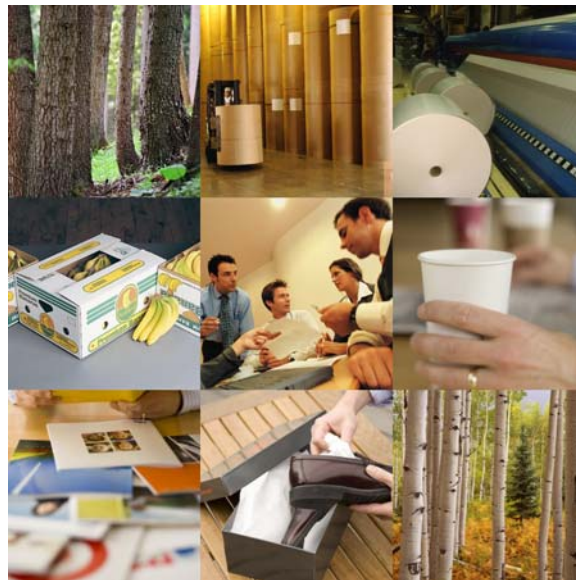




The Paper Consumer's Guide to Climate Change

How to Reduce Greenhouse Gases with Smarter Paper Choices

BY METAFORE AND THE GAGLIARDI GROUP



metaFore

The Gagliardi Group

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Message from Metafore and The Gagliardi Group

Climate change first gained prominent attention in 1992 during the United Nations Earth Summit in Rio. What started out as a handful of meetings in a global environmental forum has matured into an international movement of scientists, communities and governments mobilizing to arrest what has been called the greatest challenge of our age.

In the United States, the issue has been catching on during the last few years, and at an astonishing rate. It is beginning to appear inevitable that the U.S. government will eventually mandate greenhouse gas emissions limitations in some form, and some of the largest players in the corporate world are already vying for leadership positions in pursuit of solutions. The primary challenge faced by these companies and other organizations is accounting for and committing to reduce their greenhouse gases.

For U.S. companies that accept this challenge, the first steps are the most daunting: What is my organization's carbon footprint, and what can we do to reduce it? These are extremely complex questions with few simple answers, but there are definite places to start. Several greenhouse gas accounting guidelines now exist to help you measure your organization's footprint.

While climate change is a complex issue and it may be difficult to identify all parts of your carbon footprint over which you have some control, there is one area that lends itself more readily to carbon reductions: your procurement and use of paper and paper products.

The role of paper in climate change can also be relatively complex. Metafore and the Gagliardi Group designed this guide to help you and your organization sort through these issues and better understand the connections between carbon mitigation and your paper use. It offers you a four-step approach for measuring your paper footprint starting with the science of paper production, resources for measuring the footprint and options for mitigating carbon emissions.

Metafore and The Gagliardi Group are available to provide briefings or seminars based on the topics outlined here. Please contact us for more information.

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The Paper Consumer's Guide to Climate Change

How to reduce greenhouse gases with smarter paper choices

Introduction: How you became a player in climate change

Every organization that buys or uses paper is in the forest products business. As a paper consumer, your supply chain connects you all the way back to the forest where trees are grown and harvested to make paper. Because trees absorb and store the greenhouse gas carbon dioxide (CO₂), they play a huge role in the climate change issue, making your organization a player in that arena as well. Add the fossil-fuel energy consumption and resulting CO₂ emissions associated with paper manufacturing, transportation, making end-use products and recycling, and your company connection to climate change becomes even more apparent.

While global climate change is a complex issue, you don't need a Ph.D. in climatology or environmental science to understand how it affects your organization's paper choices or to determine how you can contribute to real environmental improvement. From the forest through paper manufacturing to your doorstep and beyond, you have many opportunities to become a champion for positive change.

STEP 1: Become familiar with the science

A No-Axe-to-Grind, Crash Course in Climate Change

The most recent report by the Intergovernmental Panel on Global Climate Change (IPCC), a consortium of hundreds of scientists from around the world, says that human-caused global climate change is real,

and so are its consequences. Burning fossil fuels – coal, oil and natural gas – releases greenhouse gases (GHGs), primarily CO₂, methane (CH₄) and nitrous oxide (N₂O). The excessive accumulation of these gases is absorbing too much of the heat that is normally radiated into space by the earth. The IPCC has concluded that we are already experiencing some effects of the resulting increase in temperature. However, among politicians and policymakers, there is intense dispute about who is responsible and what we should do about it. Throw in a lot of speculation and exaggeration on both sides of the issue, and it's understandable how we can lose sight of the growing consensus around the underlying scientific conclusion that we are indeed changing our climate.

Solutions to climate change will not be easy or inexpensive, and the overdue shift away from cheaper fossil fuels will not “pay for itself.” There should be no illusions about the challenge. Human activity is now responsible for releasing 7 billion tons of carbon a year into the atmosphere.¹ If, as is expected, that rate doubles to 14 billion tons a year over the next 50 years, the concentration of carbon dioxide in the atmosphere will reach a level that some scientists fear may cause irreversible climate-related changes to the environment, including water shortages, reduced crop yields and extinction of more plant and animal species. It will take every available technology, plus an unprecedented public commitment to conservation, just to prevent the expected increase to 14 billion tons of carbon a year and stabilize emissions at the

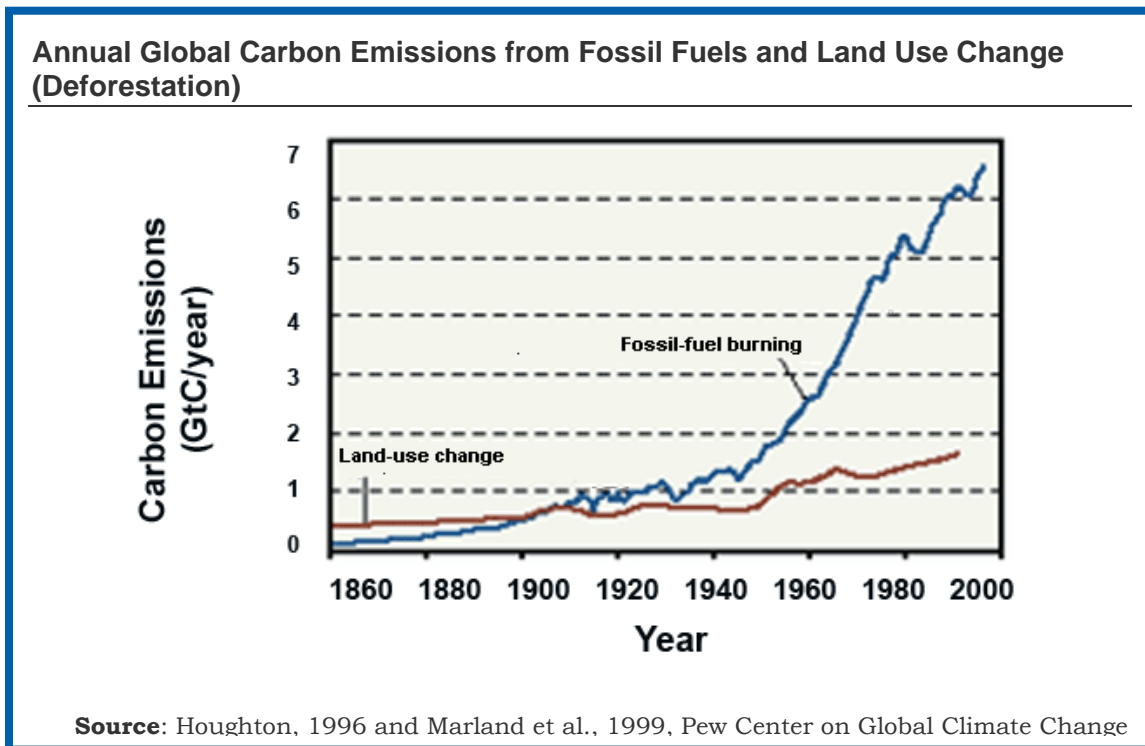
¹ Seven billion tons of carbon released by human activity is also frequently expressed as 26 billion tons of carbon dioxide. One CO₂ molecule weighs 3.67 times more than a carbon atom.

