AN EMISSION BY ANY OTHER NAME

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A global crisis has occurred, threatening to change life on this planet dramatically. Global warming, caused by excess carbon dioxide and other greenhouse gases in the atmosphere, has begun to permanently change ecosystems. The problem is rooted in the source of modern civilization: fossil fuels. Emissions from fossil–fuel–based energy used in almost every aspect of daily life is causing global warming (Intergovernmental Panel on Climate Change, "Climate Change"). To attack this problem, governments must significantly address the private lives of citizens and attempt to change the way they live. Elected officials loath to take such action because the people whose lifestyles they threaten will hold them accountable. For example, the United States, one of the main carbon emitters (Soubbotina and Sheram), has resisted the solutions put forth by the world community because of domestic pressure. The most recent international action regarding greenhouse gases is the Kyoto Protocol, which has yet to be implemented. Moreover, President Bush's refusal to ratify the Kyoto Protocol has further delayed efforts to slow global warming. A remote possibility that the protocol will enter into force still exists, but its impact will be severely diminished without the participation of the United States.

Since domestic politics have paralyzed a global solution, alternative non-governmental proposals have been offered to address environmental policy problems. The alternative methods—such as carbon trading and carbon credits—have resulted from multiple factors, including impatience at the lack of action at the international government level, anticipation of inevitable government sanctions, and even from economic benefits such as a new market niche.

Nevertheless, these new proposals lack standardization (Rosenzwieg, et al. 33) and raise questions regarding their legitimacy. There exists no standardization for the amount of carbon companies may emit; each method has its own limits, calculated through different instruments and numbers. This paper examines another alternative: a non-state market-driven (NSMD) certification system that has emerged in other sectors by non-governmental organizations that have bypassed domestic and international governmental

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processes. The certification system is based on Benjamin Cashore's theoretical framework of the "Non-State Market-Driven" (NSMD) governance system. NSMD is essentially a "privatization" of governance; it gains authority from the market supply chain, not from the state (Cashore 503-529). The presentation of the NSMD certification system as an alternative to the current carbon emission problem produces many questions: Would the NSMD certification system model have enough impact to help address the global warming issue? Does it provide a solution that could legitimate and standardize the growing number of proposals used to reduce greenhouse gases? This paper will attempt to answer these questions by exploring whether the conditions exist in the United States energy sector for the NSMD certification system to be successful. Additional follow up work is necessary to decide how this certification system could be implemented or organized (Gunningham).

Alternative Methods

Neither the Kyoto Protocol nor the US policy appear to be effective solutions for reducing carbon emissions. This lack of leadership has led to the creation of independent programs. These alternative methods are divided into three different categories: "Local Government Initiatives," "Non-Government Emission Trading," and "Direct Initiatives." "Local Government Initiatives" are smaller-scale, local government initiatives than the Kyoto Protocol or Clean Skies. "Non-Government Emission Trading" initiatives encompass industry and NGO-led attempts at emissions trading and joint implementation programs. "Direct Initiatives" rely on directly affecting the emissions from a source.

"Local Government Initiative" programs directed at local areas such as districts or states are advantageous because they come from the "top," providing their mandates with legitimacy and authority. From an economic standpoint, the local government needs to remain competitive with the rest of the world. The plans generally isolate a certain type of polluter or industry rather than delineate general policies about greenhouse gas emissions.

"Non-Government Emission Trading" is similar to the government-controlled emission trading schemes. Under these schemes, however, the trading usually occurs between a small set of companies ranging from two to over six, and the government is not involved. Public image, economic possibilities, and ethical standings drive companies to participate in these programs. From a public image standpoint, it is beneficial for a company to be green friendly. From an economic standpoint, many see an emissions limit policy as inevitable (Ellison); preparing for this outcome now will save a lot of hassle and money in the long term. In addition, companies sometimes find that

the carbon reduction saves money by increasing energy efficiency.

