

THE CURIOUS CASE OF GREENING IN CARBON MARKETS

BY

WILLIAM BOYD* & JAMES SALZMAN**

Over the last several years, so-called carbon markets have emerged around the world to facilitate trading in greenhouse gas credits. This Article takes a close look at an unexpected and unprecedented development in some of these markets—premium “green” currencies have emerged and, in some cases, displaced standard compliance currencies. Past experiences with other environmental compliance markets, such as the sulfur dioxide and wetlands mitigation markets, suggest the exact opposite should be occurring. Indeed, buyers in such markets should only be interested in buying compliance, not in the underlying environmental integrity of the compliance unit. In some of the compliance carbon markets, however, higher quality green credits have emerged in recent years as important currencies for a number of buyers, representing a dynamic that we refer to as “Gresham’s Law in reverse”—more stringent currencies arising alongside and even displacing inferior currencies. This Article provides the first recognition and analysis of green differentiation in carbon markets. We explore a range of explanations for this curious development. We then identify potential lessons for the design and evolution of future carbon markets and, more generally, environmental compliance markets.

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* Associate Professor of Law, University of Colorado Law School; Fellow Renewable and Sustainable Energy Institute (RASEI).

** Samuel F. Mordecai Professor of Law and Nicholas Institute Professor of Environmental Policy, Duke University.

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I. INTRODUCTION

In 2008, Hungary made news in the climate change world when it announced the sale of six million greenhouse gas (GHG) reduction credits to Spain, the largest sale in the world at that time.¹ The fact that Hungary was selling emissions credits (known as Assigned Amount Units or AAUs) to Spain was not surprising, nor was its earlier sale of two million credits to Belgium.² As members of the European Union (EU), Spain and Belgium have committed under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol, Kyoto, or Protocol) to reducing their GHG emissions eight percent below 1990 levels by 2012,³ and this reduction can be met by a combination of both actual emissions reductions and the purchase of emission reduction credits.

What was surprising was the sales strategy of Hungary. It proclaimed that its reduction credits were especially valuable because the funds raised by the sale would be invested in energy efficiency projects in residential and public sector buildings rather than simply going into the national treasury to be used on roads, pensions, or some other general need.⁴ Nor was Hungary's strategy unique. Over the past three years, Ukraine, the Czech Republic, Latvia, Poland, and other eastern and central European countries have announced similar transactions.⁵

These all have been described as so-called "Green Investment Scheme" (GIS) deals.⁶ GIS is a self-imposed commitment by potential seller countries

¹ See Michael Szabo, *Spain Buys 6 Million Emissions Rights from Hungary*, REUTERS, Nov. 13, 2008, <http://www.reuters.com/article/idUSTRE4AC50420081113>.

² See *id.*

³ See Kyoto Protocol to the United Nations Framework Convention on Climate Change, art. 3, ¶ 1, annex B, Dec. 10, 1997, 2303 U.N.T.S. 214.

⁴ See Szabo, *supra* note 1.

⁵ Andreas Tuerk et al., *Green Investment Schemes: First Experiences and Lessons Learned* 31 tbl.4 (Central European University Center for Climate Change and Sustainable Energy Policy and Joanneum Research, Working Paper, 2010) (reviewing GIS efforts in 11 central and eastern European countries). The largest transaction to date has been the Czech Republic's 2009 sale of 40 million AAUs to Japan. *Id.*

⁶ See WILLIAM BLYTH & RICHARD BARON, OECD ENV'T DIRECTORATE & INT'L ENERGY AGENCY, GREEN INVESTMENT SCHEMES: OPTIONS AND ISSUES 7 (2003) ("The purpose of Green Investment Schemes (GIS) is to promote the environmental efficacy of transfers of excess AAUs, by earmarking revenues from these transfers for environmentally-related purposes in the seller countries. This should act to improve the marketability of AAUs from some seller countries." (citation omitted)); ALEXEY KOKORIN, INT'L INST. FOR SUSTAINABLE DEV. AND CLIMATE CHANGE KNOWLEDGE NETWORK, GREEN INVESTMENT SCHEMES AS A WAY OF PROMOTING ENVIRONMENTALLY-

that the income generated from sale of their credits will go to environmental projects.⁷ There has been a comparable development in the Clean Development Mechanism (CDM) market, where an increasing number of certified emissions reductions (CERs) are held out as meeting a “Gold Standard” of exceptional environmental quality.⁸

It is important to note that these markets for “green” AAUs and CERs are *not* mandated by the Kyoto Protocol. Nascent and still developing, they are entirely voluntary creations with no regulatory oversight. The problem is that this shouldn’t be happening, not if past experience with other environmental compliance markets is any guide.

Differential “greening” would be perfectly understandable in the development of voluntary markets such as organic produce or paper with recycled content. Here, green consumers are explicitly buying environmental integrity but have difficulty choosing among competing products.⁹ To meet this need, information intermediaries such as standards and certification bodies or rating agencies emerge to resolve questions of trust and quality and to fill gaps due to lack of regulatory oversight.¹⁰ Put simply, these bodies ensure that buyers know what they are getting when faced with a range of purchasing options.

But regulatory markets, such as those created by the Kyoto Protocol, are very different from those for organic produce or recycled paper. These are entirely artificial markets created by law with one product for sale—compliance credits. Belgium and Spain surely are not green consumers. As rational economic actors, they and other buyers in these markets should simply be concerned about the cost of compliance—whether they have enough emissions reduction credits to meet their Kyoto obligations at low cost. This has certainly been the case in other environmental compliance markets.

Classic pollution reduction markets, such as the Clean Air Act’s¹¹ sulfur dioxide (SO₂)¹² and chlorofluorocarbon (CFC) markets,¹³ and resource allocation markets, such as individual transferable quota schemes in

SOUND COOPERATION AMONG RUSSIA, CANADA, JAPAN AND OTHER NATIONS UNDER THE KYOTO PROTOCOL 2 (2003).

⁷ See BLYTH & BARON, *supra* note 6, at 7; KOKORIN, *supra* note 6, at 2.

⁸ See Press Release, Gold Standard Foundation, Introducing the Gold Standard, available at http://www.cdmgoldstandard.org/fileadmin/editors/files/1_communication/handout/GS_in_brief.pdf; see also Kelly Levin et al., *Can Non-State Certification Systems Bolster State-Centered Efforts to Promote Sustainable Development Through the Clean Development Mechanism?*, 44 WAKE FOREST L. REV. 777, 783–88 (2009) (describing the Gold Standard and its relationship to the CDM).