current 7 billion tons per year by the year 2054.²

While reducing GHG emissions is now a matter of worldwide focus, a level of commitment beyond current government initiatives and international collaborations such as the Kyoto Protocol is required. Today, marketplace initiatives – real companies working on real-world solutions – offer the most promise.

What's so special about paper?

Paper is not the largest single source of GHGs (it is the fourth largest manufacturing source of GHGs after petroleum, cement and chemical products, and manufacturing is the third largest emissions category after electricity generation and transportation), and most of the energy used to manufacture paper products comes from tree-based biofuels. These biofuels are greenhouse gas-neutral, meaning they result in a net-zero



That's where you come in. Your company may not be able to change the world by itself, but you can contribute with measurable reductions to your carbon footprint – in particular across the buying, transporting, using and disposing of paper. On the pages that follow, you'll find an easy-to-understand guide to basic paper-related climate change issues, as well as practical, cost-effective measures you can take now to benefit both your business and the environment.

carbon exchange in the environment. As part of a continuous cycle, the biofuels used by paper mills burn carbon that was originally absorbed from the atmosphere by trees, not from fossil fuels—which add long-trapped carbon to the atmosphere. But, because of the more consumer-oriented nature of the paper business, you have far greater potential to leverage GHG reductions from the paper industry than you would from any of the other top industrial or non-industrial sources.

² Pacala and Socolow, Science Magazine 2004

Papers are designed to be light – making them is heavy industry

The role paper plays in climate change is still huge. Paper-based U.S. industries, from paper manufacturing to printing, publishing, mail and other related businesses, represent more than 9 million jobs and more than \$850 billion in annual economic activity altogether.³

Manufacturing paper is heavy industry in every sense of the word. The industry is still one of the most capital-intensive in the world – not surprising considering that pulp- and paper-making machinery is huge, expensive and uses vast quantities of energy, water and chemicals.

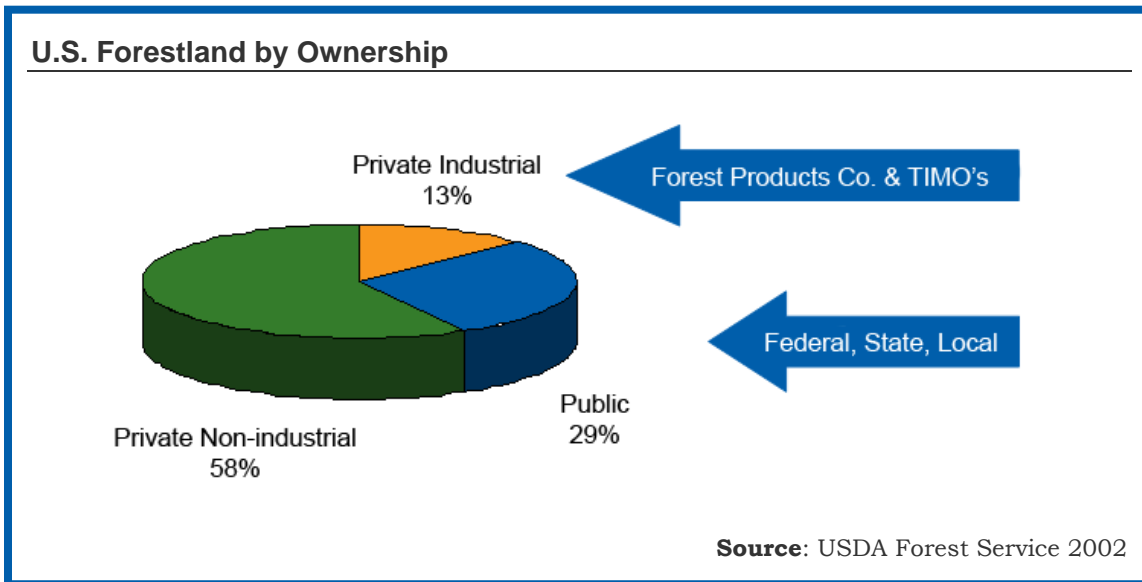
It all goes back to trees

The primary raw material for paper is wood fiber from trees. Because trees absorb and store carbon, healthy forests are critical to controlling climate change. And to the extent that healthy forests absorb more

conditions, healthier trees and more efficient stand rotation) can produce trees that help further reduce GHGs.

Far from reducing forest cover (urban sprawl in developed countries and land clearing for farming and fuel wood in developing countries are the primary causes of permanent forest loss), the forest products industry, which manufactures paper, has provided an irresistible economic incentive to keep land forested.

In the United States, the vast majority of forestlands are privately held. In fact, 70 percent of the wood used by the forest products industry comes from private, non-industrial landowners. The rest traditionally comes from forestlands owned or managed by the forest products industry, with only a few percent coming from public lands. During the last few years, forest products companies have been selling much of their forestlands to investors, primarily to Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs). But regardless of who owns the



carbon than unhealthy forests, sustainable forest management practices (including fire and disease prevention, better growing

forests, paper manufacturers remain responsible for assuring the sustainability of the forests that supply them.

³ American Forest & Paper Association data

Recycling: The fate of used paper and greenhouse gases

At the other end of the product lifecycle, used paper and paperboard products make up the largest single category of material disposed of in U.S. municipal landfills, and the decay of those materials releases methane, an even more potent GHG than carbon dioxide. For that reason alone, diverting used paper from the landfill for re-use in recycled content paper products is critical to reducing paper-generated GHGs.

So, is it reasonable to assume that using increasingly higher percentages of recovered fiber in recycled-content paper products results in greater greenhouse gas reductions? Not necessarily. To get a clear picture, you first have to look at how much and what types of energy are used to collect, transport, clean and process post-consumer fiber versus virgin fiber, and then consider what type of energy is used to manufacture the end product.

