to ensure they are only selling their offsets once.

What we found: A growing number of offset vendors are placing their

offsets in publicly accessible registries, and new online public registries have recently been set up for offsets registered to the VCS, the Gold Standard and the Climate Action Reserve. Many vendors indicated that they intend to use registries in the future, in some cases saying that they were in the process of transferring existing paperwork onto a registry. However, we only awarded points where the vendor was already using a registry. Some Canadian vendors are also using the Clean Projects Registry of the Canadian Standards Association (CSA), although in some cases only the offset project names – and not the individual offsets – appeared on the registry; in these cases the vendor also received zero points.

When asked whether they were having “sales and supply” audits performed on their operations, a number of vendors answered in the affirmative, and we are hopeful this develops into an industry-wide practice.

4. Permanence

What we looked for: Because none of the solutions proposed to date by the market appears able to absolutely guarantee permanence for the next 100 years with respect to biological carbon sequestration projects, this criterion reflects the greater level of risk currently associated with these types of projects. We only gave full marks for this criterion to vendors who had offset project portfolios that did not include any biological carbon sequestration projects. (The exception was a vendor that was pairing each tonne of offsets it sold from biological carbon sequestration projects with offsets from other project types, meaning that the purchaser was effectively buying two tonnes of offsets in order to claim one tonne of reductions). In other cases we gave marks to vendors based on the proportion of their offset portfolio that included biological carbon sequestration projects.

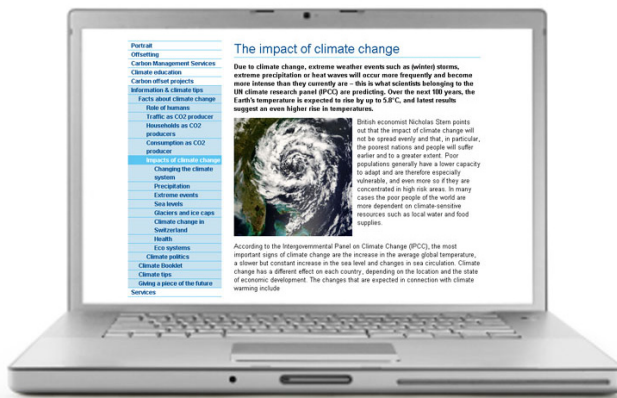
What we found: A majority of the offset vendors surveyed have portfolios that focus on renewable energy and energy efficiency projects. Among the vendors of offsets from biological carbon sequestration (primarily tree-planting projects), there was a range of approaches that attempted to address the issue of permanence, including the pairing of offsets from biological carbon sequestration with other types of offsets, as discussed above. In some cases vendors offered a portfolio of different offset portfolio types; in others, they noted that they were creating holdbacks or buffer pools of offsets that were not being sold. However, in several cases offset vendors were not taking any steps to address the permanence risks associated with the offsets they were selling, and were simply passing this risk on directly to the purchaser.

5. Vendor transparency

What we looked for: We gave points for offset project information available

on a vendor's website, including: offset project type and location; description of technology used (i.e., how reductions are achieved); the year (vintage) the offsets were created; how many tonnes of offsets each project produces in one year; total tonnes of greenhouse gas reductions expected to be achieved by each project; identification of the validators and verifiers, any offset standards used; and if offsets are sold on a portfolio basis, which offsets are in the portfolio at the time of purchase. We also checked whether vendors provided the breakdown of offset revenue going to projects and overhead; and information about the management team.

What we found: Most of the offset vendors in the survey were making efforts to be transparent about the offsets they are selling as well as their own operations. However, some vendors only indicate on their websites that they are selling offsets from certain project types (e.g., renewable energy, or tree planting projects), but do not list specific projects. And many vendor websites do not provide other detailed information, such as the number of offsets being generated each year, the total tonnes of reductions projected, the year the offsets being sold were created, or what offsets are in the portfolio being purchased.



6. Public education

What we looked for: We gave points to vendors, who, through their websites, made credible attempts to educate the public in three specific areas: (1) the causes of climate change, so that purchasers have an understanding of

the problem that carbon offsets are meant to address; (2) the importance of reducing greenhouse gas emissions themselves, and not just offsetting, to make it clear that carbon offsets alone will not solve the problem of human-caused climate change; and (3) quality issues with respect to carbon offsets, such as informing customers why “additionality” is so important.

What we found: While most offset vendors provided basic information about the major causes of climate change and its impact, a number did not provide any information or access to resources encouraging individuals and organizations to reduce their own emissions. As well, some offset vendors did not provide any information about high quality offsets, beyond a simple statement that the offsets they were selling were of high quality.

WEIGHTING OF ASSESSMENT CRITERIA USED IN OUR SURVEY

Below is a summary of the six criteria we used to assess the offset vendors and the relative weighting we used to determine the vendor scores. The weighting was assigned to reflect the relative importance we attributed to the different criteria used to evaluate the offset vendors, with most of the weighting (75 per cent) being assigned to the quality of the offsets themselves (additionality, auditing, unique ownership, and permanence).

ASSESSMENT CRITERION	WEIGHTING (%)
Additionality	20
Auditing	20
Unique Ownership	15
Permanence	20
Vendor Transparency	15
Public Education	10
TOTAL	100

It is worth noting that in the overall weighting of the criteria we would have liked to assign more points to additionality, to reflect its importance as a quality criterion for offsets. However, given that there appears to be some uncertainty about the additionality outcomes of even well-recognized screens like the CDM, we gave additionality 20% of the total points, the same as auditing and permanence.

THE RESULTS OF OUR SURVEY

The table on the next page summarizes the performance of the offset vendors in the survey with respect to the weighted assessment criteria listed above.

Each vendor's total score out of 100 was rounded to the nearest whole number for display in the table. Where more than one vendor received the same rounded score, they were listed in order of their unrounded scores.

Numbers with an asterisk indicate that the responses received from the vendor were not sufficient to assess some of the requirements of that criterion; in these instances, zero points were awarded for those requirements.

Total scores ranged from 20 to 85 points, out of a possible 100 points. The wide range in scores is an indication that vendor practices and the offset products they sell vary considerably.