⁹ See generally Jeffrey J. Minneti, *Relational Integrity Regulation: Nudging Consumers Towards Products Bearing Valid Environmental Marketing Claims*, 40 ENVTL L. 1327 (2010) (discussing eco-labeling and environmental marketing regulation).

¹⁰ *Id.* at 1366.

¹¹ 42 U.S.C. §§ 7401–7671q (2006).

¹² See *id.* § 7651b (establishing SO_x allowance trading program).

¹³ See *id.* § 7671f (establishing allowance trading program for class I and class II ozone depleting substances). Chlorofluorocarbons are class I ozone depleting substances. *Id.* § 7671a.

fisheries,¹⁴ have not tended toward any sort of greening or voluntary differentiation. Nor have offset markets such as wetlands mitigation banking or species banking, even though issues of quality and fungibility are notoriously problematic in these markets.¹⁵ In all of these environmental markets and many more, the trading currency has remained unchanged and unchallenged—whether a kilogram of fish or a ton of pollutant. Unlike apples or oranges, there has been one and only one purchasing option. How sustainably the fish was caught or emission reduction achieved has been irrelevant and will likely remain so. Regulated parties want compliance or access to the resource at lowest cost, period. Yet this is not happening in the Kyoto markets. Something else is going on.

To understand carbon markets, then, we need to understand why green differentiation is happening when least expected. Why is Gresham's Law¹⁶ occurring in reverse—superior currencies emerging alongside and, in some cases, driving out cheaper currencies? Explaining this development requires that we examine the role of governments as market participants and understand the political economy driving government decision-making in these markets.

Our central thesis is that carbon markets operate quite differently when governments are major players. This raises obvious questions about market design, whether one might expect to see similar greening dynamics in markets involving private actors, and the evolution of future carbon markets. Indeed, contrary to Gresham's Law, it seems quite likely that the premium "green" currencies currently emerging in the Kyoto compliance markets will lead to tighter rules and higher compliance standards for future carbon markets at international, regional, and national levels.

Part II provides a general overview of the carbon markets, highlighting the differences between the voluntary carbon markets and the compliance carbon markets. Part III discusses the most important environmental integrity concerns that have arisen in compliance carbon markets, in particular the so-called "hot air" problem from over-allocation of emissions allowances under the Kyoto Protocol and lack of additionality associated with certain CDM projects. Part IV considers the lessons from other environmental compliance markets, demonstrating the lack of any green differentiation in these markets. Part V contrasts these experiences with the

¹⁴ COLIN W. CLARK, *THE WORLDWIDE CRISIS IN FISHERIES: ECONOMIC MODELS AND HUMAN BEHAVIOR* 23 (2006).

¹⁵ See Deborah Fleischer & Jessica Fox, *The Pitfalls and Challenges*, in *CONSERVATION & BIODIVERSITY BANKING: A GUIDE TO SETTING UP AND RUNNING BIODIVERSITY CREDIT TRADING SYSTEMS* 43, 43–44 (Ricardo Bayon et al. eds., 2008); Dustin J. Edwards, *Wetland Mitigation Banking: Is the Current System Beyond Repair?*, 16 *TUL. ENVTL. L.J.* 445, 457–59 (2003) (discussing wetlands mitigation).

¹⁶ Gresham's Law holds that under certain circumstances "bad money" will drive "good money" out of circulation. See generally Frank Whitson Fetter, *Some Neglected Aspects of Gresham's Law*, 46 *Q. J. ECON.* 480 (1932) (providing overview of development and application of Gresham's Law); James Salzman & J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 *STAN. L. REV.* 607, 637, 665 (2000) (discussing Gresham's Law in context of environmental trading markets).

evolution of greened carbon credits in the Kyoto markets. Part VI offers a range of explanations for these developments and Part VII explores lessons this experience offers for the future of carbon markets.

II. CARBON MARKETS 101

The theory of emissions trading rests on the premise that reduction and sequestration of GHGs across different sectors, activities, and geographies can be made fungible and therefore amenable to trading.¹⁷ Because GHG emissions are global and well-mixed in the atmosphere, it should not matter from an atmospheric standpoint where the reductions (or sequestrations) occur.¹⁸ Put more crudely, under the standard economic approach to GHG emissions trading, a “ton is a ton is a ton” regardless of whether it comes from a reforestation project in Tanzania, an industrial gas destruction project in China, or reductions at a coal-fired utility in Germany.¹⁹ In theory, this fungibility enables “where and when flexibility” with respect to GHG emissions reductions and sequestration activities, thereby allowing mitigation efforts to proceed in the context of a robust market instrument at the lowest marginal cost.²⁰ This premise provides the foundation for the so-called carbon markets,²¹ which are designed to allow trading of emissions reduction and sequestration credits from various activities in various

¹⁷ See LAWRENCE H. GOULDER & WILLIAM A. PIZER, RES. FOR THE FUTURE, *THE ECONOMICS OF CLIMATE CHANGE* 7–9 (2006) (discussing emissions trading and other policy instruments for reducing greenhouse gas emissions).

¹⁸ *Id.* at 11.

¹⁹ While emissions trading rests on the premise that all reductions or sequestrations can be made fungible, the emergence of green differentiation in carbon markets illustrates the difficulties of ensuring commensurability. See *infra* Part V; see also William Boyd, *Ways of Seeing in Environmental Law: How Deforestation Became an Object of Climate Governance*, 37 *ECOLOGY L. Q.* 843, 891–98, 911–15 (2010) (discussing challenges of commensurability in translating forest carbon into compliance carbon and general problem of equivalence in environmental law); Donald MacKenzie, *Making Things the Same: Gases, Emission Rights and the Politics of Carbon Markets*, 34 *ACCT., ORGS. & SOC'Y* 440, 440 (2009) (analyzing how commensurability is established between emissions reductions activities and the role of such commensurability in providing “conditions of possibility” for emerging carbon markets); Michel Callon, *Civilizing Markets: Carbon Trading Between in vitro and in vivo Experiments*, 34 *ACCT., ORGS. & SOC'Y* 535, 540 (2009) (discussing the establishment and stabilization of “equivalences” between different greenhouse gases as a critical prerequisite for economic valuation and the functioning of carbon markets); Peter Levin & Wendy Nelson Espeland, *Pollution Futures: Commensuration, Commodification, and the Market for Air*, in *ORGANIZATIONS, POLICY, AND THE NATURAL ENVIRONMENT: INSTITUTIONAL AND STRATEGIC PERSPECTIVES* (Andrew J. Hoffman & Marc J. Ventresca eds., 2002) (examining the role of “commensuration” in creating tradable pollution permits and sustaining market-based approaches to air pollution control); Salzman & Ruhl, *supra* note 16, at 609–15 (discussing challenges of establishing fungibility in environmental markets).