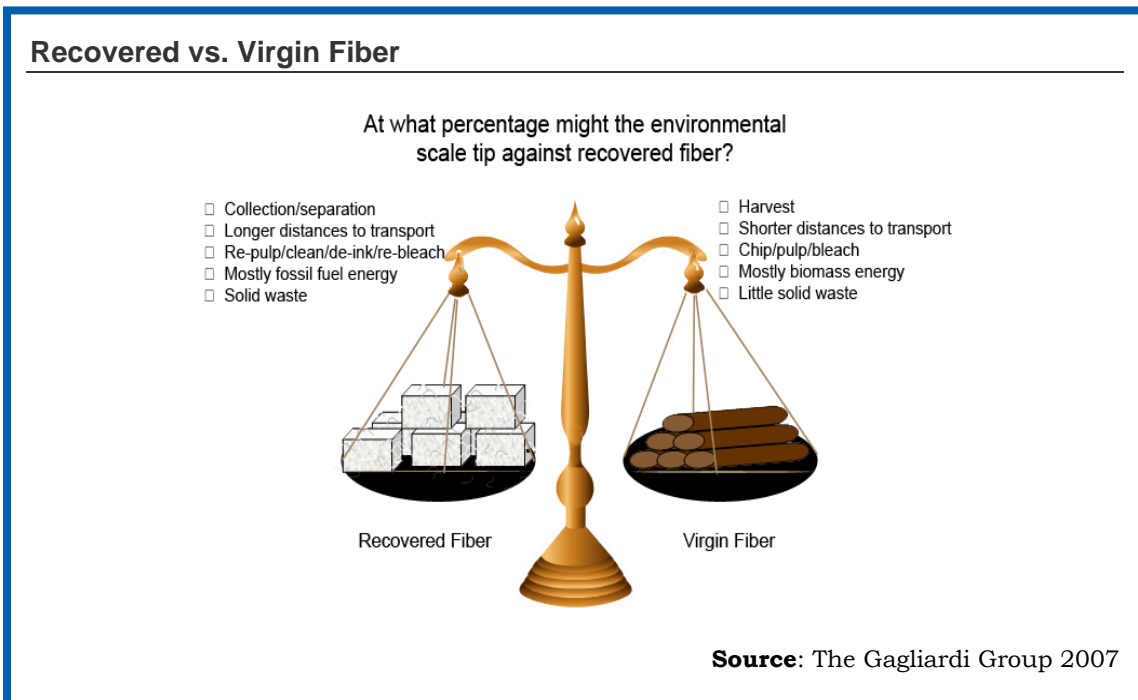
Caution: It's not always so simple

How does fiber collection and transport affect GHG emissions? Typically, the

vehicles used to collect widely dispersed post-consumer content and deliver it to recycling mills travel far greater distances, burn more fossil fuel and emit more greenhouse gases than equipment used to harvest and deliver trees from working forests that are, in most cases, located relatively close to virgin paper mills.

When it comes to converting recovered paper into recycled fiber, the amount of cleaning and processing required depends on the intended end product. Paper and paperboard products that don't need to be very bright (such as newsprint, kraft bags and corrugated containers) can use recovered paper that requires less cleaning and processing to remove dirt and ink. For these grades, the higher the percentage of recovered paper in the product, the more GHG emissions are reduced. However, the dynamic changes for brighter paper grades.

The recovered fiber needed to produce brighter paper grades, such as reprographic and laser print office papers, requires far more processing – which translates to more fossil-fuel energy – than less-bright grades. Beyond a theoretical tipping point, (probably somewhere over 30 to 50 percent post-consumer content), using increasingly



higher percentages of recovered fiber results in diminishing environmental returns as the process becomes more fossil-fuel intensive and less efficient to reach higher levels of brightness. If the percentage of recovered fiber is pushed too far, these processes can emit more GHGs than they prevent.

In some cases, it's even possible to imagine a situation where paper that has little or no recycled content might reduce GHGs more than those that do. Consider two paper mills, one in China that uses coal-fired electricity to manufacture a 100 percent recycled content product, and another in the Pacific Northwest that manufactures a similar product using virgin fiber and hydroelectric power. In this scenario, it's possible that the recycled content product may actually produce *more* GHGs than the virgin product.

Fortunately, the issues raised above are mostly academic. As a result of fiber availability and other marketplace realities, you are far more likely to buy brighter products like office papers in the 30 percent

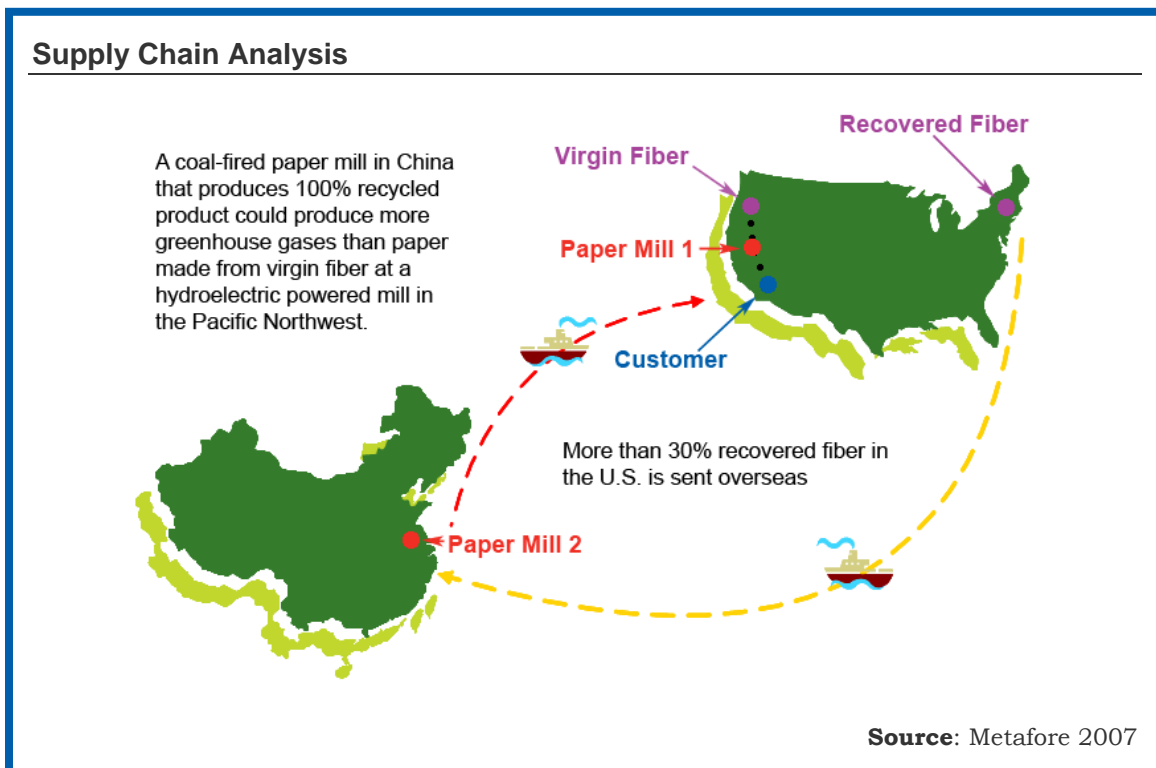
post-consumer content range for the foreseeable future, and most paper mills in the United States use biofuels as their main power source. But they illustrate a key point about paper buying and climate change: It's not always obvious which buying decisions yield the best results for reducing GHGs and producing real environmental improvement.