Table 2: Results of Offset Vendor Survey

ASSESSMENT CRITERIA & RELATIVE WEIGHTING

Vendor	Vendor Location	Type of Project(s)	Location of Project(s)	20%	20%	15%	20%	15%	10%	100%
				Additionality	Auditing	Unique Ownership	Permanence	Vendor Transparency	Public Education	TOTAL SCORE
Less www.less.ca	Canada	Renewable energy	International	20	20	7.5	20	9	8	85
ClimateCare www.jpmorganclimatecare.com	UK	Renewable energy, energy efficiency, fuel switching, methane capture, afforestation/ reforestation	International	16.1	17.6	7.5*	19.8	13.5	10	84
Climate Friendly www.climatefriendly.com	Australia	Renewable energy	International	17.5	20	8.3	20	10.5	8	84
Atmosfair www.atmosfair.de	Germany	Renewable energy, energy efficiency	International	20	20	7.5*	20	10.5	6	84
Planetair www.planetair.ca	Canada	Renewable energy, fuel switching, energy efficiency, methane capture	International	20	13	11.3	20	11	8	83
CarbonZero www.carbonzero.ca	Canada	Energy efficiency, renewable energy	Canada	15	18.4	14.4	20	6	8	82
LivClean www.livclean.ca	Canada	Renewable energy, fuel switching, methane capture	International	13.4	20	10	20	10.5	8	82
TerraPass www.terrapass.com	USA	Methane capture	International	15	9.7	15	20	11	7	78
Offsetters www.offsetters.ca	Canada	Fuel switching, energy efficiency, renewable energy	Canada	15	20	6.2	20	10.5	5	77
Borealis www.borealisoffsets.com	Canada	Renewable energy, methane capture, fuel switching, afforestation/ reforestation	Canada & International	15.7	18.3	10.7	20	9	2	76
The Carbon Neutral Company www.carbonneutral.com	UK	Renewable energy, methane capture, forestry management	International	16.9	14.2	9	18.4	12.5	5	76
Native Energy www.nativeenergy.com	USA	Renewable energy, methane capture	International	12.9	10*	7.5	19.8	7.5	9	67
ZeroGHG www.zeroghg.com	Canada	Renewable energy, energy efficiency, methane capture	International	17	10*	0	20	9	9	65
Coolaction.com www.coolaction.com	Canada	Methane avoidance	Canada	10	20	0	20	7.5	6	64
EcoNeutral www.econneutral.com	Canada	Afforestation/ reforestation	Canada	15	10	15	0	7.5	8	56
ZeroFootprint www.zerofootprint.net	Canada	Afforestation/ reforestation, methane capture, fuel switching	Canada	15	11.7	8.8	3.4	12	2	53
Carbon Footprint Offsetters www.offsetco2.ca	Canada	Renewable energy	International	7.5	10	0	20	5	6	49
Carbon Friendly Solutions www.carbonfriendly.com	Canada	Afforestation/ reforestation	Canada & International	15	0	0	0	9	8	32
Tree Canada www.treecanada.ca	Canada	Afforestation/ reforestation	Canada	5	0	7.5	0	6.5	5	24
ZeroCO ₂ www.zeroco2.com	Canada	Afforestation/ reforestation	Canada	0	10	0	0	1.5	8	20

Key: ■ Strong performance ■ Average performance ■ Weak performance

* Responses received from the vendor were not sufficient to assess some of the requirements for this criterion. In these instances, zero points were awarded for those requirements.

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Based on their numerical score, the offset vendors are grouped into three levels:



Strong performance (80 - 100 points): These are the offset vendors that performed solidly with respect to all of the criteria assessed. Our assessment indicates that these vendors were providing purchasers with carbon offsets that had a relatively high likelihood of creating real reductions in greenhouse gas emissions, and had an approach to selling carbon offsets that was satisfactorily transparent and contributed to the education of purchasers.



Average performance (64 - 79 points): These offset vendors generally performed well with respect to most of the criteria assessed but had lower scores on one or more assessment criteria. Our assessment indicates that there was a reasonable likelihood that these vendors were providing purchasers with carbon offsets that would create real reductions in greenhouse gas emissions, but prospective purchasers would be advised to obtain further information from the vendors with respect to the criteria where these vendors did not achieve full marks, and to evaluate that information carefully.



Weak performance (63 points or less): These offset vendors did not perform well with respect to a number of the criteria assessed, casting doubt on whether these vendors were providing purchasers with offsets that would create real reductions in greenhouse gas emissions. Prospective purchasers would be advised to obtain further information from the vendors with respect to all of the criteria where low scores were obtained, and to evaluate that information carefully.

Overall, the results of our survey indicate that most vendors were making efforts to ensure that the offsets they sell are additional, by selling offsets that have been tested for additionality using recognized methodologies. While we have reservations about the effectiveness of many additionality screens, in general it does appear that the vendors in the survey were at least making use of the available means for testing additionality. Many of the offset vendors were also selling offsets that had been subject to third-party audits, although a number of vendors indicated that a majority of offsets in their portfolios had not yet been verified.

The weakest performance, across the board, was with respect to unique ownership. While many of the vendors were having regular third-party “sales

and supply” audits of their internal practices, very few of the vendors had all or even a majority of their offsets posted on publicly accessible third-party registries. However, the vendor responses suggest that this could change dramatically within the next year or two, as there appeared to be strong interest among vendors in using registries in the future, and a number of registries are only just becoming operational. On a related note, there was also room for vendors to improve in making their own websites more transparent with regards to their operations and the offsets they are selling.

It should be noted that some of the vendor scores have been recalculated after the original publication of this guide due to clarifications received from vendors. In fairness to the vendors, and because this was our first survey, we accepted additional information about their portfolios and business practices in cases where communications were the root of the problem (e.g. vendor staff were on vacation and missed the deadline for submitting information). However, we did not accept new information relating to changes in portfolios or business practices that occurred after vendors submitted their information summary to us. It is our hope to conduct another vendor survey next year that will reflect these changes in portfolios and business practices, and show how the voluntary carbon market has evolved.

One further thing worth noting: generally offset vendors who sold offsets certified to a strong standard performed better in our survey. And because most of these standards are only available for offset projects outside of Canada, this meant that some of the vendors who sell offsets from these countries fared better in our survey than vendors of offsets from projects in Canada.

It should be clear from the information presented in this guide that we support the use of standards in the voluntary market, because we think that high standards and independent auditing will provide offset purchasers with the most reliable offset products. Larger or specialized organizations making offset purchases might have the resources to assess offset projects on an individual basis, but purchasers without any particular expertise in the carbon market who are averse to risk will be best served by offsets certified to a recognized standard. The standard that we most strongly favour, The Gold Standard, has requirements that cover the four basic offset quality criteria that we assessed, and also includes other offset quality criteria such as broader sustainability benefits and stakeholder consultation.

In the next section we outline our proposal for a Canadian offset standard that would provide similar protection for purchasers of offsets from Canadian-based projects.