²⁰ Note the related issue of temporal (“when”) flexibility of emissions reductions given the long residence times of carbon dioxide (CO₂) and other GHGs in the atmosphere. See GOULDER & PIZER, *supra* note 17, at 11 (discussing “where” and “when” flexibility associated with GHG emissions trading systems).

²¹ We use the phrase “carbon markets” as shorthand for GHG markets.

places as a means of ensuring that overall reductions occur at the lowest possible cost.²²

Based on this foundation, today's carbon markets come in two main flavors: voluntary and compliance. In the voluntary markets, buyers and sellers trade carbon offsets of various types for the purpose of offsetting the emissions associated with a particular activity. Many, but not all, of the buyers of voluntary offsets are interested primarily in the reputational benefits that come from offsetting a portion of their emissions, and thus want some assurance that the purchased offsets have environmental integrity.²³ But because of the high information costs of establishing such integrity on a case-by-case basis, multiple information intermediaries have emerged in the form of standards bodies for the purpose of ensuring the credibility of offsets sold in the voluntary markets, including, for example, the Voluntary Carbon Standard,²⁴ the Climate Action Reserve,²⁵ and the Chicago Climate Exchange.²⁶ Some of these standards maintain their own registries and issue their own units. Several have developed extensive rulebooks, protocols, and methodologies for project accounting, reporting, and verification.²⁷ Outside of basic consumer protection laws, there is very little regulation of the voluntary carbon markets. Some have described these markets as a wild west, buyer-beware environment.²⁸

The size of the voluntary carbon markets, in value and volume, has grown significantly over the last decade, but is still quite small when compared to the compliance markets. In 2009, total market volume was around 87 million tons and total value was around \$388 million.²⁹

²² Obviously, designing and operationalizing such a market is quite challenging, particularly as the number of GHGs, sectors, and activities included within the market increase. This Article does not address these broader market design challenges.

²³ INT'L ENERGY AGENCY GREENHOUSE GAS RESEARCH & DEV. PROGRAMME, VOLUNTARY CARBON OFFSETS 17 (2008), available at http://www.ieaghg.org/docs/general_publications/Carbon%20Offsetsweb.pdf. Some buyers are also likely interested in gaining experience in the carbon markets as they prepare for emerging compliance markets. *Id.*

²⁴ See Voluntary Carbon Standard, About the VCS, <http://www.v-c-s.org/about.html> (last visited Feb. 13, 2011).

²⁵ See Climate Action Reserve, Program, <http://www.climateactionreserve.org/how/program/> (last visited Feb. 13, 2011).

²⁶ See Chicago Climate Exchange, Climate Change Exchange, <http://www.chicagoclimatex.com/index.jsf> (last visited Feb. 13, 2011).

²⁷ See ANJA KOLLMUSS ET AL., HANDBOOK OF CARBON OFFSET PROGRAMS: TRADING SYSTEMS, FUNDS, PROTOCOLS AND STANDARDS 5–6 (2010) (providing overview of various voluntary offset standards).

²⁸ *E.g.*, JONATHAN L. RAMSEUR, CONG. RESEARCH SERV., RL 34241, VOLUNTARY CARBON OFFSETS: OVERVIEW AND ASSESSMENT 11 (2009); Neal Dikeman, *EcoSecurities Founder Says Carbon Markets Work*, GREEN TECH BLOG (May 19, 2008, 11:53 AM), http://news.cnet.com/8301-11128_3-9947454-54.html.

²⁹ This figure includes both project-based voluntary market transactions and transactions under the Chicago Climate Exchange, which functions more like an allowance market. ALEXANDRE KOSSOY & PHILIPPE AMBROSI, WORLD BANK, STATE AND TRENDS OF THE CARBON MARKET 2010 at 1 tbl.1 (2010).

The compliance markets, in contrast, are much larger (about \$143 billion in 2009) and operate at multiple levels.³⁰ At the “global” level, the Kyoto Protocol flexibility mechanisms—emissions trading, Joint Implementation (JI), and the CDM—constitute a Kyoto compliance market, where specific Kyoto units (AAUs, CERs, emission reduction unit (ERUs), and removal units (RMUs)) are traded and ultimately used by the Annex B parties to demonstrate compliance with their Kyoto reduction targets.³¹ Within the Kyoto compliance market, there is an important distinction between trading of emissions allowances (AAUs issued to the parties based on their initial “assigned amounts”) and project-based offset credits (CERs or ERUs issued under the CDM or JI) that can be used for compliance purposes.³²

Underneath the Kyoto market, there are regional and national compliance markets that operate primarily as mechanisms intended to help certain Kyoto parties meet their Kyoto obligations. The largest of these is the EU Emissions Trading System (EU ETS) (2009 value of about \$118 billion), which provides the primary Kyoto compliance mechanism for the EU Member States.³³ The EU ETS began operations in 2005, with a first trial phase running through 2007.³⁴ Phase II matches the first Kyoto commitment period (2008–2012), and the EU has committed to a Phase III (2013–2020)

³⁰ *Id.*

³¹ See Kyoto Protocol to the United Nations Framework Convention on Climate Change, *supra* note 3, art. 17 (establishing emissions trading mechanism), art. 6 (establishing joint implementation mechanism), art. 12 (establishing CDM mechanism); see also U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, KYOTO PROTOCOL REFERENCE MANUAL ON ACCOUNTING OF EMISSIONS AND ASSIGNED AMOUNT 11, 15–18 (2008), available at http://unfccc.int/resource/docs/publications/08_unfccc_kp_ref_manual.pdf [hereinafter KYOTO REFERENCE MANUAL] (describing different flexible mechanisms and various Kyoto units used under the different mechanisms).

³² See KYOTO REFERENCE MANUAL, *supra* note 31, at 13–14, 17 (noting that under Kyoto each Annex B Party is assigned a total emissions target relative to its 1990 baseline, and that the quantity of the initially assigned amount is broken into AAUs, each of which represents an allowance to emit one metric tonne of CO₂ equivalent (tCO₂e)). By permitting trading of AAUs among the Annex B Parties, the Kyoto Protocol allows these Parties to choose between making emissions reductions at home or buying allowances to cover part of their compliance obligations. In addition to AAU emissions trading, the Protocol’s JI mechanism allows an Annex B Party to invest in an emissions reduction or sequestration projects in other Annex B Parties and receive credits—ERUs—that can then be used to meet the buyer’s Kyoto compliance obligation. *Id.* Under the CDM mechanism, an Annex B Party can buy compliance credits—CERs—from projects in non-Annex B Parties. *Id.*

³³ See KOSSOY & AMBROSI, *supra* note 29, at 5 (providing data on size of the EU ETS relative to other carbon markets); David M. Driesen, *Linkage and Multilevel Governance*, 19 DUKE J. COMP. & INT’L L. 389, 392 (2009) (noting that the EU chose to use emission trading as the main mechanism for complying with the Kyoto Protocol).