STEP 2: Develop a plan

How to navigate the landscape without a Ph. D.

Environmental experts are still working out some aspects of the paper lifecycle, and other players come to the environmental debate with their own interests in mind, so you're likely to hear contradictory advice about which kinds of paper to buy and from which sources.

What can you do to sort through the differences and make responsible decisions that yield real-world results?



Lifecycle thinking as your internal compass

First, since you may not have the time or resources to develop your own comprehensive climate change expertise, you need to develop an internal compass for assessing the recommendations coming at you from different directions. You should keep in mind three principles, or rules of thumb, as you examine your paper purchasing options.

- **Principle 1: Remain independent.** Once you've had the opportunity to hear and study all sides of an issue, you should be the final arbiter of which option is best for reducing GHGs and your company's carbon footprint. You're the only one who can be confident of your own impartiality and commitment to real environmental improvement, and you know best what your paper needs and limitations are.
- **Principle 2: Make science the foundation of all environmental decisions.** The only options that make sense are those that actually reduce GHG emissions, and science above all must be the foundation for identifying those options. That may seem self-evident, but you will hear recommendations that seem appealing on their face but that have more to do with environmental politics than they do with solutions that work in the real world.
- **Principle 3: Apply lifecycle thinking.** When considering the carbon footprint of paper, try to think in terms of a fair and comprehensive lifecycle comparison before making a decision.⁴ Among environmental experts, designing environmental lifecycle comparisons is a highly complex and sometimes controversial exercise. But with a little

common sense, you can successfully apply the underlying concept behind this tool. In short, when presented with two options, ask how both affect climate change throughout the *entire life* of a product, from raw material sources like a forest to its disposal, and not just at any one point in the lifecycle. It's too easy to see an environmental advantage in a product at one stage of the supply chain without considering potential offsetting disadvantages further up or down the line.

Second, look for help from the most objective experts possible. Consult your paper suppliers, responsible environmental groups, and other legitimate parties that want to weigh in, but whenever possible, supplement your own research by asking for help or hiring independent environmental expertise.

How to be a Bona Fide Champion for Change

Beginning in the early 1970s, the U.S. federal and state governments took the initiative to impose broad, statutory solutions on the great environmental challenges of the time: pollution to the air, water and land. Federal and state governments still exercise more control over the environment than any other influence, and they always will. However, in the 1990s, the environmental community identified the marketplace as the next great opportunity to change the environmental landscape, particularly in areas protected by private property rights, like private land and forest use. In those places where traditional statutory and regulatory authority had little reach, such as deciding what kind of products U.S. consumers should buy, even the nation's primary environmental enforcer, the U.S. EPA, added market-influencing programs – like Energy Star, Green Lights and Climate Leaders – to its portfolio of traditional command and control regulations to influence behavior.

The reason is simple: While it takes a majority of legislators at any level of

⁴ For a generally accepted set of rules for designing fair lifecycle assessments, see the Principles and Guidance in the ISO 14040 standard.

government to pass an environmental law and the expense of building a strong legal and scientific case to promulgate effective regulation, marketplace initiatives require only the consent of corporate or institutional officers willing to drive environmental change back through their own supply chain.

Environmental marketplace model debuts with the forest products industry

The new movement began in earnest with the forest products industry in the late 1990s. Large corporate paper consumers either took the initiative or were persuaded by the environmental community to demand more sustainability throughout the lifecycle of the products from paper manufacturers. This business practice became more established with each passing year and helped create a model that is now being used by paper consumers to, among other things, help reduce the carbon footprint of the paper products they buy.

The model works because suppliers in the paper industry, like any other industry, are ultimately in the business of satisfying their customers. Your paper suppliers are attuned to your purchasing specifications, and that's your point of maximum leverage. Lowering the carbon footprint of the paper you buy can simply be another specification to negotiate with your suppliers.

How to harness the model, and what it might cost

The first step is to establish your organization's internal paper-related environmental goals and identify the level of environmental performance you expect from your paper suppliers (see *How to Leverage Your Purchasing Power* below). You'll also need to evaluate cost considerations. For example, if you are buying brighter recycled content papers, you will almost certainly have to pay more for them. Many recycled content grades cost more to produce – for many of the same reasons that recycling and de-inking complicate the environmental

lifecycle of recycled-content paper. For most office papers it's likely that suppliers will charge an additional \$1 to \$2 per hundredweight, so you'll have to decide if and how much of a price premium you might be willing to pay.

On the other hand, depending on the tonnage of paper you buy from any one supplier, you will have varying degrees of leverage to negotiate discounts and rebates and explore other means of absorbing the higher prices into your total purchase. And, of course, you also have the option of meeting your goals at lower cost by eliminating paper usage, finding ways to consolidate paper grades or switching to less-costly grades with comparable performance characteristics.

In the next few sections, we show you how you can harness the marketplace model to reduce your carbon footprint, beginning with how you can influence your supply chain, conduct an inventory of your greenhouse gas emissions, change your organization's internal paper habits, and purchase real carbon offsets.

How to leverage your purchasing power

As a corporate or institutional end user, the GHG emissions resulting from your paper use are a consequence of your suppliers' activities. Actions that produce GHG emissions include using fossil fuels for paper production at a mill, as well as printing, storing and transporting the product through its various stages. The fate of paper after it's used (archived, recycled or sent to a landfill) also has climate implications.

While these activities are beyond your company's immediate control, you have great leverage in reducing the carbon footprint throughout the paper supply chain. A good starting point is developing an environmental procurement policy. Adopting environmental purchasing policies is a growing trend, but missteps in development often result in policies that are overly ambitious or unachievable because of

market realities. To successfully leverage your corporate purchasing policy to address climate change and other important environmental issues, be sure you know the answers to these fundamental questions.

Why have a policy?

An environmental purchasing policy communicates your corporate environmental objectives and guides the action plans you undertake to address your carbon footprint. It shows suppliers, interest groups and customers alike that the environment is a priority and that you take environmental considerations into account when making purchasing decisions.

What's in a policy?