SECTION 6: DEVELOPING A STRONG OFFSET STANDARD FOR CANADA

As discussed in the previous section, the results of our vendor survey indicate that purchasers of offsets are more likely to obtain high quality offsets if they choose offsets certified to a credible standard. However, as noted in *Section 3*, for offset projects located in Canada there are currently no carbon offset standards that cover all major aspects of quality that we can recommend.³⁷ While draft guidelines for a federal offset system were announced in June 2009, there is still no national standard or registry in place, and it is not clear if the federal offset system will ensure high quality offsets. In British Columbia, the provincial government has created the Pacific Carbon Trust, and related offset regulations, but these are applicable only to projects based in British Columbia, and the details of the standard have not yet been made public.

Having a credible carbon offset standard that is applicable everywhere in Canada would help to raise the game of Canadian offset vendors active in the voluntary market. It would enable carbon offset projects in Canada to be certified to the standard and give Canadian offset vendors the opportunity to sell a high quality standardized Canadian product. Having a strong Canadian standard would also increase consumer confidence in carbon offsets generally, and make the carbon offset market more appealing for quality-oriented project developers and vendors in Canada (who currently have to rely on a confusing patchwork of standards from around the world). This in turn could help invigorate the development of small and medium-sized projects that reduce greenhouse gas emissions in Canada.

Both the Pembina Institute and the David Suzuki Foundation have heard from a number of existing Canadian offset vendors, both those who currently sell offsets from Canadian-based offset projects and those that do not, that they would like to see a strong carbon offset standard that could be applied

to Canadian projects. This is a view shared by our organizations. Until there is a strong standard in Canada, it will be left up to purchasers to determine if the offsets they buy create real reductions in greenhouse gas emissions.

Ideally, the recently announced federal offset system would include a strong offset standard that could be used in the Canadian voluntary carbon market as well as in the federal compliance market. However, until the federal rules are finalized it won't be known whether they will be rigorous enough to ensure offset quality criteria are met, including additionality. As a result, at this time neither the Pembina Institute nor the David Suzuki Foundation can recommend the federal system as a means of ensuring the quality of offset projects located in Canada.

If the federal system turns out to be incompatible with voluntary offset projects, or lacks sufficient rigour to ensure offset quality, an alternative to the federal system would be a separate voluntary standard. The voluntary standard could either incorporate the federal rules and add extra quality requirements (to address any shortcomings), or it could be entirely separate from the federal system. If it is separate from the federal rules, it could potentially be based on one of the existing international voluntary standards, or on an existing provincial standard. Either way, the standard could be developed by a number of different parties, such as a well-respected independent standards organization, or a group of stakeholders dedicated to quality in the marketplace.

Although it is beyond the mandate and resources of organizations such as the David Suzuki Foundation and Pembina Institute to develop such a standard, we note that any credible Canadian standard should take into account the following quality criteria (which have been previously discussed in *Section 3*):

- **Additionality** – Projects must meet strong thresholds for additionality, even if this means fewer projects get certified. We recommend using the CDM additionality tool as a starting point and developing rigorous, practical requirements for its application, based on lessons learned from the growing body of research related to the CDM.
- **Auditing** – Offset projects should be audited by accredited third-party validators and verifiers; validation and verification must further be performed by different auditors.
- **Accurate quantification** – Quantification must be consistent with best practices internationally. ISO 14064-2 can be used as a basis for establishing requirements for accurate quantification. To promote both accurate quantification and additionality, offset projects should have a fixed “crediting period.” We would suggest a crediting period of eight years, after which additionality and baseline determination would need to be repeated.

- **Unique ownership** – Offsets should be tracked in a common, publicly accessible national registry.
- **Permanence** – Reductions must be guaranteed for a period of no less than 100 years, and monitoring and insurance mechanisms must be developed to ensure this. In the absence of such safeguards, offsets from projects with high permanence risk must not be certified.
- **Leakage** – Offset projects should not lead to increases in greenhouse gas emissions outside the scope of the project, or, if they do, these emissions must be subtracted from any reductions achieved by the offset project.
- **Sustainability standards** – At a minimum, projects must meet all relevant environmental regulations, and also be required to pass a sustainable development screen at the project design stage.
- **Stakeholder consultations** – Stakeholders should be involved in the initial design of the project, with the goal of ensuring that projects are appropriate for the communities where they are developed and that they maximize social, environmental, and economic benefits.
- **Timing** – Forward crediting, forward purchasing and offset vintage should be addressed to ensure that if offsets from reductions that will be achieved in the future are allowed, any associated risks are mitigated.

In addition to incorporating the above quality criteria, a national Canadian offset standard that requires the use of a registry could also address the issue of double-counting with respect to Canada's Kyoto Protocol targets (see box below).³⁸

The issue of Kyoto double-counting in Canada

As noted in the discussion about standards, some of the most widely used standards in the global carbon market cannot be applied in Canada because of rules related to accounting under the Kyoto Protocol. The issue is that all the emission reductions that take place in Canada (plus some of the biological carbon sequestration by trees and soils) are accounted for by the federal government when it measures Canada's total emissions. The process is carried out annually for the purpose of assessing how well the government is doing with respect to meeting its Kyoto target, which in Canada's case is to reduce emissions 6 per cent below 1990 levels by 2012. In practice this means that the reductions achieved by most voluntary offset projects in Canada, such as wind farms, will be counted by the Government of Canada as part of its own reduction efforts. However, the same reductions from these voluntary projects will also be sold to businesses or individuals who purchase the offsets, meaning those same reductions will be counted twice,

a violation of an important offset quality criterion, unique ownership.

Because of this, it can be argued that a purchaser of Canadian offsets is merely helping Canada meet targets mandated by international law, rather than contributing to new reductions that would not have happened anyway. In other words, voluntary offset projects located in Canada will not benefit the climate if the federal government will make a correspondingly lesser effort to cut emissions. This issue is worth considering, as the entire concept of offsetting is built on the premise that a purchaser is buying emission reductions that would not otherwise have happened, in order to offset their own emissions. And purchasers would reasonably assume that their voluntary purchase of offsets would go beyond the existing commitments of their government.

Of course, it can also be argued that even though Canada has ratified the Kyoto Protocol, the federal government has indicated that it is not going to meet Canada's Kyoto target – in which case this accounting issue isn't really a concern. It can also be argued that voluntary investments in Canadian offset projects – just like any voluntary actions to reduce emissions – are a valuable and desirable way of helping Canada meet its international obligations.

Either way, resolving this issue will only serve to help the Canadian offset industry, as some purchasers currently bypass Canadian offsets and choose instead to buy offsets from projects in countries without Kyoto targets, which do not suffer from this double-counting problem. Harmonizing the voluntary carbon market in Canada with the international voluntary carbon market – where many leading carbon offset standards all take Kyoto accounting rules into account – would also add to the credibility of offsets produced in Canada.

