Carbon Crime in the Voluntary Market: An Exploration of Modernization Themes among a Sample of Criminal and Non-Criminal Organizations

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Abstract

The international voluntary carbon market allows economic actors to profit financially by selling carbon reduction projects (as carbon credits) in the marketplace. The objective of this work is to examine the ideology of that market and its implications for crime and climate change. More specifically, we compare advertising messages for two sets of actors in the voluntary carbon market: criminal and non-criminal organizations. To carry out this analysis we draw upon a grounded theory approach to analyze marketing websites for a sample of organizations that sell credits. We discover that overall, organizations draw upon ecological modernization ideology to provide opportunities to gain access to investors and victims by emphasizing (1) sustainability; (2) ethical behaviour; (3) economic development; and, (4) technological innovation. Importantly, statistical analyses failed to differentiate between the forms of modernization ideology employed by legal and illegal actors.

Everyone who participates in or studies the carbon offset market know that it is a haven for con artists − Lohmann (2009, p. 4)

Introduction

In 1992 The United Nations Framework Convention on Climate Change (hereafter UNFCCC) was formed as an international treaty to identify, recommend and implement a range of mechanisms to address climate change and other environmental problems (Gouldson and Murphy 1997). In 1997 the UNFCCC employed the Kyoto Protocol to validate a universal goal to reduce greenhouse gas (GHG) emissions, allowing countries to ratify legally binding targets to reduce GHG's and manage these targets through an international emission's trading system made up of two market platforms: voluntary and involuntary. Both voluntary and involuntary markets have expanded [1] despite on-going criticism that they have little to no impact in reducing emissions (Lohmann et al. 2006; Pearse and Böhm 2015).

Parallel to the legitimate market platforms, an illegal "market" for carbon crime is drawing the attention of criminologists, sociologists and political scientists (Bachram 2004; Bianchi et al. 2010; Frunza et al. 2011; Gibbs et al. 2013; Lohmann 2009; Martin and Walters 2013; Walters and Martin 2013; Williams 2013). While much has been done to examine carbon crime in the involuntary market, there is room to further expand this area of study with respect to the voluntary market (see also Walters and Martin 2012). The purpose of this research is to explore the major marketing themes in the voluntary carbon market and determine whether criminal and non-criminal organizations in that market employ different themes. Both the identification of themes as well as the differentiation of organizations by themes is interesting and important. From an orthodox standpoint, the identification of unique criminal characteristics could provide information that helps regulators profile potential carbon credit thieves—perhaps providing political support for the international market by demonstrating it can be successful with more information and better regulation. From a more critical standpoint, however, the comparison between legal and illegal actors may also highlight an important contradiction of capitalism by suggesting that voluntary carbon credit ideology itself creates motivated offenders and suitable targets that ultimately serve to undermine the credibility of that system as a solution to climate change. This second explanation is the one advocated by Lohmann (2009) in his assessment of the carbon credit market.

To determine if it is possible to distinguish between criminal and non-criminal organizations we examine themes that emerge from the websites of organizations that sell carbon credits. We obtained data on all carbon credit organizations that are classified as criminal by the UK's Financial Conduct Authority (N=10) and compared them to ten randomly chosen legal carbon-trading organizations. Prior to presenting the findings of that analysis, we examine the global approach to carbon markets. Next, we briefly examine the structure, rationale and potential crime implications for the involuntary and voluntary carbon markets. After the statistical analysis of the difference between criminal and non-criminal organizations we examine the marketing opportunities for crime in the voluntary carbon market by exploring themes that organizations use to sell carbon credits.

Background

One of the biggest challenges facing the globalized world is climate change (IPCC 2014a, 2014b). The anthropogenic actions of the industrialization process are causing significant environmental damage, including a documented increase in the earth's temperature. As the Intergovernmental Panel on Climate Change (IPCC) formed in