Your environmental purchasing policy should articulate established principles that inform your company's purchasing decisions as they relate to the environment. It's important to be forward-looking and resist the temptation to limit the scope of the policy to one or two issues. Issues tend to shift in importance over time as new information becomes available and progress is made in responding to particular concerns. By basing your purchasing policy on the lifecycle of the product, you'll avoid having to redraft it over and over again to reflect emerging priorities. For paper purchases, this lifecycle approach would include raw material sourcing (fiber), resource use (energy, water), production (emissions, effluents, waste), distribution (transportation), and disposal (recyclability and compostability).

Who do I engage?

A policy developed without sufficient stakeholder engagement will lack credibility and undercut your company's objectives for developing it in the first place. It's important to gain insight from different parties that could help shape the policy. The place to start is senior management. Top executive support sends a signal that achieving environmental objectives is a company priority that has strategic impact.

It is also important to engage procurement, marketing, communications and technical staff as each may have a role in implementing the policy. A policy that doesn't make sense internally is unlikely to be implemented effectively.

Your paper suppliers are another important stakeholder group with insider supply chain knowledge that will help you achieve your policy goals. Many of your goals (especially carbon footprint reduction goals) will be directly tied to your paper suppliers' commitment and ability to achieve continuous environmental improvement. By including your suppliers in policy development, you not only have the opportunity to gain insights into your own performance, but also to leverage your buying power to encourage them to take the next steps in their own environmental progress. Be prepared for push-back and be persistent in pursuing goals that are realistic and achievable. Getting buy-in from suppliers on the front end will be helpful as you implement and track your company's progress.

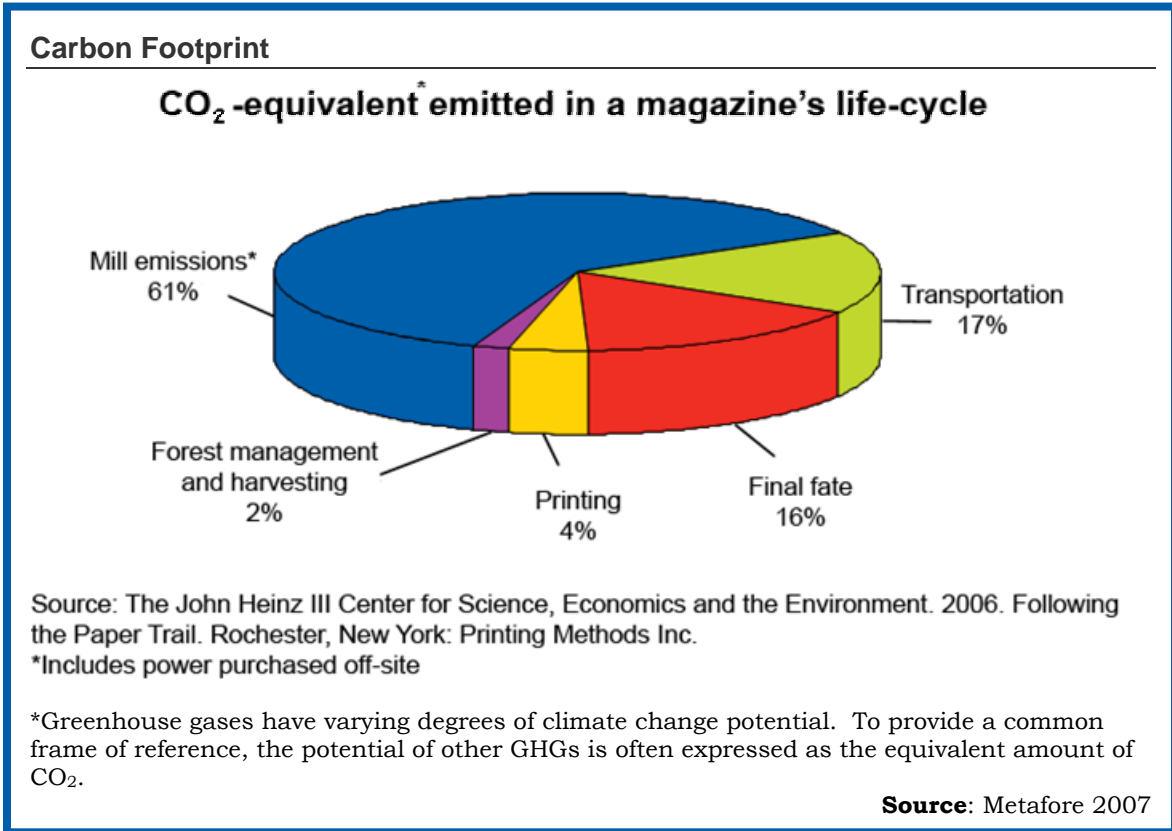
Environmental groups are also a key part of the process. The challenge – and the reward – is that these engagements are public. Many companies grapple with what information they should share and how it should be conveyed. Be sure to consider these important points when working with environmental nongovernmental organizations (ENGOS):

- **Know the landscape.** There is a surprising degree of diversity among ENGOS, so it's important to distinguish campaign-based from conservation/science-based organizations and their respective approaches to achieving market-based solutions. Relying on the latter will help assure that your policy is grounded in science rather than politics.
- **Examine their history.** Ask the ENGOS and any peer companies or suppliers who have worked with them. Two important questions are, "What was

the outcome of the engagement?” and “Is there a continuing dialogue or relationship between the different parties?”

- **Set expectations.** It’s important to articulate your company’s expected

take to achieve that vision should be set down in an action plan that sets measurable targets for the different areas covered in the policy (See Setting Ambitious but Realistic Goals, below). You and your stakeholders will be using these targets to measure and report progress against your policy, so it’s



outcomes from the engagement. By outlining your expectations and asking an ENGO to do the same up front, you can more effectively decide if they make a good match to engage in developing a policy.

- **Maintain the dialogue.** Keep communication channels open and don’t be defensive when supporting your policy decisions.

How do I implement it?

As mentioned before, a policy built to adapt to a changing marketplace is one that articulates a future vision. The steps you

important that you weigh all stakeholder contributions into the target-setting process against market realities and scientific research.

STEP 3: Pick a measurement guide

Accounting for your greenhouse gases

Paper certainly provides a carbon mitigation opportunity, especially when viewed along the entire supply chain. The challenge is determining the true “carbon footprint” of your paper. Carbon footprint is determined by measuring the GHG emissions along the

entire product supply chain, including harvesting trees, manufacturing products and distributing them to end-users (see sample footprint on the next page). However, the desire for a complete accounting of emissions has to be balanced against barriers to collecting data. Data may be too complex to produce reliable results, the environmental effects of the measured emissions may be unknown, or an activity's emissions may or may not be relevant to a particular supply chain. There are varying interpretations of what constitutes a credible footprint, so it's important to choose a proven guide to help you through the process.

Internet-based GHG paper calculators

There are many easily accessible GHG calculators on the internet, and they have gained popularity. Most, however, are consumer-focused tools that deal with household energy use and personal travel and have no capability to address the link between paper and greenhouse gases. But there are a few paper-specific internet-based GHG calculators available, such as Environmental Defense's (ED) paper calculator⁵, that can serve as a good starting point for companies and other institutions interested in evaluating environmental aspects of the paper they buy. The U.S. Environmental Protection Agency has its own version of the calculator, and some paper manufacturers, like Mohawk Fine Papers, have begun including variations of the idea on their corporate Web sites. While these tools generate theoretical figures that can provide a useful environmental overview, they are no substitute for getting real numbers based on a thorough GHG accounting of your supply chain.