"Direct Initiatives" are the least traditional. They do not involve trading or offsetting projects per se. Instead, they concentrate on cutting emissions through energy efficiency, less polluting fossil fuels, and/or the use of renewable energy. The NSMD certification system that this paper explores could be placed in this category; however, because of its currently unknown guidelines, it has not been determined which category the certification system will be placed. EnergyStar is the only "Direct Initiative" that currently exists.

NSMD Certification Method

To more clearly understand the potential of an NSMD certification system, it is important to understand (1) green consumerism, (2) NSMD, and (3) the history and mechanics of certification.

Consumers are exhibiting a growing interest in the environmental friendliness of products (Worldwatch). These "green" products satisfy the customer's desire to support practices that do not harm the environment. Many customers are willing to pay slightly higher prices to ensure that a product is "green." In order for green consumerism to work, consumers must have access to reliable information about a product's environmental impact (Fulmer). The customer is informed that a product has met certain environmental standards through "eco-labeling," also known as certification (FatEarth). To be reliable, this information must come from a third party or the state; otherwise, the self-interest of the companies undermines the system (Federal Trade Commission; Cashore 513). Many companies are finding a significant market niche for green products, giving the companies who produce green products a competitive advantage. The pressure green consumerism can place on products that are not environmentally friendly is important. Market forces and public image pressure have incited many companies to go green, including those in the following industries: tuna (dolphin-friendly), timber (sustainably harvested), coffee (Fair Trade), and fisheries (Marine Stewardship Council) (504).

Currently, there is less direct governmental action and more allocation of the government's duties to third parties, usually private organizations. The government does this by contracting out the responsibility and application to third parties while maintaining the ultimate authority and providing funding (Salamon et al.).

Along with, or perhaps encouraged by, these shared private/public governance systems, a new phenomenon of non-state market-driven governance has emerged. NSMD systems do not rely on the state at all, but derive their authority "from the manipulation of global markets and attention to customer preferences" (Cashore 504). It is an economic authority that relies on

the supply chain to enforce policies.

Certification is a type of NSMD governance system. It relies on the recognition of a label to help sell a product. In order to get the label, a company must adhere to the policies and conditions the label requires. Deriving its authority from the market through the label, certification is governing the companies involved and not state policies.

To understand NSMD fully it is important to understand the economic supply chain, which is based on the theory of supply and demand: someone demands a product, so someone else supplies it. In most cases it is a bit more complicated, as products go through different stages, or some variation thereof.

While not all supply chains have as many levels (though some have even more) this basic model is sufficient to explain the forestry and energy sectors, the two sectors upon which this paper focuses. Market incentive may occur anywhere along the supply chain. While the final consumers do play a significant role in the market pressure along supply chain, it is not necessary that they apply the most pressure (Cashore 513). In the case of forest certification described hereafter, it is the retailers who end up pressuring the supply chain into compliance, with no change in direct pressure from the final consumer. The retailer's pressure on upstream suppliers of the supply chain is a "business to business" transaction (Hansen). The idea of "business to business" transactions is important to the success of certification.

Certification

Certification is not a new concept. If a product follows certain rules and procedures previously agreed upon by the party giving the certification, than the product receives the label of the certification. The label is the most important part of the certification. It gives the certification program legitimacy and market power. The easier the label is to recognize, the more successful it is. The label of certification is an instant message and advertising for the product, just like any other product label such as Coca-Cola or McDonald's (Hansen).

Forest, shade-grown coffee, fisheries, tourism, organic food, and most recently mining, comprise the *environmental* certification programs that currently exist. NSMD environmental certification is a new field and thus there have not been many case studies to date. However, sufficient evidence supports the relative success of environmental certification and "[s]uccessful practices – if they are not proprietary– attract attention, and are replicated by others" (Lipschutz 161). To date, the most successful of the environmental certification programs is forest certification.