1988 under the guidance of the UNFCCC notes, the environmental consequences of climate change will not only impact social inequality, but radically transform the geographical makeup (e.g. deforestation, rise in ocean waters, etc.) of the world as it stands today (Pearse and Böhm 2015). Warnings about climate change have not gone unnoticed by governments. For example, the UNFCCC formed, in part, as a global governance strategy and as a response to the increasing awareness of environmental problems and impacts of climate change. The adoption of UNFCCC was, according to some scholars, the leading edge of a social transformation that would incorporate ecological welfare into political-economic structures (Spaargaren and Mol 2013). The birth of UNFCCC and the idea that the ecology is increasingly important and beneficial to the economy is now understood in terms of ecological modernization theory (or EMT).[2] EMT emerged to explain the concerted policy and market efforts that are a response to the failings of individual states to address ecological problems (Jänicke 1990; Mol et al. 2009). It provides a complex understanding of post-industrial society, and the increasing importance of the ecology, and the role of governments in emphasizing environmental policy to attain pollution reduction (Anderson and Massa 2000; Christoff 1996; Gouldson and Murphy 1997; Hajer 1995; Harvey 1993; Huber 1982; Jänicke et al. 1993; Weale 1993). In short, EMT emphasizes the importance of both the economy and ecology and those solutions rooted in technological innovation and markets (Böhm et al. 2012; Gouldson and Murphy 1997).[3] Influential EMT advocates Mol and Spaargaren (2000) claim that EMT explains how a political-economic pathway can protect the interests of the environment and economic growth in light of environmental challenges faced by modern society. Subsequent policy developments inspired by the theory have incorporated the state acting as a regulator to market mechanisms, technological advancements and fostered a relationship with civil society based on an environmental ethic (Jänicke 1990).[4]

The Kyoto protocol is a legally binding agreement amongst UNFCCC members to meet greenhouse gas emissions reduction targets and marks the second wave of ecological modernization that relies on autonomous market mechanisms and independent financial actors and investors within a transnational global policy network to decarbonise the global economy (Spaargaren and Mol 2013). The commodification of carbon dioxide – and the technological innovation, research and development surrounding that market – can be viewed as market based solutions to the problem of climate change since carbon credits were now introduced as one cost of doing business. As a result, Newell and Paterson (2010) suggest this is the era of "*Climate Capitalism.*" That is, both the voluntary and involuntary markets are used as a viable response to climate changes without overhauling "the existing system as a precondition for achieving sustainability" (Newell 2010, p.5). Therefore, the decarbonisation of the economy is shaped around current political-economic structures, enacting the same operations as traditional financial markets. Spaargaren and Mol (2013) see carbon market developments as a symbol of reflexive modernity. The international carbon markets are a mechanism to manage environmental problems in an interconnected global society (Newell and Paterson 2010).

While ecological modernization is often used to describe the way that the world is addressing the issue of climate change, especially through the use of carbon markets, we argue that the reliance on carbon markets to solve the problem of ecological destruction caused by capitalism is ineffective and opens up significant opportunities for crime. That is, our view is that crime in the carbon market is a result of our observations of the neo-liberal framework and therefore serves a critical function of capitalism in that it allows for the continuation of economic growth. [5] We now turn to the issue of crime in the carbon market to expand upon our position.

Carbon Markets and Crime

To understand carbon crime, it is important to appreciate that the market is split into involuntary (i.e., "compliance") and voluntary sectors. The involuntary sector is based on an international emissions trading system as well as national and regional compulsory markets (Bayon et al. 2007) [6] Most markets are composed of three flexible mechanisms known as (1) Cap and Trade (or CAP), (2) Clean Development Mechanisms (or CDM) and (3) Joint Implementation (or JI). The CAP mechanism works by allowing countries to buy and sell carbon credits so that countries that release more pollution can buy credits from countries that release less pollution. The CDM mechanism allows a country to receive additional carbon credits for providing financial support to carbon reduction projects in countries that tend to rely on carbon intensive industry. Finally, the Joint Implementation (JI) mechanism allows industrialized countries to purchase carbon credits that are generated by projects in other industrialized countries.

Although regulatory bodies have taken the lead in the development of CDM's and JI, it is generally down to the actions of private actors and civil society institutions that control these projects to attract the neo-liberal capitalist actors to increase wealth and market power. As might be expected, most studies of carbon crime are based on problems in the involuntary market as the majority of the attention on carbon reduction efforts is focused on these markets (see Bachram 200; Bianchi et al. 2010; Frunza et al. 2011; Gibbs et al. 2013; Lohmann 2009; Martin and Walters 2013; Walters and Martin 2012; Williams 2013). For instance, Martin and Walters (2013) analyse four case studies identifying potential threats including computer, state and taxation crime; scams;