There are a number of ways to address the double-counting problem, but the first step would be to create a national standard for carbon offsets that requires the use of a national registry. Once that was in place, the Government of Canada would be able to ensure that it was not including emission reductions from the voluntary carbon sector in its national accounting. It is also possible to develop offset projects in Canada under the "Joint Implementation" mechanism of the Kyoto protocol, with the backing of the government of another country with Kyoto targets.³⁹ The emission reductions created through this process would not be counted by the federal government.

And finally, a short-term solution to get around the Kyoto accounting rules is for Canadian vendors to "pair" one tonne of offsets from a Canadian offset project with one tonne from a project in a developing country. The buyer would technically purchase two tonnes, but would only be able to count one of them (the one from the developing country). The buyer would still create a global net reduction in greenhouse gas emissions, and would also be supporting greenhouse gas reduction efforts in Canada.

In summary, to address concerns about quality in the Canadian offset market, a strong offset standard for Canada should be developed and implemented as soon as possible, along with a national registry for offsets. These measures will make it possible for the voluntary carbon market in Canada to flourish, while ensuring real environmental benefits.



CONCLUSION

Although the voluntary carbon market is still relatively new, it is growing rapidly as individuals and businesses look for ways to reduce their climate impact. Carbon offsets can be part of the solution to reducing greenhouse gas emissions, but it is important that they be of high quality in order to create real reductions in greenhouse gas emissions. As a result, buyers will need to perform some due diligence when shopping for carbon offsets.

Purchasers can use the results of the vendor survey in *Section 5* as a starting point for identifying vendors of high quality offsets. However, because vendor practices and offset portfolios can change over time, purchasers also need to be able to assess offsets and vendors on their own.

The safest approach is to look for offsets that meet relatively strong standards, as these have been certified by independent auditors and are very likely to be of high quality. It is worth noting that the results of our survey show a correlation between a high score and the use of relatively strong offset standards, like CDM and The Gold Standard. This should not be surprising, as standards are designed to ensure the quality of offsets. Therefore, purchasers can usually be reasonably confident that they are receiving high-quality offsets if they are certified to a recognized standard.

Of course, it is possible to have high quality offset projects that have not been certified to a strong standard. In fact, many of the leading international offset standards are not even available for offset projects based in Canada. In these situations, buyers must be prepared to do some extra homework to evaluate the offsets they are considering.

To begin, purchasers should review the issues associated with different types of offset project types (e.g., wind farms, tree planting, etc.) as discussed in *Section 2*, and consider which offset project types they wish to support, as this may help narrow their initial search. Renewable energy and energy efficiency projects are generally most likely to offer high quality offsets, and also help

support the transition to a clean-energy economy (and this is the case for both offsets certified to standards and those that are not).

Purchasers can then use the list of questions for offset vendors on page 6 to help obtain information needed to evaluate offsets from specific vendors. Purchasers can then evaluate the responses from the vendors using the key quality criteria for offsets discussed in *Section 3*, namely: additionality, accurate quantification, auditing, unique ownership, permanence, leakage, sustainability considerations, stakeholder consultation and timing. It is also helpful to consider the other offset and vendor criteria explained in *Section 4*, including price, the location of the offset project itself (e.g., Canada or a developing country), and whether the vendor is being transparent about its practices.

The voluntary offset market in Canada can contribute meaningfully to the reduction of greenhouse gas emissions, but we need a strong national standard for carbon offsets to promote the development of high-quality offset projects in Canada. Such a standard would also give buyers more confidence in Canadian offsets. As part of the implementation of such a standard, the issue of double-counting with respect to Canada's targets under the Kyoto Protocol should also be addressed.

In the end, carbon offsets are just one tool to tackle climate change. Each one of us will also need to make substantive reductions to our carbon footprint, in all of our activities, in order to address the problem of climate change. To make this possible we will need leadership at all levels of government to ensure that there is an adequate price on carbon, and firm, science-based targets for greenhouse gas reductions.



RESOURCES

CARBON CALCULATORS

- Resources for Going Carbon Neutral, *by David Suzuki Foundation*
www.davidsuzuki.org/Climate_Change/What_You_Can_Do/carbon_neutral.asp
- Greenhouse Gas Protocol Calculation Tools, *by World Resources Institute*
www.ghgprotocol.org/calculation-tools/all-tools

OTHER CARBON OFFSET VENDOR SURVEYS

- Consumer's Guide to Carbon Offsets, *by Clean Air-Cool Planet*
www.cleanair-coolplanet.org/ConsumersGuidetoCarbonOffsets.pdf
- Carbon Offset Watch 2008 Assessment Report, *by C. Riedy and A. Atherton, The Institute for Sustainable Futures, University of Technology*
www.carbonoffsetwatch.org.au
- Carbon Offset Research & Education, *by Stockholm Environment Institute*
www.co2offsetresearch.org/consumer/index.html
- Voluntary Offsets For Air-Travel Carbon Emissions: Evaluations and Recommendations of Voluntary Offset Companies, *by Tufts Climate Initiative*
www.tufts.edu/tie/carbonoffsets/TCI_Carbon_Offsets_Paper_April-2-07.pdf
- Carbon Concierge
www.carbonconcierge.com
- Carbon Catalog
www.carboncatalog.org
- Offset Options
<http://offsetoptions.com>
- Carbon Offset Review
www.carbonoffsetreview.com/products.html?cat_id=586
- EcoBusinessLinks
www.ecobusinesslinks.com/carbon_offset_wind_credits_carbon_

reduction.htm

- The Independent Guide to the Voluntary Carbon Market, *by ENDS*
www.endscarbonoffsets.com/directory/