⁵ <http://www.environmentaldefense.org/papercalculator/>

GHG accounting and carbon footprint guides

You can choose from a number of guides⁶ that show larger companies and organizations how to segregate and account for their GHG emissions and determine the carbon footprint of their paper. Each guide varies in its scope and approach. Some allow more creativity in evaluating your GHG profile, while others are more prescriptive or demand more data. Three of these are particularly credible.⁶

The Greenhouse Gas Protocol

The Greenhouse Gas Protocol is the gold standard for calculating a company's carbon footprint. It is the product of a multi-stakeholder initiative facilitated by the World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD). The protocol is based on expertise from businesses, non-governmental organizations (NGOs), government and inter-governmental organizations. It is the most widely recognized tool in the marketplace for companies interested in accounting for, evaluating and reporting GHG emissions associated with their operations.

The protocol's Corporate Accounting Standard⁷ defines organizational boundaries (e.g. sole versus joint ownership, affiliates, franchises) and operational boundaries (e.g. supply chain). It divides emission sources into three scopes.

- **Scope 1: Direct emissions**

Scope 1 includes greenhouse gas emissions from sources that are directly owned or controlled by a company. For

⁶ A fourth standard developed specifically by the Confederation of European Paper Industries is currently being developed.

⁷ The Protocol also contains a module for calculating emissions reductions from carbon mitigation projects that is not part of this report.

paper, this means emissions that result from harvesting trees and from mill manufacturing operations that use fossil-fuel energy. Emissions from biomass fuels used at paper mills are not included in Scope 1 because they are considered greenhouse gas neutral. CO₂ emissions from burning wood waste and byproducts are assumed to be offset by reforestation of the land where the trees were harvested.

- **Scope 2: Indirect emissions from purchased electricity**

Scope 2 includes greenhouse gas emissions from the generation of purchased electricity consumed by a company, including purchased electricity that fuels paper manufacturing and printing operations.

- **Scope 3: Other indirect emissions**

Scope 3 includes emissions that result from a company's activities but are from sources not owned or controlled by the company. There are several activities along the paper supply chain that affect the carbon footprint, including fiber sourcing, production, conversion, transportation and disposal. These represent Scope 3 emissions for a paper buyer.

The GHG Protocol recognizes a GHG quantification model developed by the National Council for Air and Stream Improvement, Inc. (NCASI) as the sector-specific tool for pulp and papermaking. This detailed spreadsheet model covers six GHG emission categories: stationary fuel combustion, transportation and mobile sources, waste management, make up chemicals, electricity and steam purchases, and exports and imports of fossil CO₂.

The protocol recommends that businesses account for and report Scope 1 and 2 emissions. However, paper buyers interested in measuring the carbon footprint of a product's supply chain will need to work with their suppliers and potentially their

suppliers' suppliers to determine the carbon profile of the paper they buy.⁸

International Organization for Standardization Standard 14064

The International Organization for Standardization (ISO) released a GHG quantification and verification standard in 2005. ISO standard 14064 provides guidance on best practices for quantifying and verifying GHG emissions for entities and projects. It addresses organizational boundaries and emphasizes comprehensiveness and transparency in quantifying emissions sources. The ISO standard also outlines three scopes that parallel the three scopes in the GHG Protocol. The ISO standard requires entities to report direct (Scope 1) and energy indirect (Scope 2) emissions, while recommending an effort to measure other indirect (Scope 3) emissions. The ISO standard and GHG Protocol may be used together to provide the most detailed guidance on measuring GHG emissions.

Carbon Trust Product Footprint Standard

The Carbon Trust, a not-for-profit organization created by the government of the United Kingdom, developed a supply chain-based analysis for quantifying the greenhouse gas emissions of a product across its lifecycle. The scope of this product footprint standard covers GHG-emitting activities for raw material extraction, manufacturing, distribution and disposal. The methodology is currently in the pilot phase, but the plan is to use it for developing a carbon label for retail products sold in the UK. The pilot is currently being tested on two paper products and other goods.

The Carbon Trust standard is meant to apply across a broad spectrum of products

⁸ For example of the supply chain collaborating on the carbon footprint of paper see, The Heinz Center, 2006, *Following The Paper Trail*.

and be consistent with ISO lifecycle, carbon accounting, the GHG protocol and ISO Type III label standards.⁹ The scope of the carbon footprint for a paper product would, with some exceptions, include:

- **Raw material.** For fresh fiber, the standard covers the use of herbicides and machinery used for harvesting; for recovered fiber, it addresses collection and distribution to a de-inking facility;
- **Manufacturing.** Energy used at facilities that make inputs, such as chemicals, and the finished product;
- **Distribution.** Energy used to transport the inputs to paper mills and to transport finished products to warehouses and retail stores; and
- **Disposal.** The standard does account for emissions from the transport to and decomposition of sanitary paper products in the landfill. GHG emissions from the disposal of recyclable paper products are not included.

These guides will give you the most complete accounting of your GHG footprint, but there is a trade-off. The more credible the approach, the more resources you will need to collect and calculate the data, and the more difficult it will be to get the figures you need from your suppliers. You can hire the consulting expertise you need to help with the former, but the latter may be more challenging. Generally, the newer the mill that manufactures your paper, the better your chances are of getting the data you need. Whether your suppliers' mills are old or not, you may have to exercise your full leverage as a customer to persuade your suppliers to help you account for your greenhouse gases.

⁹ Type III labels are the environmental equivalent of dietary labels on food products. They provide an environmental declaration of a product using verified quantifiable data on environmental performance.

Making sense of the numbers

A GHG inventory provides quantifiable data on the carbon footprint of your operations and the products in your supply chain. Having the data represents some progress. The next challenge is interpreting it. For products such as paper, the question arises: "What kinds of liability or potential risks exist for your business if GHG emissions become subject to regulations?"

The risks along the supply chain are shared by your company, other paper customers and your paper suppliers. The extent to which the costs of addressing carbon risks can be passed along the supply chain depend on many different market factors, including the intensity of competition, price margins and availability of substitute products. Attempting to fully assess the likelihood and extent to which risks are borne across the supply chain are beyond the scope of this primer.

However, an easy rule-of-thumb for gauging carbon risk is to look at who in the supply chain is actually generating the carbon. The company directly emitting GHGs faces the greatest risk. For paper products, that would be the company that owns the paper mill. The direct emitters also have the greatest opportunity for carbon-related benefits because they own any carbon credits generated by their greenhouse gas mitigation efforts.