³⁴ See Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 Establishing a Scheme for Greenhouse Gas Emission Allowance Trading Within the Community and Amending Council Directive 96/61/EC, arts. 10, 11(1), 2003 O.J. (L 275) 32, 36; see also A. DENNY ELLERMAN & PAUL L. JOSKOW, PEW CTR. ON GLOBAL CLIMATE CHANGE, THE EUROPEAN UNION’S EMISSION TRADING SYSTEM IN PERSPECTIVE iii (2008), available at <http://www.pewclimate.org/docUploads/EU-ETS-In-Perspective-Report.pdf> (noting that the EU ETS began in 2005 with a trial phase that ran through 2007).

regardless of what happens in the international climate negotiations.³⁵ In contrast to Kyoto, which applies to governments, the EU ETS covers private sector entities (more than ten thousand installations in major energy and industrial sectors across the twenty-seven participating jurisdictions).³⁶ These covered entities are allowed to tender three units for compliance purposes: emissions allowances (EUAs) and certain types of CERs and ERUs issued under the CDM and JI Kyoto mechanisms.³⁷

Outside of Kyoto, there are several other existing and emerging compliance markets at the subnational level. The Australian state of New South Wales and the Canadian province of Alberta both operate their own provincial-level compliance systems.³⁸ In the United States, the Regional Greenhouse Gas Initiative (RGGI), which went live in 2009, operates a cap-and-trade system for carbon dioxide (CO₂) in the power sector in ten mid-Atlantic and Northeastern states, and allows for the trading of emissions allowances and offsets subject to its own particular rules.³⁹ California is moving toward the adoption of a cap-and-trade system that would start in 2012, and is also exploring ways to link its system with those in several other western states and Canadian provinces through the Western Climate Initiative (WCI).⁴⁰ All of these emerging compliance markets are developing their own rules, while exploring various possibilities for linkage with other existing and emerging markets.⁴¹ Given the differences between these systems, however, it is unclear whether and how they will link to other

³⁵ See *Questions & Answers on the Revised EU Emissions Trading System* (Dec. 17, 2008), available at http://www.travellingeuets.com/@api/deki/files/78/=Memo_08-796_REVISÉD_-_clean.pdf (providing overview of EU ETS and revisions for the Phase III period (post-2012)) [hereinafter European Comm'n Memorandum]; see also ELLERMAN & JOSKOW, *supra* note 35, at 1 (noting that the EU ETS is expected to endure independent from any existing or future international climate agreements).

³⁶ European Comm'n Memorandum, *supra* note 35.

³⁷ *Id.* CERs and ERUs are only allowed for certain activities, pursuant to the so-called linking directive. See Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 Amending Directive 2003/87/EC Establishing a Scheme for Greenhouse Gas Emission Allowance Trading Within the Community, in Respect of the Kyoto Protocol's Project Mechanisms, 2004 O.J. (L 338) 18–21.

³⁸ See Government of Alberta, *Greenhouse Gas Reduction Program – Albert Environment*, <http://environment.alberta.ca/01838.html> (last visited Nov. 17, 2010); NEW SOUTH WALES GREENHOUSE GAS REDUCTION SCHEME, INTRODUCTION TO THE GREENHOUSE GAS REDUCTION SCHEME (GGAS) (2010), available at <http://greenhousegas.nsw.gov.au/documents/Intro-GGAS.pdf>.

³⁹ See REGIONAL GREENHOUSE GAS INITIATIVE, OVERVIEW OF RGGI CO₂ BUDGET TRADING PROGRAM (2010), available at http://rggi.org/docs/program_summary_10_07.pdf; Regional Greenhouse Gas Initiative, Welcome, <http://rggi.org/home> (last visited Oct. 30, 2010) (identifying the ten northeastern and mid-Atlantic states participating in RGGI).

⁴⁰ See Assemb. B. 32, 2006 Leg., Reg. Sess. (Cal. 2006); CAL. AIR RES. BD., CLIMATE CHANGE SCOPING PLAN: A FRAMEWORK FOR CHANGE at ES-1 (2008); CAL. AIR RES. BD., PROPOSED REGULATION TO IMPLEMENT THE CALIFORNIA CAP-AND-TRADE PROGRAM, Appendix A: Proposed Regulation Order (Oct. 28, 2010); WESTERN CLIMATE INITIATIVE, DESIGN FOR THE WCI REGIONAL PROGRAM at 1–2, DD-2 (2010).

⁴¹ See Judson Jaffe et al., *Linking Tradable Permit Systems: A Key Element of Emerging International Climate Policy Architecture*, 36 *ECOLOGY L.Q.* 789, 790–91 (2009) (discussing various linkage options).

Kyoto compliance markets, such as the EU ETS, and to flexibility mechanisms, such as the CDM.

In sum, the compliance carbon markets are quite fragmented with a range of different sellers, buyers, units, and rules. Given the lack of progress toward a post-2012 international agreement, such fragmentation will likely continue for some time. In all of these compliance markets, however, the buyers of compliance units are interested primarily in satisfying their regulatory obligations. They are interested, in other words, in buying compliance—or so one would think.

III. PROBLEMS IN THE CARBON MARKETS—HOT AIR AND ENVIRONMENTAL INTEGRITY

The overarching policy concern regarding a compliance carbon market is whether it will function in a manner that actually reduces emissions. In the Kyoto context, this concern has been apparent from the very beginning, and has led to more than a few calls for abandoning the whole effort.⁴² Two issues in particular have dominated the discussions surrounding Kyoto's environmental performance. First, there has been a long-standing concern since the late 1990s that the 1990 Kyoto baseline⁴³ would result in substantial AAUs going to the former economies in transition, who would then sell them to other Annex B countries such as Japan or certain EU member states, allowing these countries to cover their compliance obligations with surplus AAUs rather than through actual emissions reductions.⁴⁴ "Hot air" was the term coined by environmental groups such as the World Wildlife Fund, Greenpeace, and Friends of the Earth shortly after Kyoto was adopted in order to bring attention to this supposed "loophole" under the Protocol.⁴⁵ The environmental community thus saw this as a major defect of Kyoto, and

⁴² See Sergio Abranches, *Why We Should Abandon the Kyoto Protocol and Aim Higher*, <http://www.ecopolity.com/2009/10/09/why-we-should-abandon-the-kyoto-protocol-and-aim-higher/> (last visited Nov. 18, 2010); SCOTT BARRETT, *CLIMATE CHANGE NEGOTIATIONS RECONSIDERED 2-3* (2008) available at http://www.policy-network.net/uploadedFiles/Publications/Publications/Scott_Barrett.pdf; Christina K. Harper, *Climate Change and Tax Policy*, 30 B.C. INT'L & COMP. L. REV. 411, 411 (2007).