CARBON OFFSETS

- What is a carbon offset? *by David Suzuki Foundation*
www.davidsuzuki.org/Climate_Change/What_You_Can_Do/carbon_offsets.asp
- Science Matters: The Truth About Carbon Offsets, *by David Suzuki Foundation*
www.davidsuzuki.org/about_us/Dr_David_Suzuki/Article_Archives/weekly02250801.asp
- Credit Check: A Comparative Evaluation of Tree-Planting and Fossil-Fuel Emission Reduction Offsets, *by David Suzuki Foundation*
www.davidsuzuki.org/Publications/credit_check08.asp
- Neutral & Beyond, A Review of Carbon Neutrality and Offsets, *by M. Lynch et al, Green Capital, an Initiative of Total Environment Centre*
www.greencapital.org.au/index.php?option=com_docman&task=doc_download&gid=86
- Top 10 Tips for Purchasing Carbon Offsets, *by The Climate Group*
www.theclimategroup.org/assets/resources/Top_10_-_Carbon_Offsetting.pdf
- Offsetting Emissions: A Business Brief on the Voluntary Carbon Market, *by Business for Social Responsibility*
www.bsr.org/reports/BSR_Voluntary-Carbon-Offsets-2.pdf
- Getting Carbon Offsets Right: A Business Brief on Engaging Offset Providers, *by Business for Social Responsibility*
www.bsr.org/reports/BSR_Getting-Carbon-Offsets-Right.pdf
- Offset Quality Initiative
www.offsetqualityinitiative.org
- Fortifying the Foundation: State of the Voluntary Carbon Markets 2009, *by Ecosystem Marketplace*
http://ecosystemmarketplace.com/documents/cms_documents/StateOfTheVoluntaryCarbonMarkets_2009.pdf
- State and Trends of the Carbon Market 2009, *by the World Bank*
http://wbcarbonfinance.org/docs/State___Trends_of_the_Carbon_Market_2009-FINAL_26_May09.pdf
- Making Sense of the Voluntary Carbon Offset Market, A Comparison of Carbon Offset Standards *by A. Kollmuss, H. Zink, C. Polycarp, prepared by the Stockholm Environment Institute and Tricorona for WWF*

Germany

http://assets.panda.org/downloads/vcm_report_final.pdf

- A Review of Offset Programs: Trading Systems, Funds, Protocols, Standards and Retailers, *by Anja Kollmuss, Michael Lazarus, Carrie Lee and Clifford Polycarp*
www.seib.org/climate-and-energy/offset_review.html

TIPS FOR REDUCING YOUR EMISSIONS

- One Less Tonne, *by Pembina Institute*
www.onelesstonne.ca
- Tips for Reducing Your Carbon Footprint, *by David Suzuki Foundation*
www.davidsuzuki.org/Climate_Change/What_You_Can_Do/
- Ten Ways to Stop Global Warming (brochure), *by David Suzuki Foundation*
www.davidsuzuki.org/files/climate/10_ways_to_stop_global_warming_web.pdf
- Resources for businesses interested in measuring, reducing, and/or offsetting their emissions, *by David Suzuki Foundation*
www.davidsuzuki.org/Climate_Change/What_You_Can_Do/carbon_neutral_business.asp
- Doing Business in a New Climate: A Guide to Measuring, Reducing, and Offsetting Greenhouse Gas Emissions, *by David Suzuki Foundation*
www.davidsuzuki.org/Publications/Doing_Business_in_a_New_Climate.aspx



GLOSSARY

Additionality: Refers to an essential characteristic of carbon offsets, i.e. that they must result from emission reduction activities carried out because of the incentives associated with the existence of the carbon market, and not be the result of “business as usual” activities. A variety of tests have been developed to assess the additionality of offset projects.⁴⁰

Auditing: See *validation* and *verification*.

Baseline scenario: A hypothetical description of what would most likely have occurred in the absence of a given offset project (i.e., the emissions baseline), also often referred to as “business as usual.”

Biological carbon sequestration: The uptake and storage of CO₂ in biological matter, such as trees and agricultural soils. See *Section 2* for examples of these projects.

Carbon calculator: A tool (often found on offset vendor websites) that allows users to calculate how much carbon dioxide or other greenhouse gases is emitted from various activities, such as air travel. Results from different carbon calculators tend to vary, depending on the underlying assumptions and methodologies. See *Resources* section for more information.

Carbon dioxide (CO₂): A naturally occurring gas, and also a by-product of burning fossil fuels and biomass, land-use changes, and industrial processes. It is the greenhouse gas responsible for most of the Earth’s warming. See *carbon dioxide equivalent*.

Carbon dioxide equivalent (CO₂e): The universal unit of measurement used to indicate the global warming potential of each of the different greenhouse gases so that their relative climate impact can be compared and overall climate impact aggregated. The CO₂e quantity of any greenhouse gas is the amount of carbon dioxide that would produce the equivalent global warming potential. See also *global warming potential*.

Carbon footprint: The greenhouse gas emissions associated with a particular individual, organization, company, other entity or activity. These may include both direct emissions such as those from driving a car, or burning fuel to heat a building, and indirect emissions such as those from flying in a commercial airplane, or using electricity purchased from a utility.

Carbon neutral: Used to signify that an organization or individual has reduced the net climate impact of their operations or activities to zero, usually after purchasing offsets in a quantity equal to their total emissions after reduction efforts. For example, a business with total emissions of 100 tonnes (after its own direct reductions) would purchase 100 tonnes of offsets to become carbon neutral.

Carbon offset: A reduction in greenhouse gas emissions created by one party that can be purchased and used to compensate for (offset) the greenhouse gas emissions of another party. Carbon offsets are quantified in metric tonnes of CO₂e reductions. They may be purchased on a voluntary basis or to meet regulatory requirements. The effectiveness of carbon offsets in creating real reductions in greenhouse gas emissions depends on whether they meet important quality criteria. See *Section 3* for more information.

Carbon offset project: A project that generates carbon offsets. Some examples of projects include renewable energy, energy efficiency, methane recovery from agricultural waste, fuel switching, and storing carbon in forests. See *Section 2* for more information.

Carbon offset project developer: An individual or organization that develops a carbon offset project.

Carbon offset standard: A standard that helps to ensure that carbon offset projects meet certain quality requirements, such as additionality and third-party auditing. Several offset standards exist for the voluntary and compliance markets, and each has a slightly different focus and set of requirements.

Clean Development Mechanism (CDM): A market-based mechanism under the Kyoto Protocol that allows projects in developing countries that reduce greenhouse gas emissions to earn credits for those reductions. These credits can then be sold to industrialized countries, which can use them to help meet their Kyoto commitments to reduce emissions. These CDM credits can also be purchased on the voluntary carbon market by organizations and individuals.

Climate change: A change of climate attributed directly or indirectly to

human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. See *global warming*.

Double counting: This problem arises when two or more entities claim ownership of the same emission reductions, or carbon offsets.

Energy efficiency: The rate at which a machine or other equipment uses energy to perform its function. Also a type of carbon offset project. See *Section 2* for more information.

Fuel switching: Fuel switching involve substituting a cleaner fuel that emits less carbon dioxide for another fuel (e.g., substituting natural gas for coal to generate electricity, or using biomass instead of natural gas to heat a greenhouse), usually in energy generation or industrial or commercial processes. Also a type of carbon offset project. See *Section 2* for more information.

Forward crediting: This involves selling offsets for emission reductions that haven't yet been achieved, but are planned to be achieved in the future. See *timing*.