Forest Certification

Just as for greenhouse gases, there exists no international treaty on forestry practices. Although a treaty was considered at the 1992 Rio conference, the north-south divide led to an impasse and no global forest convention was signed. Frustrated by the deadlock, the World Wildlife Fund (WWF) and the Rainforest Alliance collaborated to create the Forest Stewardship Council (FSC). The FSC certifies forest landowners and forest companies who practice "sustainable" forestry. What sustainable forestry entails is determined by the rules and regulations laid out by the FSC. The rules are based on broad performance and practices such as management plans, monitoring, protection of workers' rights, minimal environmental impact, and preservation of old growth forests (Cashore 507). The rules are rigid and are not voluntary. An interesting aspect of the FSC was the inclusion of not only environmental representatives, but also business and social interests on the council. The council is split into three equal votes instead of one sector dominating.

Soon after the FSC was organized, competition appeared in the forest certification market. One of the main competitors is the American Forest and Paper Association's (AFPA) Sustainable Forestry Initiative (SFI). SFI has a slightly more flexible and business friendly approach to forest certification, which undermines their label because of a taint of self–interest. As opposed to the FSC's strict micro-management guidelines, the SFI is more goal-oriented and procedural based (Sustainable Forest Initiative). Although originally business heavily weighed in the decisions, the SFI has started to reform their program so that it is more equitable, looking similar to the FSC's equal representation. The SFI program is seeking to get its Sustainable Forestry Board approved status as an independent non-profit third-party (Sustainable Forest Initiative). This should help in dispelling the notion that the SFI label is less "environmentally" benign due to a self-interest associated with its founders, the American Forest and Paper Association. The competition of forest certification has helped keep the programs constantly evolving and improving.

FSC and Home Depot

The biggest success for the FSC was its campaign against Home Depot. The FSC launched a public image campaign against Home Depot to make them purchase certified wood. By criticizing the CEOs' moral integrity and their roles as citizens of the world, FSC successfully persuaded Home Depot in 1999 to "eliminate from its stores wood from endangered areas —including certain redwood and cedar products—and give preference to 'certified

wood' by 2002" (Kennedy).

Previously, forest activists and organizations had tried to influence the logging companies themselves, which resulted in a geographically fragmented and impotent effort (Krill). Home Depot represented a market pressure point that was visible and was a logical endpoint of the supply chain. Home Depot is the largest home improvement retailer in the United States, with more than 1000 stores in four countries, $30 billion in annual sales and 10 percent of the US lumber market (Krill). For a supplier's wood to be certified it must be tracked from the forest, through manufacturing and distribution, to the customer, and must ensure a balance of social, economic and environmental factors that the FSC label guidelines approve of. Due to its influence as a buyer group, Home Depot places pressure on the wholesalers (distribution), who will place pressure on the primary industry (manufacturing), who will place pressure on the raw product or the logging companies (Home Depot). As previously explained, the final consumer did not create the market pressure on the supply chain, the retailer did. Other home improvement retailers soon followed suit, including Lowe's, another major home improvement retailer, who started phasing out its non-green wood in 2000. Lowe's also agreed to purchase only FSC approved timber (World Resources Institute, "WRI applauds").

The FSC currently certifies about 72 million acres of the world's forests (Forest Stewardship Council, "Looking for FSC"). This number more than doubles the amount certified in 1998 (Makower 8). While this is small compared to overall the forest destruction (the tropical forests alone are losing 33.8 million acres of tropical forest per year) (Rainforest Alliance), it is still a considerable success.

Five Features of Certification

Studying the FSC history, with additional findings from shade-grown coffee (TerraChoice) and fisheries certification (Marine Stewardship Council), five identifiable features emerge. Because of their presence in all three cases, the five features are sufficient for the survival of certification. The five features are:

(1) Third Party Pressure
(2) Market Niche
(3) Global Commons Problem
(4) Multiple Drivers
(5) A Traceable Product

Third Party Pressure

This is pressure from an outside source, usually not a part of the supply chain. The precedent so far has been NGO third party pressure rather than industry. In the case of forest certification the third parties were the WWF and the Rainforest Alliance. It was their pressure on the companies and the world to accept the importance of sustainable harvesting that enabled certification to take place and succeed. The pressure placed on Home Depot through a third party is an indication of the influence that they can create and how important they are to certification.