corruption; and structural fraud emerging as the result of poor regulation. Not only does this criminal activity take place frequently as the researchers note, it also contributes to market failure and therefore allows problems to continue. Importantly, Gibbs et al. (2013) rely on Cohen and Felson's (1979) theory of routine activities to explain how the involuntary market can produce opportunities for carbon crime in the European Union ETS. They used mental models to pin point potential points of crime. For example, many carbon markets rely on an electronic registration process that is vulnerable to hackers, who can steal credits and obtain information in order to send scam emails requesting financial and account details as part of an individual's investment process. Bachram (2004) identifies this problem as the result of a laissez-faire environment that reduces the role of government in free markets allowing fraud to be committed by large corporations. While Bachram does not draw upon a rational choice perspective as an explanation of carbon crime, it is not difficult to imagine a link between routine activities theory and ecological modernization ideology as an explanation of carbon crime. That is, the implication exists that ecological modernization opens up opportunities for criminogenic markets because markets actors (e.g. corporations, industry interest groups, etc.) sell the hegemonic idea that we can have environmental protection through green technology.

Frunza et al. (2011) also studied the involuntary carbon crime market and note that the impact of carbon crime is extensive when nation-states are considered victims. For instance, tax fraud accounts for nearly 60 percent of money lost because of crime in the involuntary carbon market between 2008 and 2009. Williams (2013) also suggests that the market creates a tremendous opportunity for significant amounts of money laundering.

In this research we focus on crime in voluntary carbon markets. Actors in the voluntary markets freely choose to invest and sell credits in projects that lower or offset greenhouse gas emissions. These carbon reduction projects are normally located in the global South. Bayon et al. (2007) provide an example of the voluntary market using the AES Corporation as an example. The AES strategy to reduce the company's carbon footprint in the U.S. relied on the purchasing of carbon offsets that were generated by employing Guatemalan farmers to plant trees, thereby increasing carbon sequestration. [7] In most instances, however, voluntary carbon markets appear to rely on advances in technology to develop alternative energy sources or reduce current carbon emissions (Taiyab 2005).

As voluntary carbon reduction projects have developed over time, investors have begun to find and market those projects to companies that would like operations to be viewed as "carbon neutral." As a result, a company in a developed country can invest in a carbon reduction project in a developing country to "offset" the harm caused by their carbon emissions. Voluntary carbon reduction projects are therefore developed, verified, brokered and sold. It is within this market and its ecological modernization ideology that crime emerges. That is, voluntary markets are viewed as a practical solution for economic growth and environmental protection but can also facilitate opportunities for crime. Lohmann (2009) stresses the opportunities for corruption that allows negative social and environmental costs to continue (see also Böhm et al. 2012). Yet despite these criticisms, voluntary markets exist.

For purposes of understanding crime in the voluntary carbon market, it is important to understand that the market operates on a "buyer beware" philosophy. In 2013, Interpol uncovered and presented a global map of the types of criminal activity within the voluntary carbon markets that include the false selling of carbon credits, exploitation of weak regulations, tax and security fraud, money laundering and internet crimes (Interpol 2013). The conclusion stressed that the simultaneous goals of profit maximization and greenhouse gas reduction are not compatible. In the UK the Financial Conduct Authority (or FCA) has taken an interest in voluntary carbon fraud in the UK. The FCA specifically reports on its website (10 October 2014),

> *"…You may be offered carbon credit certificates, voluntary emission reductions (VERs), certified emission reductions (CERs) or an opportunity to invest directly in a 'green' scheme or project that generates carbon credits as a return on investment. Carbon credits and VERs certificates are often labelled as 'certified', but this certification is voluntary and involves a wide range of bodies and different quality standards that are not recognized by any UK compensation scheme. The caller may claim carbon credits are 'the new big thing' in commodity trading, industries now have to off-set their emissions, the government is focusing on green developments or that it is a growing market"* (FCA, 2014)