Forward purchasing: This occurs when a buyer invests the money to pay for offsets up front before the reductions are created, but does not receive the credits until they are actually generated. See *timing*.

Global warming: The gradual increase, observed or projected, in global surface temperature as one of the consequences of an accumulation of greenhouse gases in the atmosphere. See *climate change*.

Global warming potential (GWP): A measure of how much a given amount of greenhouse gas is estimated to contribute to global warming, relative to the same amount (by weight) of carbon dioxide (whose GWP is by definition 1). See also *CO₂e*.

Greenhouse gas (GHG): Any natural or man-made gas that absorbs infrared radiation in the atmosphere. The six greenhouse gases that are covered by the Kyoto Protocol are: carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulphur hexafluoride (SF₆). Others not covered include water vapour (because it is very short-lived) and ozone. See also *CO₂e*.

Kyoto Protocol: An international protocol to the United Nations Framework Convention on Climate Change (UNFCCC) that requires industrialized

country signatories to meet reduction targets for greenhouse gas emissions relative to their 1990 levels during the period of 2008-2012.

Leakage: Refers to a situation where a greenhouse gas reduction from an offset project in one region causes an increase in emissions somewhere outside the scope of the project. For example, protecting a forest in one location could simply shift logging to another forested area.

Offset: See *carbon offset*.

Permanence: An aspect of offset quality that refers to the durability of the climate benefit from an offset project.

Quantification: The process of estimating the net emission reductions created by an offset project.

Renewable energy: Energy from sources that are essentially inexhaustible, such as wind, hydropower, solar, geothermal, biomass, etc., and which also emit fewer greenhouse gas emissions than the burning of fossil fuels. Electricity from renewable sources is often called green power. See *Section 2* for a description of common renewable energy projects.

Renewable Energy Certificate (REC): RECs represent the environmental attributes associated with renewable electricity sources like wind and solar, and can be purchased by companies that wish to support renewable electricity generation. See *Section 2* for more information.

Registry: A publicly accessible database that tracks ownership of carbon offsets over their lifetime.

Retire: To take carbon offsets out of circulation permanently so that they are not sold again. One way to ensure that offsets are being retired is to assign them serial numbers and place them in a registry. See *unique ownership*.

Timing: Refers to the time period when the emission reductions from an offset project are achieved. Some vendors only sell offsets for reductions that have actually been achieved, whereas others sell offsets for reductions that are projected to be achieved in the future. See also *forward crediting* and *forward purchasing*.

Unique ownership: Because offsets are an intangible commodity, it is important that clear ownership rights are established to the greenhouse gas reductions that the offset represents. Otherwise, more than one individual or organization might rely on the benefit from the reduction (a problem known as “double counting”). See *retire*.

Validation: An independent assessment of the offset project design by a qualified third-party auditor that takes place before project activity is underway. Its purpose is to review the baseline and all calculations for accuracy, and to confirm that the emission reductions will be additional and achievable.

Verification: An independent assessment of the reliability of the actual reductions achieved by a carbon offset project, carried out by a qualified third-party auditor after the project is underway.

Vintage: The year in which the emission reductions that a carbon offset represents were made.

Voluntary carbon market: The segment of the carbon market that includes all carbon offset transactions that are not part of government-regulated compliance schemes. It serves individuals, businesses, and other organizations that voluntarily choose to take responsibility for their climate impact.

APPENDIX A: EXPLANATION OF THE CARBON OFFSET VENDOR RATING SYSTEM USED IN OUR SURVEY

This appendix provides a detailed explanation of the offset vendor rating system used in *Section 5*.

Below is the weighting applied to the assessment criteria. Four of the criteria relate to offset quality (additionality, auditing, unique ownership, and permanence), and counted for 75% of the total score each vendor received. The other two criteria we used (vendor transparency and public education) relate to vendor practices, and counted for the remaining 25% of a vendor's score.

ASSESSMENT CRITERION	WEIGHTING (%)
Additionality	20
Auditing	20
Unique Ownership	15
Permanence	20
Vendor Transparency	15
Public Education	10
TOTAL	100

It should be noted that in cases where the responses received from a vendor were not sufficient to assess the requirements with respect to any of the criteria assessed, the vendor received 0 points for the requirements that could not be assessed. For example, if a vendor indicated that 100% of its offsets had been validated, but did not provide a response for what percentage had been verified, the vendor received 10 points for validation and 0 points for verification, for a total of 10 points for the “Auditing” criterion.

1. Additionality (20 points)

For this criterion, we assessed vendors based on the additionality screens

that have been applied to the offsets they sell.

First we had to rank the additionality screens themselves. We did this by looking at whether the screens used a strong methodology, and also if they provided assurance that the methodology is applied objectively and accurately. We then grouped the different additionality screens into four different categories (A, B, C, D), based on their rigour, and assigned points for each category, out of a possible 20 points:

- Category A (20 points) included offsets certified to the CDM or The Gold Standard. Both the CDM and Gold Standard rely on the CDM additionality tool. While researchers have observed some problems with the application of the tool, the methodology remains the strongest available to date. Both the CDM and The Gold Standard require that the offset project documentation be reviewed by an accredited, third-party auditor, and then by either the CDM Executive Board or The Gold Standard Foundation before registration with either of these standards. Among the additionality screens that we assessed, these two levels of review provided the greatest assurance that the methodology was applied objectively and accurately.

- Category B (15 points) included offsets certified to the VCS, the Climate Action Reserve, or the CCBS. All of these standards and protocols have reasonably rigorous procedures for determining additionality, and require review by a third-party auditor. Also included in this category were offsets screened for additionality using the CDM tool, and reviewed by third-party auditors, but not reviewed by the CDM Executive Board.

- Category C (10 points) included offsets that have been screened for additionality using other methods not described in Categories A and B, such as vendors' own internal additionality screens or other unspecified additionality tests. In these cases, where the rigour of a strong, recognized methodology or third-party review was lacking, the level of uncertainty about whether additionality has been adequately assessed was much greater and thus fewer points were awarded.

- Category D (0 points) included offsets that have not been screened for additionality.

Next, we ranked the vendors, based on the proportion of their offset portfolios (by tonnes of CO₂e) that fell into each category. Here's how the total points were calculated:

___% of offset portfolio that meets Category A x 20 points = _____

___% of offset portfolio that meets Category B x 15 points = _____

$$\begin{array}{rcl}
 \underline{\quad} \% \text{ of offset portfolio that meets Category C} & \times & 10 \text{ points} = \underline{\quad\quad\quad} \\
 \underline{\quad} \% \text{ of offset portfolio that meets Category D} & \times & 0 \text{ points} = 0 \\
 \text{TOTAL (100\%)} & & = \underline{\quad\quad\quad} \text{ points}
 \end{array}$$

Although we displayed the score for this criterion in the results table as a number with one decimal place, we did not round this number for the purposes of tallying each vendor's total score out of 100.