Third party pressure was also present in the fisheries certification developed by the Marine Stewardship Council (MSC). Again, it was the WWF pushing forward fisheries certification. For shade-grown coffee, it was a variety of actors including the Organic Crop Improvement Association, the American Birding Association, and Fair Trade, amongst others, who compelled growers to adapt to a more environmentally friendly manner of growing coffee (TerraChoice 11-13).

Market Niche

There was no previous green wood market before the FSC. They found an entirely new market niche to develop, as did the MSC and shade-grown coffee. Small companies gain a competitive advantage by marketing green certification. It gives their products an edge, a different appeal. In addition, some argue that because of the label companies can charge "gourmet" prices for their products. While some green consumerism currently thrives on this economic boon, it may not do so indefinitely because there is a limit to the consumer's willingness to pay more for an environmental product (Sedjo 8-9). This "gourmet" misconception could hurt more than help green products. There is also a limit to the ability to lure companies to become certified using the gourmet pricing incentive. Large companies, who harvest most of the timber and usually are not interested in sustainable forest management, are not susceptible to this "gourmet" niche (Varangis).

Global Commons Problem

Forests may appear at first to be a national problem, as forests cannot move or change places. But they are an international problem because of the forests secondary importance as carbon sinks and habitats for endangered species. Forests are sufficiently a part of the global environment, especially as global warming increases, that the world found it necessary to address the issue globally at Rio, in 1992 (Varangis 154-157).

While shade-grown coffee, like forests, does not appear to be a global commons problem, the birds and basic human rights involved with growing coffee are (TerraChoice 11-13). The state of the world's fisheries is certainly a global problem, as recognized at the World Summit on Sustainable Development in Johannesburg in September, 2002 (World Wildlife Federation, "Endangered Seas").

Multiple Drivers

As mentioned previously, sustainable forestry practice is not only important to preserve the trees for the timber but for other services they provide. The forests help: a) absorb the natural carbon in the air, b) are a natural purifier for the water, c) help to moderate climate, and d) prevent soil erosion. Additionally they are habitats for millions of diverse species and by destroying the forests, the extinction of species, plant and animal, is also promoted (World Resources Institute, "People and Ecoystems").

In addition to being more environmentally friendly, the rights of the workers were also a crucial aspect of the rise of certification in shade-grown coffee (TerraChoice 11-13). Marine life is an important income for many communities around the world and if the fisheries were to become depleted it would certainly take a drastic toll on these communities (World Wildlife Federation, "Rewarding").

A Traceable Product

Wood, coffee, and fish are all tangible products that can be audited with relative ease. Even as the products go through their various stages, from harvesting to manufacturing, they can still be tracked through their whole "life-cycle" (Hailes). This makes the auditing and enforcing mechanism workable and verifiable.

NSMD Certification in the Energy Sector

To determine if an NSMD certification system could be effective in the energy sector in reducing carbon emissions, the five features described above should be present and the supply chain in the industry must be conducive to "business to business" transaction pressure.

Energy Supply Chain

The energy supply chain is slightly more complicated than the forestry supply chain. There are four identifiable links in the chain: raw product,

wholesaler, retailer, and final consumer. The "final consumer" category is slightly fragmented, as there are many different forms of final consumption of energy (EPA, "Climate Action Report 2002"). Because of its fragmented nature the final consumer is not as relevant as the "business to business" transactions. It is the industries that use energy in mass quantities (just like the Home Depot bought wood in mass quantities) that must pressure the producers and the primary industry.

The energy sector has a slightly more scattered direction of supply than the forest sector. There are three weak points of pressure that could potentially be utilized to drive an upward trend of certification: industry, residential/commercial, and transportation.