Overall, the FCA warning identifies how individuals and small organizations do invest in these illegal voluntary markets, which have been influenced by policy derivatives prescribed by ecological modernization. That is, we argue that because some people subscribe to ecological modernization as a solution to environmental problems (e.g., that technology and the market can solve the environmental crises) they invest in these projects—some of which are illegal. Thus, voluntary actors in the market use the language of business to address environmental problems, combining it with ecological modernization discourse to create a new product that has more than simple commodity value within the capitalist market tradition (Spaargaren and Mol 2013). Previous research suggests that carbon credits and offsets appear as an eco-friendly, politically reputable investment (Lohmann 2012). Thus, carbon is an *artificial commodity*, a symbolic, permit-like or liability agreement (Martin and Walters, 2013) marketed as the same type of commodity such as fair trade produce (Lovell et al. 2009). Bryant and Goodman (2004) suggest, for instance, that carbon is a conservation seeking commodity providing long term ecological and social development that is consistent with Hajer's (1995) vision of ecological modernization. This particular discourse specifically designed under ecological modernization perspective has not only formed this approach to a low carbon economy, but also the legal and illegal advertising practices used to engage investors. Thus, the opportunity for carbon crime in the voluntary market is situated in a call to action to do something about environmental problems (Gouldner 1976) while it is simultaneously situated in a system of regulation that conceals environmentally responsible discourse and promotes criminal behavior that harms the environment over the long run (Foster 2000)

Gouldson and Murphy (1997) argue those selling carbon credits and offsets utilise the regulatory process that exists within large and small business resulting in a collective ecological corporate culture (Lovell et al. 2009). This has contributed to the introduction of Corporate Social Responsibility (CSR) reports; a non-binding agreement that allows small and large businesses to demonstrate a connection between social and ecological welfare and economics (Aguilera et al. 2007). The purpose of these reports is to be a tool for business practice change by incorporating ecological modernized goals. At face value this practice of investing in the voluntary market suggests a contribution to the welfare of communities (Tate et al. 2010) and appear altruistic (see Aguilera et al. 2007). Yet Bakker (2010) and Polonsky et al. (2010) argue it may simply be green washing the industry. That is, corporations invest in the voluntary carbon market to make a false appearance of ecological welfare to the public and stakeholders.

The voluntary market also allows for the personal regulation of carbon flows because individuals believe they can offset their consumption practices through the market (Spaargaren and Mol 2013). For example, individuals can put the details of their consumption practices into a calculator (e.g., number of miles travelled by air) to determine their individual contribution to the carbon footprint. This footprint can then be offset by purchasing carbon credits that promote projects in the voluntary market (Lovell et al. 2009). It is not surprising that researchers such as Gillenwater et al. (2007) suggests that this type of investment practice is based on a rational choice to justify the continued polluting activities by paying a small amount for a different consumer to lower their pollution. Kotchen (2009) takes this justification idea further and suggests it is also a process to reduce guilt whilst maintaining the same problematic relationship between pollution and resource depletion. It is the ideology of ecological modernization and its resulting faith in the market that is played out at the individual level. The investment in the carbon market reduces the capacity of individuals to re-evaluate consumption practices and the effect those practices have on the earth systems. [8] We now turn to the main purpose of this work which is to examine how these modernization messages show up in criminal and non-criminal websites used for marketing carbon credits and determine if there is a difference in the messages the two sets of actors use.

Data and Methods

We have argued that the voluntary carbon market is constituted within an ecological modernization agenda. Our present concern is to examine how crime in the market is supported by modernization ideology. A qualitative approach is used to locate ecological modernization themes that exist amongst a convenience sample of identified illegally acting carbon trading organisations in the UK. [9] The offending organisations in the sample come from the FCA and represent those organizations that have been identified as acting illegally within the UK carbon market between the years of 2011−2014 (see http://www.fca.org.uk). The FCA reports that there are ten organizations that are currently in operation which investors should avoid because they are running possible investment scams and likely engaged in fraud and identity theft. For each of the companies we were able to access organization websites and use the materials on those websites to carry out a thematic analysis to determine how these organizations drew upon an ecological modernization framework to facilitate their carbon crime. We rely on a grounded theory approach (Glaser and Strauss 2012 [1967]) to identify themes used by illegal organizations as they were reported on the organizational websites used to attract customers. [10] To attract victims, the criminal carbon organizations appear to use the same advertising mechanisms as the non-criminal carbon traders, providing examples of projects and companies that improve environmental performance. However, to gain access to organization details and more specific financial benefits, victims were required to provide additional personal details so that they could be "contacted" by a member of the organization. We were able to construct the following themes from the publically available information on the organization websites: (1) sustainability; (2) ethical behaviour; (3) economic development; and, (4) technological innovation. [11] We then compared the ecological modernization themes found in illegal UK organizations with those that appeared in a random sample of legal UK carbon trading organization to determine if illegal and legal organizations discuss the benefits of carbon trading differently. The random sample of ten legal organizations was taken from the ENDS Carbon Offsets Directory (http://www.endscarbonoffsets.com). The list of voluntary carbon-offset brokers is located in Appendix A of that directory).