2. Auditing (20 points)

For this criterion, we assessed vendors based on the percentage of their offset portfolio that had been validated and verified by third parties (where “%” indicates the percentage of offsets by tonnes CO₂e in the vendor's portfolio). We awarded points as follows, with a total of 20 points possible:

A. Validation (10 points):

We multiplied the percentage response by the total points available (e.g., if response was “50%”, the vendor received 5 points).

B. Verification (10 points)

We multiplied the percentage response by the total points available (e.g., if response was “50%”, the vendor received 5 points).

We did not award any points where vendors stated that they intended to verify any or all of the offsets in their portfolio, if verification had not yet occurred.

Although we displayed the score for this criterion in the results table as a number with one decimal place, we did not round this number for the purposes of tallying each vendor's total score out of 100.

3. Unique ownership (15 points)

For this criterion, we assessed vendors based on the systems they had in place to ensure their offsets were only sold to one purchaser. In particular, we looked at whether vendors had regular auditing by third parties of their internal accounting systems, and whether they used an external offset registry. We awarded points as follows, with a total of 15 points possible:

A. Internal accounting systems (7.5 points):

- 7.5 points if the offset vendor accounting systems for offsets are audited regularly by a third party
- 0 points if the offset vendor accounting systems are not audited regularly by a third party, or where inadequate information was provided by the offset vendor, or available on its website

B. External (third-party), public registries (7.5 points)

We multiplied the percentage response by the total points available (e.g., if response was “50%”, the vendor received: $0.5 \times 7.5 = 3.75$ points)

We gave 0 points if 0% of the offsets in the vendor’s portfolio could be viewed on a public registry, or where inadequate information was provided by the offset vendor, or available on its website.

Although we displayed the score for this criterion in the results table as a number with one decimal place, we did not round this number for the purposes of tallying each vendor’s total score out of 100.

4. Permanence (20 points)

For this criterion, we assessed vendors based on the percentage of their offset portfolio that had a significant risk of reversal (i.e. the offsets were based on emission reductions that could be lost), which we defined as projects involving biological carbon sequestration (including tree planting and soil-management projects).

To determine the points for this criterion, we added up the total percentage of each vendor’s offset portfolio (by tonnes CO₂e) that was made up of offsets that did NOT have a significant risk of reversal, and multiplied that percentage by 20 points. For example, if 60% of a vendor’s offset portfolio did not have a significant risk of reversal (meaning that 40% did), they would receive 12 points in this category.

Although we displayed the score for this criterion in the results table as a number with one decimal place, we did not round this number for the purposes of tallying each vendor’s total score out of 100.

5. Vendor transparency (15 points)

For this criterion, we assessed vendor websites on the dates 8-9 July 2009 to see how much information they provided about the offsets they sell, as well as about their own business practices. We awarded 1.5 points for each of eight items, and three points for one final item, with a total of 15 points being possible.

- 1.5 points for each of the following: tonnes of each project, technologies used, project location, name of validator/verifier, certification standards used, vintage/offset flows, % of revenue going to projects, management team (12 points total); and
- 3 additional points if the website explained which offsets were in the portfolio at time of purchase.
- 0 points if none of the above.

Although we displayed the score for this criterion in the results table as a number with one decimal place, we did not round this number for the purposes of tallying each vendor's total score out of 100.

6. Public education (10 points)

For this criterion, we assessed vendor websites on the dates 8-9 July 2009 to see how much information they provided about climate change, and solutions to it. We awarded 3 points each for two of the items, and four points for one final item, for a maximum total of 10 points.

- 3 points for climate change education: explaining what a greenhouse gas is (1 point), what causes greenhouse gas emissions (1 point), and what climate change is (1 point);
- 3 points for education about carbon offsets: explaining what offsets are (1 point), how they are generated (1 point), and what makes a high quality offset (1 point); and
- 4 points for education about the importance of reducing emissions: explaining why it is important to make reductions in greenhouse gas emissions beyond simply purchasing carbon offsets (2 points), and giving examples of reduction opportunities (2 points).

SUMMARY

The vendor's total score out of 100 was rounded to the nearest whole number and was recorded in the results table.

NOTES

¹Based in part on information presented in C. Riedy and A. Atherton, Carbon Offset Watch 2008 Assessment Report (Sydney: The Institute for Sustainable Futures, University of Technology, 2008).

²See the *Glossary* at the end of this guide for a definition of additionality, and other terms used in the guide.

³Based in part on information presented in M.C. Trexler, A Consumer's Guide to Retail Carbon Offset Providers. (Clean Air–Cool Planet, 2006).

⁴Katherine Hamilton, Milo Sjardin, Allison Shapiro, and Thomas Marcello, Fortifying the Foundation: State of the Voluntary Carbon Markets 2009 (Ecosystem Marketplace and New Carbon Finance, 2009), page 6.

⁵Because carbon dioxide is the most common of the long-lived greenhouse gases that cause climate change, greenhouse gases are often referred to collectively as “carbon”. Similarly, a person or organization’s “carbon footprint” is the sum total of all of the greenhouse gases that they are responsible for.

⁶James Murray, “Offset Group Aiming to Quadruple in Size.” BusinessGreen. www.businessgreen.com/business-green/news/2222661/offset-group-aiming-quadruple

⁷See *Resources* section at the end of the guide for a list of other vendor surveys.

⁸Sources: Clothes dryer: Electricity GHG intensity: 220 g/kWh (ON 2007 elec. intensity). Canada National Inventory Report 1990–2007 (Pub'd. April 2009) http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php In 2004, 75.3 percent of electric clothes dryers consumed between 900 and 949 kWh [Assume 925 kWh/ yr.] <http://oee.rncan.gc.ca/Publications/statistics/cama06/chapter6.cfm?attr=65>; Flight: GHG Protocol, www.ghgprotocol.org; Car: Average for entire light duty fleet in 2006 is 10.9 l /100 km. Average annual distance driven in 2006: 16.0 K km, Transportation in Canada 2007, www.tc.gc.ca/policy/Report/anre2007/pdf/add2007-e.pdf, Litre of gasoline = 2.382 kg e CO₂e. (GHG Protocol factor); Canadian per capita emissions: Canada

National Inventory Report 1990–2007 (Pub'd. April 2009). http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php; Global per capita emissions: 2004 figure from IPCC AR4: 49.0 Gt CO₂e/year www.ipcc.ch/graphics/syr/fig2-1.jpg, Global population 2004: 6.3776 billion people www.unfpa.org/swp/2004/presskit/docs/indicator2.pdf

⁹See *Glossary* at end of guide for a definition of CO₂e.