Industry

Industry would be the easiest to target because it creates products that can be clearly labeled and identified. It also accounts for 33 percent of the total US greenhouse gas emissions (EPA, "Climate Action Report" 41). Other manufacturers or suppliers buy these products, so there is a "business to business" transaction potential in the supply chain. For example, let us say Kmart implemented a policy that all the appliances that it sold had to be certified for carbon emission reduction. Why would Kmart want to implement this policy? Just like Home Depot, a third party-supported public image campaign may induce this type of commitment to the environment and/or it might be genuinely concerned for the environment. The demand from the retailer, a large buyer group, on the supply chain would cause upward pressure. Every part of the appliances would have to be manufactured under the given conditions of the certification in order to receive a label. The label would be awarded by an independent third party, like the FSC for forest certification, who would likewise monitor and verify the validity of the label.

Residential/Commercial Buildings

Residential/Commercial buildings respectively account for 19 percent and 16 percent of US carbon emissions (EPA, "Climate Action Report 2002" 19). It is more difficult to press residential/commercial buildings towards certification. A company's building could be certified based on various issues. First, it could be a qualification that they receive energy from a certified utility. Another possibility is that the buildings could emit only a certain amount of emissions, and could use only a certain amount of energy in the first place. The buildings could place some pressure up the chain to the utilities. An impediment to the certification scheme is that commercial buildings are hard to pressure because a large buyer's group, such as Home

Depot or Kmart, does not exist. Therefore the pressure implemented by a third party would be fragmented and resources would be scattered, making it harder to put the proper amount of pressure in one place that would ensure a big return.

For these same resource reasons, residential buildings are twice as hard to pressure as commercial buildings. While one could influence the construction of a house, and certify that the house was constructed using a certain amount of energy and emitting limited amounts of greenhouse gases, it is not practical. Certification could be implemented on a larger scale, especially regarding the larger housing complexes being built in the western half of the United States, but even this pressure would be a lot of work for not much return in carbon emissions reduction.

Transportation

The most difficult category to pressure is transportation because there is no specific product that is produced by the consumption of energy by the trains, planes, cars, and boats. Transportation accounts for 31 percent of US carbon emissions ("Climate Action Report 2002"). The carbon emissions in the transportation sector depend greatly on how the final consumer utilizes the transportation. If, for example, the consumer owns a car, she can choose to drive it as little as possible or possibly even get a hybrid, but there is no way to "certify" the emissions she creates. The manufacturing of the car could be certified. The factory could be placed under a certain amount of emissions it is allowed to emit and the use of a certain percentage of renewable energy of the total energy used could be determined. However, this falls under the industry category, and not transportation. Like the residential building, it is up to the individual citizen to "certify" himself by limiting his own carbon emissions.

The study indicates that the supply chain of the energy sector requires the same pressure that a certification system needs to be successful. Focusing on the industry arm of the supply chain would appear to have the most returns for the effort, although perhaps smaller campaigns to educate final consumers offering a voluntary certification guideline for them to follow could help in the residential/commercial and the transportation sectors.

Five Features

The energy sector supply chain can work with the NSMD certification system, proving the first part of the investigation. The following will answer the second question: whether the five features found in the forest certification system (third party pressure, market niche, global commons problem,

multiple drivers, and a product that can be monitored) exist in the energy sector. If the answer is affirmative than the overall conditions in the energy sector are conducive for certification according to this study.

Third Party Pressure

Programs previously listed under the "NGO Emissions Trading" or "Direct Initiative" categories pressure the energy sector to reduce carbon emissions. Simply by offering companies/products that are green, they provide a small amount of pressure on the whole market to consider limiting carbon emissions. NGOs such as Greenpeace, the Pew Center for Climate Change, the World Resources Institute (WRI), and many others are pushing for some sort of carbon emissions solution. These NGO coalitions exert pressure by creating interest and expertise in the reduction of carbon emissions.

Yet no organization is specifically supporting a carbon emissions certification program. Most groups are advocating an emissions trading and offsetting project type system. No equivalent to the WWF for carbon emission certification exists. Unless a third party champions the certification system it probably will not be implemented. A certification system needs a specific body creating its guidelines and regulating it. It is highly unlikely that a company would opt to create and manage a certification system. Trading emissions is simpler for a company to manage (although not necessarily participate in).