To determine whether legal and illegal carbon offset brokers send out different ecological modernization messages we first quantitatively compare ecological modernization themes between illegal and legal carbon trading organizations. Next, we report qualitative data from individual organization websites that illustrates how organizations use these themes to attract potential investors.

Results

Table 1 displays the percentage of criminal and non-criminal carbon trading organizations that employ one of the identified ecological modernization themes (i.e., sustainability, ethical behaviour, economic development, and technological innovation) that emerged in the grounded theory portion of the analysis. The table indicates that there are no statistically significant differences in the percentages of actors in each category. For example, when we examined the differences in the proportions of these two sets of actors using both chi-square and Fisher's Exact test we found no difference between the two sets of actors ($p<0.05$) for any of the modernizations themes. Thus, the type of ecological message sent to investors and victims appears to be statistically identical.

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We now examine these ecological modernization themes in more detail, providing examples of how each theme appears when marketing carbon credits to investors and victims.

Sustainability

The carbon trading market has been set up as part of the economic and policy directives that attempt to combine economic growth with environmental welfare. To attract victims and investors to the voluntary trading sector, the illicit organizations use online advertising to market the increasing supply and demand for carbon credits and offset, as part of the wider environmental reforms within the financial market. This forms the foundation of green market advertising that mirrors legally operating organisations.

Similar to non-criminal traders, criminal traders combine the opportunity to make profit and prevent further environmental deterioration through environmental technological reform that ensures future sustainability. To attract victims, criminal organizations prioritise the problem of climate change, environmental deterioration and animal extinction; one of the most "*pressing*" issues facing the world. However, these problems can be stopped by buying credits and making production sustainable. That is, individuals can buy credits to "*reduce carbon footprints*" and improve worldwide "*sustainability*" through the investment of offset projects. In total, 18 of the 20 organizations (90%) noted that "sustainability" could be achieved by encouraging a voluntary carbon market. Moreover, sustainability could be achieved while making a profit. For example, one legally operating actor suggests that investors should "*provide a loan and earn 5% [to] help build more sustainable, self-sufficient communities.*" While one criminal organization states "[*our company] can help your entity better understand how focusing on sustainability can benefit now and avert risks later*." In short, the language of sustainability is consistent across legal and illegal actors.

Ethical Behaviour

Seventeen of the twenty organizations in the sample advertise that investments in carbon credits are acts of social and environmental responsibility. This marketing angle advertises "environmental justice" because carbon credit investment is the right thing to do for low-income countries to help them live sustainable lifestyles. This is marketed through advertising slogans such as *"social and environmentally responsible investment"* and *"helping other parts of the world."* The data demonstrate how both legal and illegal organisations have used the same ecological modernization discourse used to attract investors and victims. One criminal company suggests:

> *Bottom Line: It benefits everyone on the planet to help keep our wild spaces alive and growing. Embracing a greener lifestyle, means saving money on your energy use, improving your health, padding your bank balance, and ultimately, improving your overall quality of life and at the same time, you can preserve furry animals from becoming extinct.*

Most carbon credit organizations in the voluntary market, then, say their projects are a *"beacon of ethical conduct.*" This draws attention to the role of greening corporations as they will be able to do the "*right thing*" for stakeholders in companies concerned about environmental practices, as well as the "*right thing*" for the planet. Ironically, one illegally operating company suggests that it can even help customers obey confusing regulations by serving as a "*regulatory and protocol advisory.*" Thus, the role of green marketing in promoting an environmental ethic is influential for these companies to attract investors and victims.

Economic Development

Many legal and illegal organizations in the voluntary market (i.e., 15 out of 20 in the sample) promote consumer choice by offering different projects that can increase production. For example, a victim or investor could buy credits in hydro-electricity, reforestation, or other specific works in developing countries. These organizations advertised that they are "*boosting local economies"* and "*production*" and increasing jobs within those communities. Not only will investment be environmentally beneficial, but it will be socially and economically beneficial and provide a "*great deal of meaning"* for the investor by "*helping other parts of the* [less developed] *world* [develop]. *"* Many times this discourse is emphasized by providing visual images (i.e., pictures) of third world poverty on the marketing website. This serves to reinforce the "development" aspect of carbon dioxide commodification. For instance, one non-criminal company notes:

> *We aim to promote projects that provide social and environmental benefits, create jobs and development in the local communities and entail a net transfer of wealth to deprived areas*.