The Greenhouse Gas Protocol scope approach described above provides insight into which companies control the carbon along the paper supply chain, that is, who produces the emissions and who gets credit for reducing them. As a paper buyer, the carbon footprint of your purchases falls into Scope 3. You have limited ability to directly reduce greenhouse gas emissions. But that does not limit your ability to play a significant role in the process. By leveraging your purchasing power, you can encourage paper suppliers to reduce their greenhouse gas emissions and lower the carbon footprint of paper products you buy.

STEP 4: Down to the business of reducing your carbon footprint

How to mitigate your emissions

Once you've chosen the GHG inventory guidance that suits your organization and accounted for your carbon footprint, return to the action plan and paper purchasing policy we described earlier. The key to success is setting meaningful, achievable targets – deciding how much your organization can reduce greenhouse gases through your paper purchases.

Regardless of which protocol you follow, reaching your targets can be attainable by keeping a few imperatives in mind.

Your greenhouse gas inventory is a benchmark

Conducting a greenhouse gas inventory is the most complex and challenging step in your program. Once complete, you will find that you have developed tools and habits that will continue to serve you throughout your program, and you will have signaled to your organization and your stakeholders that you are serious about reducing the carbon footprint of your paper. However, as critical to success as that may be, the real value of your inventory is that it becomes a benchmark for your organization; a reliable starting point. First, only after you begin to capture the sources and extent of your carbon footprint can you begin to consider what you can achieve with your carbon reduction plan. Second, the inventory provides the baseline against which you can and should measure your progress.

Set ambitious but realistic goals with your management team

You have arrived at the moment of decision in any voluntary environmental program. Now that you know what your GHG footprint is, how much will you be able to reduce it and what kind of resources can you commit

to the effort over time? Answering those questions requires total buy-in from your leadership team. The first step is to meet with your leadership and management peers to see how far you can drive changes in your paper procurement. In the case of paper, that means:

- Presenting what you've learned from your GHG inventory, together with your case for a paper procurement policy that reduces GHGs;
- Considering your organization's paper needs;
- Deciding how much paper and which grades you can eliminate, consolidate or replace with recycled content paper while still meeting those needs;
- Forecasting whether you might need additional funds to purchase grades that reduce your carbon footprint but may cost somewhat more;
- Deciding whether you will need additional time or staff to support your program;
- Budgeting for those potential needs; and
- Incorporating those decisions into your paper procurement policy.

Share the procurement policy

The success of your program will require that you keep your leadership, employees, customers, and above all, your paper suppliers informed about your program and its progress. That's why you drafted your procurement policy—it is the tool to use to keep the support of your management and win the support of employees. And it gives your suppliers the opportunity to respond to your program, discuss ideas for supporting you, and plan to meet your requirements.

Welcome to the club

What we have outlined for you is a GHG reduction program specifically for your

organization's paper procurement needs, but that doesn't mean you'll have to develop your program in isolation. The last decade has seen the growth of multi-stakeholder initiatives to help you design your program, share technical expertise and compare your efforts with others.

There are a number of public-private GHG reduction partnership programs that can provide assistance and insights from both technical experts and peers. These multi-stakeholder options are framed around reporting (Department of Energy 1605b Registry and the California Climate Change Registry), business and policy engagement (Pew Center Business Environmental Leadership Council and U.S. Climate Action Partnership) and trading carbon reduction credits (Chicago Climate Exchange). There are also initiatives specifically geared toward promoting reductions, such as Climate Savers and Climate Leaders.

Climate Savers

The World Wildlife Fund (WWF) established Climate Savers to encourage companies to voluntarily set ambitious greenhouse gas reduction targets. To participate, companies must partner with WWF to establish these targeted reductions. Climate Savers participants include: Catalyst Paper Company, The Collins Companies, IBM, Johnson and Johnson, Lafarge, Nike, Novo Nordisk, Polaroid, Sagawa Transport, Sony, Tetra Pak and Xanterra Resorts. Climate Savers companies have committed to reducing GHG emissions by more than 10 million tons each year, by 2010.

Climate Leaders

The Environmental Protection Agency (EPA) initiated the voluntary Climate Leaders program to help companies develop long-term comprehensive climate change strategies. Each industry partner sets a corporate-wide greenhouse gas reduction goal and inventories their emissions to measure progress. The EPA provides technical assistance, inventory

measurement, management guidance and public recognition of companies that participate in the program. The program includes more than 100 companies across many different sectors representing more than 8 percent of the country's total GHG emissions. It includes several paper producers, office supply stores and publishers.

How to buy carbon offsets that actually offset carbon

With all the celebrity attention carbon offsets are generating lately, you may be wondering if offsets are an option for buying down the carbon footprint of your paper, or at least for supplementing your company's other GHG reduction efforts. Or, you may have heard some justifiable skepticism from both sides of the environmental divide that these programs permanently reduce carbon.

The idea behind carbon offsets is relatively simple. Instead of reducing your own carbon, you are essentially paying another organization to compensate for your emissions by investing in projects that reduce them by an equivalent amount or greater. The projects may take any number of forms, from planting trees that absorb carbon dioxide from the atmosphere, to capturing methane emissions from coal mines, to producing biofuels.

Internal corporate carbon reduction programs have an important advantage over offsets: they represent self-perpetuating reductions that can pay for themselves in energy and other efficiencies. Offsets, on the other hand, represent a permanent cost to your company, with no internal efficiencies to show for the money you paid to buy them. Still, like most voluntary environmental programs, some offset programs are far better than others. Where it can be shown that they permanently reduce carbon in the real world, they may be worth your consideration.

A brief history of the offset market

The first carbon offset project was conceived in the late 1980s. AES Corporation, an independent power producer, teamed with the World Resources Institute to develop a forestry project in Guatemala. The project was intended to offset the projected carbon emissions from a planned coal plant AES was building in the United States. The offset market started taking shape in the mid-1990s, particularly in response to the Kyoto Protocol, which included flexibility mechanisms (see text box) that allowed for the exchange of offsets resulting from emission reduction activities and projects.

Throughout the 1990s and in the early 2000s investments in projects and trades were pursued predominantly by large companies motivated by risk management

part of their sustainable marketing efforts.¹⁰ The growing momentum led to the creation of a voluntary trading market called the Chicago Climate Exchange (CCX).

The CCX operates a pilot market designed to educate participants and demonstrate how an actual market might function. Under this pilot effort, participating companies commit to annual emission reductions. Those that reduce emissions below their reduction target are allowed to sell the excess reductions or offsets to companies that exceed their targets. Companies also are able to purchase project-based offsets generated by sources that do not participate in the cap and trade program.