¹⁰Wind power in Antsirana, Madagascar, and Heat and power from biomass in Karnataka, India, www.myclimate.org/en/carbon-offset-projects.html; Fuel Switching in Greenhouse – Chilliwack, www.pacificcarbontrust.ca/Home/BCOffsetShowcase/FuelSwitchinginGreenhouseChilliwack/tabid/143/Default.aspx.

¹¹Katherine Hamilton, Milo Sjardin, Allison Shapiro, and Thomas Marcello, *Fortifying the Foundation: State of the Voluntary Carbon Markets 2009* (Ecosystem Marketplace and New Carbon Finance, 2009), page 6.

¹²Some offsets sold in the voluntary market originate in the compliance market (notably, CDM offsets), and are therefore regulated. Also, some countries have commercial laws that discourage misleading advertising, including about carbon offsets.

¹³Katherine Hamilton, Milo Sjardin, Allison Shapiro, and Thomas Marcello, *Fortifying the Foundation: State of the Voluntary Carbon Markets 2009* (Ecosystem Marketplace and New Carbon Finance, 2009), page 6.

¹⁴*Ibid.*, page 6.

¹⁵While these projects are not yet common in Canada, the Canadian Geothermal Association (CanGEA) has a target of 5000 MW by 2015.

¹⁶These and other terms relating to offset quality are discussed in more detail in *Section 3*, as well as in the *Glossary* at the end of this guide.

¹⁷Offset Quality Initiative. “Maintaining Carbon Market Integrity: “Why Renewable Energy Certificates Are Not Offsets” June 2009. www.offsetqualityinitiative.org/OQI%20REC%20Brief%20Web.pdf See also the Green-e Climate Protocol for Renewable Energy www.green-e.org/getcert_ghg_re_protocol.shtml

¹⁸See *Glossary* for definition.

¹⁹For more information, please see David Suzuki Foundation. “Credit Check: A Comparative Evaluation of Tree-Planting and Fossil-Fuel Emission Reduction Offsets.” www.davidsuzuki.org/Publications/credit_check08.asp

²⁰P.J. van Mantgem et al. Widespread Increase of Tree Mortality Rates in the Western United States, *SCIENCE*, Vol. 323, 23 January 2009

²¹It should be noted that some of these criteria are also known by other terms.

For example, “unique ownership” is sometimes referred to as “registration”, “additionality” is sometimes called “incrementality”, “real” is sometimes used to describe quantification or other aspects of offset quality, etc..

²²See, for example, Michael Wara and David G. Victor, “A Realistic Policy on International Carbon Offsets”, Working Paper #74, Program on Energy and Sustainable Development, Stanford University, April 2008, and L. Schneider, “Is the CDM fulfilling its environmental and sustainable development objectives? An evaluation of the CDM and options for improvement.” Report prepared for WWF by Öko-Institut E.V. Berlin, November 2007.

²³While ISO 14064-2 gives guidance on greenhouse gas quantification, it does not give specific guidance on additionality. Hence, the ISO standard on its own is not sufficient to evaluate carbon offsets.

²⁴See David Suzuki Foundation. “Credit Check: A Comparative Evaluation of Tree-Planting and Fossil-Fuel Emission Reduction Offsets.” www.davidsuzuki.org/Publications/credit_check08.asp

²⁵In the case of energy efficiency projects this is sometimes called the “rebound effect.”

²⁶The standards specified by ICROA are the CDM, Joint Implementation, The Gold Standard, and the Voluntary Carbon Standard. See www.icroa.org for more information. Green-e has also developed a voluntary certification program for the sale of carbon offsets, Green-e Climate. See www.green-e.org/getcert_ghg.shtml.

²⁷Katherine Hamilton, Milo Sjardin, Allison Shapiro, and Thomas Marcello, *Fortifying the Foundation: State of the Voluntary Carbon Markets 2009* (Ecosystem Marketplace and New Carbon Finance, 2009), page 63.

²⁸For more discussion about the CDM process, see the sub-section “Additionality” on page 29.

²⁹The Gold Standard was developed by WWF International, SSN, and Helio International, and is now an independent non-profit organization based in Switzerland.

³⁰For more information see “The Gold Standard.” www.cdmgoldstandard.org

³¹“NGO Supporters.” www.cdmgoldstandard.org/NGO-Supporters.178.0.html?&L=0

³²For example, while the VCS requires third-party auditing of projects to meet the standard, unlike the CDM and The Gold Standard it does not require an independent review of the auditors’ findings, nor does it outline detailed requirements for consultation with stakeholders. See “Voluntary Carbon Standard 2007.1”. www.v-c-s.org/docs/Voluntary%20Carbon%20Standard%202007_1.pdf

³³For further explanation of this issue, see the sub-section “The Issue of Kyoto Double-counting in Canada” in *Section 6*.

³⁴There are a couple of reasons for varying results. For example, many online calculators provide results for “average” carbon footprints, which requires assumptions about what “average” means. In the case of air travel, however, there is also scientific uncertainty about the climate impact of high-altitude emissions from airplanes, and various methods have been implemented by vendors to estimate this.

³⁵It should be noted that many of these organizations use offsets sourced from the retail vendors included in this survey.

³⁶For the purposes of this survey we were unable to assess vendor offset portfolios with respect to all of the quality criteria discussed in *Section 3* due to limited resources and access to information. Thus, while “accurate quantification”, for example, is a key quality criterion, assessing it specifically would have meant reviewing project documentation for dozens of projects. Instead, we focused on criteria like additionality and auditing as an indication of a vendor’s overall approach to offsets.

³⁷The week following the initial publication of this guide, the VCS announced that it will be available for use by offset projects developed in Canada. It is too soon to judge the impact of this announcement on quality in the Canadian offset market. For more information, see: www.v-c-s.org/docs/VCS%20News%20Release,%20Canadian%20VCUs,%20FINAL.PDF

³⁸Finally, although outside the scope of this discussion, another area that would benefit greatly from a national standard or best-practice model is carbon calculators. Having consistent and reliable carbon calculators is also important to ensure integrity in the voluntary carbon market.

³⁹The accounting rules for Joint Implementation ensure that the emission reductions that receive credits do not count towards the Kyoto target of the country where they are created.

⁴⁰M.C. Trexler, *A Consumer’s Guide to Retail Carbon Offset Providers*. (Clean Air–Cool Planet, 2006), page viii.



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