Market Niche

There is a market niche available for certification that draws from green consumerism and specifically the EnergyStar market. Green consumers exist, but whether they would be interested in green energy is hard to gauge at the moment. The closest example is found in the deregulation of California's electricity sector (Nieves). In California between 1998 and 2001, consumers were allowed to choose the company from which they received their energy. This was known as the "Customer Credit Account" (California Energy Commission). Among their choices were five companies that offer renewable energy and other green practices: Go Green, Common Wealth Energy, and Green Mountain Energy (1006, Solar, and Wind). Each of these had different options and used a different percentage of renewable energy, but all were better for the environment than the generic power supplier was (Nuclear Age Peace Foundation). Whether it was a lack of information or easy access to information, not knowing the option was available, or not believing it was worth the money (Center for Resource Solutions 3), the green power option

was not as popular as hoped for, accounting for only about 128,000 households (approximately 350,000 people) in 1999 (2). Due to the power crisis in 2001, this option was eliminated in September of that same year. Greater numbers perhaps could have been possible given more time. While demonstrating the general atmosphere of consumers and green energy, this example of a market niche is not precisely applicable. The California "Customer Credit Account" dealt with final consumers and does not illustrate the "business to business" market niche on which the certification is based.

It may be that the consumers just cannot easily buy or identify green friendly products because of a lack of market recognition for companies that are trying to limit their carbon emissions and help the environment. Market recognition for a product is key for any company to have an advantage. Companies such as BP or Shell make big announcements when they implement a carbon emissions reduction plan, but after the first publicity splash there are no visible signs that the company is doing anything, even though the company continues to implement the plan To have a lasting impact on the market, the effort to be green must be rewarded daily. This requires the retailers further down the chain and the final consumers to be constantly reminded of this effort as they buy their inventory and check off their shopping lists. More than the specific consumer market, the certification label is needed to fill a niche in market recognition as a reward system for those companies who are green.

Global Commons Problem

Carbon emissions have an impact worldwide, and pollution in one place is guaranteed to travel and affect another place. Global warming is causing hurricanes and floods in one area of the earth (such as this summer's Prague disaster), and droughts in another (such as the Western half of the United States). No national government wants to make the first dramatic step toward eliminating emissions if no one else does. The reason is twofold: first, acting alone puts the country at an economic and competitive disadvantage (prisoner's dilemma) and second, the country acting alone cannot stop global warming single-handedly, so global warming will continue , and there will be no benefit for the cost incurred.

The convention/protocol method was introduced to combat the transnational nature of global warming. Derailed by international and domestic politics, however, conventions and protocols proved to be too fragile. As a result, the problem persists.

Multiple Drivers

If global warming is not checked, it could be more expensive to rectify than the cost required to reduce emissions in the first place. The insurance industry knows this. Insurance companies are giving incentives to their customers for basic energy efficiency in their homes, businesses, and transportation (Mills). The insurance industry is losing money through damage and insurance claims from more frequent weather disasters, such as floods, hurricanes, and fire. Global warming is believed to be the cause of this rise in disasters. The EPA reports that, "During the first three quarters of 1998, the US insurance industry alone had weather-related claims of more than $8 billion – three times the claims of 1997" ("Preparing"). While the upsurge in natural disasters has not been completely accredited to global warming, it has the insurance industry worried enough to boost support for energy efficiency programs.

Agriculture also is being affected economically. As droughts and floods hit, the sector is losing billions of dollars. Some scientists have concluded that some agricultural areas will benefit from global warming, as the growing season will last longer (US Global Change Research Program). At the present time, however, no benefit seems to be in sight for the farmers as the droughts and floods continue to ruin crops and fields.

Tourism, too, stands to suffer a great deal (Viner and Agnew), as global warming will affect many geographic locations and nations. Indeed, anything relying on an ecosystem will be affected: water supplies, forests, aquatic life, urban infrastructure, and much more (National Assessment Synthesis Team 7). Clearly, a lot is at stake and many potential drivers to support carbon emissions certification.