That is, marketing targets victims and investors by focusing on doing good for the environment and the economy in "less developed" countries of the global South.

Organizations suggest that consumption does not need to be reduced if people invest in the voluntary market. That is, promoting investments in environmentally sustainable and renewable technologies in countries that may not be accustomed to the same carbon intensive lifestyles will negate and balance CO_2 emissions. This combination of current lifestyles (in developed countries) with offset projects (developing countries) is referred to as a "*carbon green world.*" Investing in carbon offset projects is marketed as an "*easy option*", for environmental reform, stimulating further interest in investment by arguing individuals or corporations will be engaging in environmentally friendly practices, without having to change their specific lifestyle. This process highlights the "win-win" scenario of environmental protection and economic prosperity for investors.

Technological Innovation

Ten out of twenty actors (50%) marketed *technology as the* "*driving force*" for environmental change, noting that it is possible to *"offset unavoidable carbon footprint through projects*." Thus, the "*use of clean and efficient technologies"* is therefore often essential to the voluntary industry. Most organizations use technology and projects as equivalent. Projects that use less carbon than traditional production methods save money that can be invested elsewhere—such as in ethical development as previously suggested. For instance, one company describes its project as follows:

> *We use the surplus funds from our wind turbines to support social and environmental projects in both our Indian and UK communities.*

Companies that sell credits claim that the demand for credits will only intensify as regulations are put in place and suggest that projects that employ technology are the way out of the problem. As a result, investment in technology is a solution to the production problem and a "*wealth generating investment opportunity"* that can be "*presented for commercial use."* In short, the idea that technology will solve the problem is consistent voluntary market discourse for both criminal and non-criminal corporations.

Discussion and Conclusion

The research set out to examine the marketing strategies used by criminal and non-criminal organizations operating in voluntary carbon market with an aim of determining if there were major differences between the two sets of actors. That is, we might expect non-criminal organizations to advertise differently, perhaps stressing ethical behaviour more than criminal organizations. Finding a difference between criminal and non-criminal organizations might suggest that a criminal profile could be developed to help regulate the fraud in the market. However, we find little difference between the two types of organizations. Instead, there are consistent patterns with respect to what is advertised by both criminal and non-criminal organizations. As noted, both sets of actors focus on sustainability, ethical behaviour; economic development, and technological innovation. These themes are consistent with the idea that better forms of production -- that emphasize the environment -- can impact climate change. However, as noted in the critical environmental literature, market-based mechanisms are not effective, do not address foundational ecological problems, and merely support opportunities for criminal activity (Pearse and Böhm 2015).

As emphasized, the ideology of ecological modernization appears to be emphasized in the voluntary market and is focused on sustainability, ethical behavior, economic development, and technological innovation. Opportunities for crime are inherent in the structure of the carbon market via routine activities because they produce an easy target – a target that has been socialized to believe that investment in the market will make money and solve the climate change problem while simultaneously promoting social justice.

The voluntary carbon market appears to promote two forms of crime. First, the international voluntary carbon market advertises and promotes a corporate view of being green that increases ecological disorganization by promoting production (Lynch & Stretesky 2003; Lynch et al. 2013). This idea is not new and several researchers outside criminology have made similar points. Schnaiberg (1980), for instance, suggested that market-based policy developments do not stimulate environmental and social action, it simply 'greens' capitalism, ensuring that it is immune from an ecological critique (see also Curran 2009). However, there is an important difference between our observations of the voluntary market and other critiques of ecological modernization. We find, for instance, that social themes *have* been merged with the voluntary carbon credit market, and ethical behavior (as emphasized by social and environmental justice) often appears alongside most claims of greening production. As a result, social justice and ecological justice are simultaneously marketed.

Second, the market promotes traditional fraud and theft by using those marketing messages to appeal to victims who wish to be 'green' through investment. As a result, motivated offenders and victims come together in the marketplace because ecological modernization ideology is such a strong behavioural driving force. We emphasize that it is unlikely that government regulation will have a large impact on carbon crime in the voluntary market because ecological modernization ideology is hegemonic. That is, as long as offenders and victims operate within the powerful set of ideological conditions that legitimate ecological modernization opportunities, these crimes cannot be sufficiently reduced by guardianship.