A recent report on the offset market identified more than 30 entities that are in the business of estimating a carbon footprint and selling offsets to help companies become

Examples of Carbon Offsets Programs

The image displays six examples of carbon offset programs arranged in a 2x3 grid. Each example consists of a photograph and a caption below it, all set against a yellow background. The examples are: 1. Landfill Methane: Aerial view of a large landfill site. 2. Renewable Energy: A close-up of solar panels. 3. Rangeland Soil Carbon: A wide shot of a green rangeland with mountains in the background. 4. Coal Mine Methane: Industrial equipment at a coal mine. 5. Forestry: A dense forest of tall, thin trees. 6. Agricultural Methane: A large white covered structure, likely a greenhouse or covered walkway. 7. Renewable Energy: A row of wind turbines. 8. Agricultural Soil Carbon: A person working in a field, possibly planting or tending to crops.

Landfill Methane Renewable Energy Rangeland Soil Carbon

Coal Mine Methane Forestry

Agricultural Methane Renewable Energy Agricultural Soil Carbon

Source: Chicago Climate Exchange 2007

concerns. There were also a select few green niche companies that purchased offsets as

¹⁰ Two notable early mover companies that purchased offsets as part of their green marketing efforts are Stonyfield Farms and Shaklee.

carbon neutral.¹¹ As a voluntary market commodity, there is no single standard defining a “credible” offset, so it can be a challenge to distinguish between offsets that truly reduce GHGs from those that do not and from those that result in unacceptable environmental or social trade-offs. For example, a recent *Fortune* magazine article examined a carbon reduction project in Uganda where farmers are alleging in a legal challenge that they were evicted so that more land could be reforested to generate further carbon offsets.¹²

Buyer beware: Gauging offset quality

Although the offset market is almost 20 years old, it continues to operate in a Wild West atmosphere. At this time, regulation seems to be the only solution to determine what is and what isn't a carbon offset. However, in the absence of regulations there are still guiding criteria for assessing the quality of a carbon offset. Environmental groups, businesses, offset project developers, offset retailers and climate experts have adopted a new language for criteria evaluating the credibility of an offset.

- **Additionality** addresses the motivation behind GHG reductions when developing and implementing an offset project. Any activity undertaken as part of “business as usual” cannot be claimed as a carbon offset.
- **Quantification** develops a credible baseline to illustrate positive reductions, taking into account emissions that would occur in the absence of the project as well as potential emissions leakage (an increase in emissions elsewhere as a result of the project).

¹¹ Trexler Climate and Energy Services, 2006, A Consumers' Guide to Retail Carbon Offset Providers,” prepared for Clean Air-Cool Planet.

¹² Farris, Stephan, 2007, “The Other Side of Carbon Trading, *Fortune Magazine*, August 30, 2007. http://money.cnn.com/2007/08/27/news/international/uganda_carbon_trading.fortune/index.htm?source=yahoo_quote

- **Permanence** accounts for the risks of a reduction that doesn't materialize or lasts only a certain amount of time before carbon is released again, such as the loss of forecasted carbon storage from a fire in a forest-based offset project.
- **Ownership** defines clear ownership so there is little to no chance of disputes or the multiple sale of the same offset.
- **Monitoring and Verification** audits project performance to verify emission reductions over of the project over time.
- **Registration** formally documents offsets to provide a paper trail.
- **Ancillary Benefits** verify non-climate improvements produced by offset projects, such as cleaner air or water, and improved living standards for impoverished people.

The Kyoto Mechanisms

There are three flexibility mechanisms available to countries with binding reduction targets in the Kyoto Protocol.

1. **Emissions Trading:** Countries with targets can trade allowances with one another;
2. **Joint Implementation:** A country with a reduction target can purchase emissions reductions from a project in another country with a binding target and import the reductions to use for meeting its compliance obligations; and
3. **Clean Development Mechanism:** A country with a reduction target can purchase emissions reductions from a project adhering to guidelines in another country that is not subject to a binding compliance target and import them for complying with its emission reduction target.

Profile of Voluntary Third-party Offset Standards

Standard	Lead Developers	Status	Summary
The Gold Standard	WWF, SSN and Helio International	Complies with Kyoto Protocol projects launched in 2003. Voluntary market standard launched in 2006.	Standard provides a label for renewable energy and energy efficiency projects that meet eligibility (project type, and host country) additionally, and sustainable development screens.
Voluntary Carbon Standard	International Emissions Trading Association and the Climate Group	Final review, implementation planned for late 2007	Designed to create fungible and tradable assets that are real, quantifiable, beyond business as usual.
Green-e	Center for Resource Solutions	Implemented July 2007	Offset suppliers must undergo an annual audit and demonstrate reductions are real, verifiable, permanent, enforceable and not counted towards mandatory reduction programs, and/or voluntary but binding cap and trade markets.

In addition to these criteria, several standards have recently emerged to provide a third-party seal of approval for carbon offsets sold in the voluntary market. Many of the criteria are incorporated into these standards. The table on the next page describes different options you can use to evaluate the credibility of an offset.

Conclusion: This is only the beginning

In this “Paper Consumer’s Guide” we’ve tried to spare you as much of the complexity and controversy of GHG reduction as we can and get to the real fundamentals you need to know. But, the more involved you become in your own program to reduce GHGs, the more likely you’ll be interested in the national and international politics of climate change.

The first development you’ll notice, if you haven’t already, is that there is a seismic shift taking place in the climate change debate in the United States. Although the U.S. government has declined to ratify the

Kyoto Protocol and consequently sign on to mandatory GHG reductions, signs are everywhere that the political landscape is changing. State and local governments, including hundreds of U.S. cities, are not waiting for the federal government. They are undertaking GHG reduction programs of their own, sometimes as mandates, but more often as voluntary reduction programs.

For the time being, however, U.S. companies and industries are leading the way, both independently and as part of multi-company and multi-industry efforts. How these developments affect you and your paper procurement program will depend on the type of business or organization you have, who your customers are, and what governments do next. One thing is clear, however: By taking the steps we recommend, your organization will go a long way toward eliminating uncertainty, preparing for future government or marketplace mandates, and playing a leading role in solving the problem.

About Metafore

Metafore (www.metafore.org) is a source of tools, information and innovative thinking for businesspeople focused on evaluating, selecting and manufacturing environmentally preferable products. Metafore works with business, government and other leaders to meet environmental goals. Metafore specializes in teaming with brand-name businesses because the power of their market influence can be mobilized to encourage better stewardship of the global environment. Using diverse sources of funding since its inception in 1997 as a non-profit 501(c)(3) organization, Metafore develops ideas, insights and credible information to create solutions. You may contact Metafore at 503.224.2205 or info@metafore.org.

About The Gagliardi Group

The Gagliardi Group (www.thegagliardigroup.com) helps companies and other institutions develop sensible, workable approaches to achieve their most ambitious environmental leadership goals at the lowest possible cost. TGG helps clients develop common sense environmental solutions -- programs, systems, policies and communications -- that truly demonstrate sustainability without undermining business models or jeopardizing profitability. The Gagliardi Group works with companies to sort through the competing voices and increasing complexity of today's environmental landscape and develop cohesive strategies that not only meet customer and other stakeholder expectations, but also result in bona fide environmental benefits. You may contact The Gagliardi Group at 901.748-3955 or gagliardi@thegagliardigroup.com.