⁴³ The Kyoto Protocol allows Annex I Parties "undergoing the process of transition to a market economy" to choose a baseline other than 1990. Kyoto Protocol to the United Nations Framework Convention on Climate Change, *supra* note 3, art. 3, ¶ 5. Annex I Parties with a base year other than 1990 are Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986). U.N. Framework Convention on Climate Change, Geneva, Switz., July 8–19, 1996, *Action Taken by the Conference of the Parties at Its Second Session*, U.N. Doc. FCCC/CP/1996/15/Add.1 (Oct. 29, 1996).

⁴⁴ In other words, setting the baseline for emissions reductions at 1990 meant that the Soviet Union and its Eastern and Central European allies were effectively given a subsidy for joining the treaty because their economies collapsed after that date and produced fewer emissions than their AAU allocations. See David G. Victor et al., *The Kyoto Protocol Emission Allocations: Windfall Surpluses for Russia and Ukraine*, 49 CLIMATIC CHANGE 263, 263 (2001).

⁴⁵ See Kokorin, *supra* note 6, at 2. The problem only got worse when it became clear that the United States, the largest potential source of demand for Kyoto units of any type, was never going to ratify the Protocol. *Id.*

mounted a campaign to limit the use of such hot air during the first commitment period.⁴⁶ Several nations responded to these concerns with public commitments that they would not use hot air to meet their Kyoto compliance obligations.⁴⁷

The second major concern regarding Kyoto's environmental performance has been the failure of the CDM program to drive investment to projects that satisfy basic additionality requirements (i.e., achieving reductions that are additional to what would happen under the business as usual scenario) and promote sustainable development.⁴⁸ The CDM has thus had its own version of the hot air problem. This has been most apparent in the context of large industrial gas destruction projects.⁴⁹ Because of the large global warming potential (GWP) of certain industrial gases such as hydrofluorocarbons (HFCs),⁵⁰ much of the early investment in CDM focused on projects intended to destroy such gases. Indeed, the majority of CERs that have been issued to date have gone to these projects. By the end of 2009, HFC destruction projects, most of which have been in China, accounted for about fifty percent of the total supply of issued CERs.⁵¹

Evidence suggests that many of these projects were not additional; that is, these were existing projects that were simply relabeled as CDM projects

⁴⁶ See Michele Betsill, *Environmental NGOs Meet the Sovereign State: The Kyoto Protocol Negotiations on Global Climate Change*, 13 COLO. J. INT'L ENVTL. L. & POL'Y 49, 57 (2002).

⁴⁷ See, e.g., Jeremy van Loon, *Canada Won't Buy Carbon Credits to Meet Kyoto Treaty Targets*, BLOOMBERG, Dec. 10, 2008, available at http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aK_E4068FTC4.

⁴⁸ See Kyoto Protocol to the United Nations Framework Convention on Climate Change, *supra* note 3, art. 12 (establishing the CDM, which requires the promotion of sustainable development). But the CDM Executive Board has not developed any sort of formal requirement that particular projects deliver sustainability benefits. See U.N. ENVIRONMENT PROGRAMME, A REFORMED CDM – INCLUDING NEW MECHANISMS FOR SUSTAINABLE DEVELOPMENT 47–48 (Karen Holm Olsen & Jorgen Fenhann eds., 2008).

⁴⁹ A number of commentators have raised concerns about the “additionality” and lack of sustainable development benefits associated with these industrial gas destruction projects. See, e.g., Michael Wara, *Measuring the Clean Development Mechanism's Performance and Potential*, 55 UCLA L. REV. 1759, 1778, 1795 (2008).

⁵⁰ HFC-23 has a GWP of 11,700, which means that the warming potential of 1 ton of HFC-23 is equivalent to that from 11,700 tons of CO₂. CLIMATE CHANGE: THE IPCC SCIENTIFIC ASSESSMENT: WORKING GROUP I CONTRIBUTION TO THE FIRST ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, Technical Summary 22, tbl.4 (J.T. Houghton, G.J. Jenkins & J.J. Ephraums eds., 1990) (providing GWPs for various greenhouse gases including HFC-23). Thus, an HFC-23 gas destruction project under the CDM that destroys 100 tons of HFC-23 could generate up to 1,170,000 tons of reductions or 1.17 million CERs. The GWP concept itself is not without problems, but has come to provide a key component of the technical foundation for the Kyoto Protocol's embrace of a multi-gas compliance system. See, e.g., Keith P. Shine, *The Global Warming Potential: The Need for an Interdisciplinary Retrial*, 96 CLIMATIC CHANGE 467, 467 (2009) (discussing problems of using GWPs as a basis for comparing the climate impacts of different GHGs).

⁵¹ See Andrew Allan, *EU Signals HFC 23 CER Ban: Report*, POINT CARBON, Oct. 26, 2010, available at <http://www.pointcarbon.com/news/1.1482070>.

in order to take advantage of carbon finance.⁵² Such projects have also been heavily criticized because of the “windfall” profits they generated for certain project developers and host country governments as well as their very limited contribution to sustainable development.⁵³ In both the AAU and the CER markets, significant and very legitimate concerns have been raised that excess AAUs and low-quality CERs will flood the Kyoto markets and thus undermine the environmental integrity of the whole effort.

IV. LESSONS FROM OTHER ENVIRONMENTAL MARKETS

There are two basic types of regulatory environmental markets: cap-and-trade markets and offset markets. In cap-and-trade markets, property rights are created in the form of use, emission, or extraction rights—for example, the right to graze in a certain area,⁵⁴ emit a ton of sulfur oxides (SO_x),⁵⁵ or catch a lobster.⁵⁶ These trading systems use the market to make prescriptive regulation more efficient. The government decides how much of a harmful activity to permit (such as pollution or fishery catch), awards private rights to engage in the activity up to the regulatory cap, and then permits those rights to be traded. The market does not play a role in determining the level of environmental protection; that is the role of the regulatory regime.