One potential bright spot in our analysis suggests that because traditional carbon crime is so embedded in the voluntary market it appears, as noted, uncontrollable. That is, criminal and non-criminal organizations are not distinguishable and draw upon the same themes to market to victims and investors. As a result, a contradiction emerges because as the level of fraud increases it may also sow the seeds of its own destruction. That is, the level of traditional crime in the carbon market may ultimately put an end to that market because of the erosion of public trust.

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Endnotes

[1] Initial proposals for carbon markets were promoted heavily the United States and OECD countries (Bernstein et al. 2010). However, it is the EU ETS that has achieved greatest success compared to other involuntary and voluntary markets such as the New Zealand Emissions Trading Scheme (NZ ETS), California's Cap and Trade Program and the *Chicago Climate Exchange* (CCE)(for a full review, see Hood 2010).

[2]EMT is a response to environmental problems that argues these problems can be solved within capitalism. Criticism of this perspective is found in the political economy literature, such as the treadmill of production (Schnaiberg 1980; Stretesky, Long and Lynch 2013)

[3] The purpose of which was to create pro-active policy developments such as those identified in the publication of the Brundtland Report (1987) that considered the poor environmental records of western economies, multinational corporations and how these could be adapted to protect the welfare of the environment. Buttel (2000) argues that despite various and differing contributions about EMT, its implications for policy, such as the Brundtland Report, led to the radical transformation broader political-economic structures. This was through both a macro-economic shift transforming resource intensive industries to service and knowledge industries reorienting technological infrastructure and micro-economic shift proposing to and increasing clean technological developments that reduce negative effects on the environment (Gouldson and Murphy, 1997).

[4] The result is the restructuring of the the outcome of which, to has maintained the role of capitalist markets by that it has been argued can be restructured to remedy environmental problems (Revell, 2007).

[5] This is known as decoupling. This concept draws heavily on the notion of decoupling-that the economy can grow even as carbon toxic releases decline.

[6] Give some examples of schemes that must be followed such as the European Union Emissions Trading System.

[7] These projects can often be described as a form of "greenwashing." For example see Greer and Bruno (1996).

[8] Brisman and South (in press) present a similar argument about ecological modernization and water. Brisman, Avi and Nigel South. (in press) "State-corporate environmental harms and paradoxical interventions: Thoughts in honour of Stanley Cohen. In Raghnild Solund (ed.) *Green Criminology and Political Activism*. Palgrave.

[9] Some of these websites have been removed from the internet. That is, once discovered by authorities they were taken down so as to not draw additional attention to the organization. We were able, however, to locate 10 of the 13 websites.

[10] Themes of ecological modernization used to explain legitimate trading organisations would likely be the same for illegal organisations, based on the assumption that they would use the same marketing and advertising techniques to attract victims as would a legitimate trader.

[11] Eight out of ten organizations acted as both as a consultancy organization and a financial trader while the other two organizations were promoted as consultancy firms that work with financial traders.

Table 1. Legal and Illegal Carbon Trading Organizations and Ecological Modernization Themes

Theme	Legal % Yes	Illegal % Yes	Significance[a]
Sustainability	80% (8)	70% (10)	0.61
Ethical behaviour	100% (10)	70% (7)	0.06
Economic development	70% (7)	80% (8)	0.61
Technological innovation	70% (7)	30% (3)	0.07

Notes: *n*s are in parentheses. [a] The reported significance levels are calculated from chi-squared tests. Due to the small sample sizes, we also calculated Fisher's Exact test values. In all cases the significance values were higher than the reported chi-square values.

Appendix 1. List of Legal and Illegal Carbon Trading Organizations in the Analysis

Legal	Illegal
Blue Green Carbon Offsetting	Capital Carbon Credits
Carbon Managers	Carbon Advisory Council
Carbonica	Carbon Credit International
Clear the Carbon Offset Company	Carbon Credit Offsetting
Climate Care	Carbon Credit Specialists
Climate Stewards	Carbon Green Solutions
Sindicatum Sustainable Resources	Carbon Solutions
The Carbon Neutral Company	EAC Consultancy
The Converging World	Green Carbon Direct Limited
The Original Carbon Company	Independent Carbon