A Traceable Product

That emissions are intangible is probably the most challenging aspect of carbon emissions. Unlike wood, the carbon emissions are not the product themselves, but are used to create products. Carbon emissions come from the energy that produces almost every product. The product that is made or the company who makes it must be labeled, as the carbon emissions cannot be. One must monitor the carbon emissions but label the product, a hard task, though not impossible. The lack of visibility is a problem for reducing carbon emissions. But as was mentioned in the "Market Niche" section earlier, this is precisely why a certification program would be successful because the label makes the reduction of carbon emissions visible.

Conclusion

A solution to global warming is developing slowly and it is building momentum. While international negotiations have stalled, some individual countries are implementing their own programs by giving a framework to companies to follow and giving them a monetary incentive. Companies and consumers are willing to be a part of the solution. Each year more NGO proposals, partnerships, and programs pledging the reduction of carbon emissions are introduced. Such coalitions are laying considerable groundwork for a future global solution, whether they are government-induced or NGO-driven. Still, an effective solution has yet to be found.

NSMD certification for carbon emissions offers another solution. After looking at both the supply chain and the five identified factors from the forestry certification scheme and comparing them to the energy sector, certification for carbon emissions appears tenable. If companies begin to realize the need for the reduction in carbon emissions, both from an environmental and a business point of view, then they will need a blueprint to follow to validate their emission reductions. With few governments providing such a framework, NGOs are stepping in to fill the void. But if too many of these different systems or programs materialize, then standardization will be opaque, and no one will know the proper baseline for carbon emission reduction. The lack of a baseline will confuse consumers and industries alike. There will be no competitive advantage gained by reducing carbon emissions. The system would have to rely solely on good intentions, which are usually lacking in business. Certification could provide this standardization, although this is also true of many of the other solutions if they were used on a grander scale.

To implement certification, however, much preparation is required and the logistics may be overwhelming. The first problem is the invisibility of carbon emissions. A way must be found to measure the emissions originating at a specific location as well as the emissions related to the energy provided to that location. The pervasiveness of burning fossil fuels, the most significant source of carbon emissions, is extensive. Such ubiquity makes monitoring difficult, yet companies and NGOs are finding solutions to these difficulties and monitoring is becoming more effective.

A second difficulty is the practical enforcement of potential guidelines that would be set forth by a third party. Audits must be made by an independent company to have legitimacy. On a small scale auditing is generally successful, but on a large scale, auditing would demand extensive organization.

Another potential impediment to certification is lack of legitimacy. Only the market gives certification legitimacy and authority. If the market

does not support the certification, it will not work. Non-governmental programs simply do not have the force behind them of government legislation. For this reason, the most legitimate and effective carbon reduction program will have to come from the government.

Though it will be difficult to resolve the problems facing carbon certification, it does seem possible. As such, reasonable speculation about the future of such a certification system can be made. The ultimate ability for NSMD certification for carbon emissions to succeed remains theoretical. Success relies on an optimistic perspective about industry, the market, and capabilities of people. In addition, certification's capacity to effect total emissions depends greatly on its ability to use fossil-fuels' own pervasiveness as an advantage. Industry, the primary "buyer group" accounts for approximately only one-third of the end-use carbon emissions. Another, more applicable, solution would have to be found for residential/commercial and transportation end-use emissions.

At minimum, even a purely theoretical analysis of NSMD carbon emission certification is a useful exercise. It has identified the problems with current solutions, identified strong features that indicate a successful environment where certification could work, critically analyzed the US energy market and found promising weak points to be exploited, and identified a potential market incentive, the "label," which has useful implications. If the NSMD carbon emission certification system, in theory or in practice, is able to fundamentally change how people view the world and live their lives, then it has accomplished a great deal for the environment by increasing awareness. Society must give priority to environmental problems if there is any hope that global warming can be alleviated.

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