If the cap is set appropriately, marketable permits should, in theory, achieve the same level of protection as command-and-control alternatives at a lower cost.⁵⁷ The net result allows the regulated community to select appropriate control strategies and encourages innovative practices and technologies. In all of the cap-and-trade programs with which we are familiar—including the Clean Air Act’s SO_x,⁵⁸ CFC,⁵⁹ lead,⁶⁰ nitrogen oxides

⁵² See, e.g., Wara *supra* note 49, at 1787 (“[C]ircumstantial evidence suggests that, rather than building new plants, HCFC-22 manufacturers elected to add capacity at existing plants during the CDM baseline period in order to take advantage of the CDM subsidy.” (footnote omitted)).

⁵³ *Id.* at 1788–89.

⁵⁴ See Benjamin M. Gramig, *Greenhouse Gas Emissions Offsets from Agriculture: Opportunities and Challenges*, in NATIONAL AGRICULTURAL BIOTECHNOLOGY COUNCIL REPORT 21: ADAPTING AGRICULTURE TO CLIMATE CHANGE 179, 181–82 (Allan Eaglesham & Ralph W.F. Hardy eds., 2010), available at http://nabc.cals.cornell.edu/pubs/nabc_21/NABC21_Module4_Gramig.pdf.

⁵⁵ U.S. Env’tl. Prot. Agency, SO₂ Reductions and Allowance Trading Under the Acid Rain Program, <http://www.epa.gov/airmarkets/progsregs/arp/s02.html> (last visited Feb. 13, 2011).

⁵⁶ Salzman & Ruhl, *supra* note 16, at 607, 616.

⁵⁷ Bruce A. Ackerman & Richard B. Stewart, Comment, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1333, 1341–42 (1985). See generally Jody Freeman & Charles D. Kolstad, *Prescriptive Environmental Regulations Versus Market-Based Incentives*, in MOVING TO MARKETS IN ENVIRONMENTAL REGULATION: LESSONS FROM TWENTY YEARS OF EXPERIENCE 3, 3–15 (Jody Freeman & Charles D. Kolstad eds., 2007) (reviewing lessons from experiences with environmental compliance markets); Ackerman & Stewart, *supra*, at 1341–47 (discussing merits of emissions trading relative to command-and-control regulation).

⁵⁸ 42 U.S.C. § 7651b (2006).

⁵⁹ *Id.* § 7671f.

⁶⁰ See OFFICE OF POL’Y, ECON., AND INNOVATION, U.S. ENVTL. PROT. AGENCY, THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES FOR PROTECTING THE ENVIRONMENT 86–87

(NO_x),⁶¹ and proposed Clean Air Interstate Rule⁶² trading schemes; individual transferable quotas for fisheries; and grazing rights—there has been no differentiation within the currency of trade. In other words, in none of these markets has a buyer expressed a preference for a “greener” subgroup of the commodity. To coal-fired utilities, a credit for a ton of reduced SO_x is all that is needed. So long as the credit satisfies the regulatory compliance requirement, all’s well. Whether the credits came from “clean” or “dirty” operations, sustainable or unsustainable, is immaterial.

The same is true for offset markets. In these markets, trades take place in the context of permitting exactions and mitigation conditions. The government authority conditions the granting of a permit to develop or destroy habitat on agreement by the party to provide some environmental value in return, such as open space or preserved habitat. Wetlands mitigation banking and endangered species banking are the best-known examples of these types of markets. In wetlands mitigation markets, the effective trade is habitat destroyed in exchange for other habitat conserved, generally larger in size.⁶³ The permittee is responsible for finding the other conserved habitat purchased either on the open real estate market or from a so-called mitigation “bank,” which has conserved habitat for the express purpose of selling it to persons in need of such mitigation values.⁶⁴ In either case, destroyed habitat is swapped for conserved habitat often with the person seeking the permit largely in control of which lands are traded.⁶⁵

As with cap-and-trade, there has been no market differentiation in offset markets. Buyers simply want to satisfy their regulatory requirements. They have no concern for the quality of the credits so long as the mitigation banks are certified. They have little or no interest in the specifics of how the credits have been generated. Indeed, this lack of concern over the quality of mitigation credits so long as they satisfy compliance requirements has led to real problems. The early history of wetlands banking was rife with failed mitigation projects.⁶⁶ The wetlands vegetation planted prior to official inspection may have looked good enough for release of credits and issuance of the 404 permit,⁶⁷ but the lack of subsequent oversight failed to uncover

(2001), available at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/\\$file/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/$file/EE-0216B-13.pdf).

⁶¹ NO_x Budget Trading Program for State Implementation Plans, 40 C.F.R. pt. 96 (2010).

⁶² Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone, 75 Fed. Reg. 45,210 (proposed Aug. 2, 2010) (to be codified at 40 C.F.R. pts. 51, 52, 72, 78, and 97).

⁶³ See MARK LANDRY ET AL., APPLYING LESSONS LEARNED FROM WETLANDS MITIGATION BANKING TO WATER QUALITY TRADING 4–5, 7 (2005), available at <http://www.eli.org/pdf/wqtforum/LanSiemStedShab05.pdf>.

⁶⁴ See Compensatory Mitigation for Losses of Aquatic Resources, 33 C.F.R. § 332.2 (2009); U.S. Env’tl. Prot. Agency, Mitigation Banking Factsheet, <http://www.epa.gov/owow/wetlands/facts/fact16.html> (last visited Feb. 13, 2011).

⁶⁵ See 33 C.F.R. § 332.2 (2009).

⁶⁶ E.g., Roy R. Lewis, *Why Florida Needs Mitigation Banking*, 14 NAT’L WETLANDS NEWSL., Jan.–Feb. 1992, at 7.

⁶⁷ Section 404 permits are issued by the Secretary of the Army if, after public notice and comment, the Secretary determines that the dredged or fill material will only cause a “minimal

that such “cosmetic mitigation” projects failed more often than they succeeded.⁶⁸ In a compliance mitigation market, the supervising government authority is the *only* party that actually cares about quality, and it must carefully oversee transactions or poor quality mitigation will follow.

A further type of environmental market exists within the larger voluntary marketplace. These markets are driven by environmentally concerned consumers. For example, consumer concern over ozone depletion led progressive aerosol producers in the late 1970s to identify some of their products with “CFC-free” labels, well before any government regulation for these compounds.⁶⁹ In the produce market well into the 1990s, a plethora of “organic” labels bedeviled consumers who sought vegetables grown without pesticides or milk from cows who had not been given hormones.⁷⁰ The labels, however, did not disclose the specific standards for certification.⁷¹ One of the best-known problems with such loose “eco-labels” was General Motors’ bold marketing claim for its sport utility vehicle as “environmentally friendly” because it had a CFC-free air conditioner.⁷²

In such a setting, a predictable pattern emerged. Amidst the noise of multiple labels and standards, confused consumers turned to trusted information intermediaries. Consumer Reports has served this role for many types of products,⁷³ and a number of intermediaries have emerged to provide information on the green credentials of various types of products and their supply chains.⁷⁴ Eventually, the government steps in—hence the guidelines for environmental marketing promulgated by the Federal Trade Commission or the federal Organic standard developed by the U.S. Department of Agriculture after a record number of public comments.⁷⁵

adverse environmental effect.” Federal Water Pollution Control Act, 33 U.S.C. § 1344 (2006). Alternatively, a State can issue 404 permits if it has an authorized program. *Id.* § 1344(g).

⁶⁸ James Salzman & J. B. Ruhl, “No Net Loss”: *Instrument Choice in Wetlands Protection, in* MOVING TO MARKETS IN ENVIRONMENTAL REGULATION, *supra* note 57, at 323, 326.

⁶⁹ See Rodney Dobell et al., *Implementation in the Management of Global Environmental Risks, in* 2 LEARNING TO MANAGE ENVIRONMENTAL RISKS 115, 124–26 (The Social Learning Group ed., 2001) (describing the development of consumer concerns over CFCs and subsequent legislation).

⁷⁰ See *generally* National Organic Program, 65 Fed. Reg. 80,548, 80,663–65 (Dec. 21, 2000) (codified at 7 C.F.R. pt. 205) (describing the growth in the organic market, the patchwork of private and state certification standards that developed prior to the promulgation of national rules, and the difficulty consumers had verifying “organic” label claims).

⁷¹ See *generally id.* at 80,664 (identifying variation in certification standards and state labeling requirements).

⁷² See *generally* Greenpeace, Gas-Friendly to Gas-Free? GM’s Attempt to Greenwash Its Image, http://stopgreenwash.org/casestudy_gm (last visited Feb. 13, 2011) (describing General Motors’ advertisements of its Chevrolet line of vehicles in 2007 focusing on the company’s efforts to be more environmentally friendly, such as through increasing vehicle fuel efficiency).

⁷³ Consumer Reports, Our Mission, <http://www.consumerreports.org/cro/aboutus/mission/overview/index.htm> (last visited Feb. 13, 2011).

⁷⁴ See, e.g., Good Guide, Good Guide, <http://www.goodguide.com> (last visited Feb. 13, 2011); see also Minneti, *supra* note 9, at 48; James Salzman, *Sustainable Consumption and the Law*, 27 ENVTL. L. 1243, 1263–65 (1997).

⁷⁵ Organic Foods Production Act of 1990, 7 U.S.C. § 6503 (2006).

V. GREEN DIFFERENTIATION IN THE KYOTO MARKETS

Given the environmental market experiences described in Part IV, we would expect to see something similar in the carbon markets—that is, no green differentiation among compliance credits. Indeed, the wetlands experience suggests we might expect to see evidence of Gresham’s Law, where the cheapest (and simplest) currency tends to dominate as the medium for exchange.⁷⁶

In the voluntary carbon markets, by contrast, where buyers care about the environmental integrity of the asset and in the absence of a regulatory authority to guarantee such quality, we would expect to see information intermediaries such as standards organizations stepping in to provide labeling, certification, and other services to provide some assurances to the buyers that the asset meets certain quality requirements. This appears to be happening, as evidenced by the proliferation of voluntary offset standards.⁷⁷ In the compliance markets, on the other hand, those purchasing credits should be indifferent to the actual quality of the credits, so long as they satisfy the regulators. Voluntary differentiation or greening, in other words, is something we expect to see in the voluntary carbon markets but not in the compliance markets.

In fact, however, we are seeing examples of voluntary greening in the Kyoto markets for AAUs and CERs, likely as a response to some of the environmental integrity concerns discussed above.⁷⁸ This is a curious development. As suggested, from a rational economic actor perspective, one would expect that the buyers in a compliance market, whoever they may be, would be interested only in buying compliance. Once the credits are issued by the relevant regulatory authority, the question of their underlying environmental integrity or quality should not matter to the buyer, whose only aim should be to acquire enough credits to satisfy compliance obligations. There is no need for a premium currency, in other words, because the only characteristic of the asset that matters in these markets is whether the unit in question counts toward compliance. But in both the AAU market and the CER market, we are seeing efforts to “green” the compliance units through voluntary programs and labeling schemes that seek to assure buyers of the underlying environmental integrity of the credits.

A. Green AAUs

Greening is happening in the AAU market through the so-called Green Investment Schemes (GIS) mentioned in the Introduction. These GIS programs are self-imposed commitments on the part of certain central and eastern European countries (former “economies in transition”), selling excess AAUs to use the income generated from such sales for specific

⁷⁶ See Fetter, *supra* note 16, at 480.

⁷⁷ See ANJA KOLLMUSS ET AL., *supra* note 27, at 141–205 (reviewing different voluntary offset standards).

⁷⁸ See *supra* Part III.

activities that will reduce emissions.⁷⁹ Through such schemes, purchased AAUs become linked to specific GHG reduction efforts, providing a means of squeezing some of the hot air out of the system.⁸⁰

Two types of GIS schemes seem to be emerging. “Hard Greening” refers to funded activities that can deliver measurable and quantifiable emission reduction units.⁸¹ This looks a lot like JI (though without the formal certification processes) and includes equipment upgrades, energy efficient investments, etc. Ideally, the ratio of GHG emission reductions from hard greening to emission reduction credits transferred approximates 1:1. “Soft greening” refers to activities that have nonquantifiable and nonmeasurable emission reductions, such as capacity building or awareness raising.⁸² While hard to quantify, the ratio of GHG emission reductions from soft greening GIS to emission reduction credits would likely be less than 1:1.

The AAU market is nascent and still developing. In 2009, the total value of AAU deals was around two billion dollars, with a volume of one hundred fifty-five million tons—a seven-fold increase over the prior year.⁸³ These were typically large, bilateral deals, most of which were subject to some type of greening.⁸⁴ Buyers include a few European governments (primarily Spain and Belgium), the government of Japan, and large Japanese companies.⁸⁵ To date, Ukraine and the Czech Republic have been the largest sellers of green AAUs.⁸⁶

The key point is that GIS is not mandated by the Kyoto Protocol, and is not something one would expect in a compliance market. This is an entirely voluntary creation with no accepted international rules or standards for what should or should not count as an acceptable GIS.⁸⁷ The very flexibility of GIS also creates uncertainty because the environmental integrity of projects will be harder to assure without robust international legal and institutional monitoring, reporting, and verification frameworks designated for this purpose.⁸⁸

⁷⁹ See BLYTH & BARON, *supra* note 6, at 7; KOKORIN, *supra* note 6, at 2–4, 7–8.

⁸⁰ See KOKORIN, *supra* note 6, at 4.

⁸¹ Tuerk et al., *supra* note 5, at 3 (citing BLYTH & BARON, *supra* note 6); KARAN CAPOOR & PHILIPPE AMBROSI, WORLD BANK, STATE AND TRENDS OF THE CARBON MARKET 2009 at 56, available at http://siteresources.worldbank.org/EXTCARBONFINANCE/Resources/State_and_Trends_of_the_Carbon_Market_2009-FINALb.pdf.

⁸² Andreas Tuerk et al., *supra* note 5, at 3 (citing BLYTH & BARON, *supra* note 6); CAPOOR & AMBROSI, *supra* note 81 at 56.

⁸³ CAPOOR & AMBROSI, *supra* note 81, at 56.

⁸⁴ See *id.* at 56. Most deals were reportedly signed at a price of €10 per ton. *Id.*

⁸⁵ *Id.* at 24, 54–56. Japanese companies are allowed to use AAUs to comply with Japan’s voluntary domestic GHG reduction targets.

⁸⁶ *Id.* at 56.

⁸⁷ AAU purchase agreements appear to be customized, bilateral deals, which are not publicly available.

⁸⁸ See, e.g., Szabo, *supra* note 1 (quoting Lajos Olah, State Secretary for Hungary’s Ministry of Environment and Water, as saying, “The spending of the proceeds will be audited, in this way the buyers can check how their money is spent.”). Since Olah made this statement, however, Hungary has been the target of criticism for failing to spend the proceeds of its AAU sales on environmental initiatives under its GIS framework. Green Gas, “Green Investment Schemes” Grow. But Are They Green? MONTHLY CARBON REPORT (Aug. 2009), available

B. The CDM Gold Standard

In the CDM market, several voluntary standards have emerged in an effort to differentiate “premium” CERs from the rest of the market.⁸⁹ The most prominent of these is the Gold Standard, which was established under the leadership of the World Wildlife Fund for the purpose of certifying high quality carbon offsets with demonstrated sustainability co-benefits in both the voluntary and compliance markets.⁹⁰

The Gold Standard applies to a narrow range of projects in the renewable energy and energy efficiency fields on the theory that these sorts of projects are far more important than other types of offset projects (e.g., industrial gas destruction projects) in encouraging the transition to a low-carbon energy system.⁹¹ The Gold Standard has a specific set of rules regarding special additionality tests, sustainability assessments, and public consultations, and a separate registry that records and tracks the specific CERs that are issued to Gold Standard certified CDM projects.⁹²

In 2007, the first CERs were issued by the CDM Executive Board for a Gold Standard certified CDM project.⁹³ Since that time, around 350,000 Gold Standard CERs have been issued for some 20 projects, with additional

at [http://greengas.net/files/Carbon%20Report%20Aug%202009\(1\).pdf](http://greengas.net/files/Carbon%20Report%20Aug%202009(1).pdf). As a result, several pending deals for Hungarian AAUs collapsed. See, Marton Kruppa, *Hungary Loses €500m After GIS Fiddle*, POINT CARBON, Nov. 20, 2009, available at <http://www.pointcarbon.com/news/1.1298726> (reporting on collapsed AAU deals after report document Hungary’s use of AAU sales proceeds to deal with budgetary shortfalls).

⁸⁹ See, e.g., CLIMATE, CMTY. & BIODIVERSITY ALLIANCE, CLIMATE, COMMUNITY AND BIODIVERSITY PROJECT DESIGN STANDARDS 6–7 (2d ed. 2008), available at http://www.climate-standards.org/standards/pdf/ccb_standards_second_edition_december_2008.pdf; The Gold Standard, Gold Standard FAQs: Certification and Marketing of Gold Standard Carbon Credits, <http://www.cdmgoldstandard.org/Gold-Standard-FAQs.194.0.html> (last visited Feb. 13, 2011); see also Adrian Muller, *Risk Management in the Clean Development Mechanism (CDM) – The Potential of Sustainability Labels*, in ECONOMICS AND MANAGEMENT OF CLIMATE CHANGE: RISKS, MITIGATION AND ADAPTATION 193, 201–02 (Bernd Hansjürgens & Ralf Antes eds., 2008); Patrick Nussbaumer, *On the Contribution of Labeled Certified Emission Reductions to Sustainable Development: A Multi-Criteria Evaluation of CDM Projects*, 37 ENERGY POLICY 91, 92 (2009).

⁹⁰ The Gold Standard CDM standard was launched in 2003. See THE GOLD STANDARD, GOLD STANDARD: THE BENCHMARK FOR QUALITY IN CARBON MARKETS (2009), available at http://www.cdmgoldstandard.org/fileadmin/editors/files/1_communication/flyer/Gold_Standard_flyer_2009.pdf. A Gold Standard for the voluntary markets was issued in 2006. *Id.*

⁹¹ Press Release, Gold Standard Foundation, *supra* note 8, at 1; see also Levin et al., *supra* note 8, at 784.

⁹² THE GOLD STANDARD FOUNDATION, GOLD STANDARD REQUIREMENTS VERSION 2.1, at 12, 38, 39, 44 (2009), available at http://www.cdmgoldstandard.org/fileadmin/editors/files/6_GS_technical_docs/GSv2.1/GSv2.1_Requirements.pdf; see also Muller, *supra* note 89, at 202.

⁹³ See Muller, *supra* note 89, at 202.

projects in the pipeline.⁹⁴ These Gold Standard CERs apparently trade at up to a 25% premium over “regular” CERs.⁹⁵

It is not entirely clear who is buying Gold Standard CERs, and some portion of these are clearly being used in the voluntary markets to satisfy corporate social responsibility pledges and other ethical investments.⁹⁶ At the same time, some entities regulated under the EU ETS have tendered Gold Standard CERs for compliance purposes,⁹⁷ and a number of Governments have also purchased them.⁹⁸ The Gold Standard organization states that Gold Standard-certified credits

are in high demand due to the growing awareness about the need for rigor and transparency in the carbon markets. They are preferred by a range of government and private actors and fetch premium prices. Gold standard credits have value in any policy environment, so companies feel safe with them because they know their carbon investment will have value even if the policy environment changes.⁹⁹

This suggests that Gold Standard CERs are being used at least in part as a hedge against the fragmentation and uncertainty in the carbon markets.

As with green AAUs, however, there is no regulatory requirement under Kyoto or any other compliance scheme that a covered entity,

⁹⁴ *Id.* at 202. The Gold Standard maintains public registries that track Gold Standard projects and certified credits for such projects. The registry listing Gold Standard CDM and JI projects is available at <https://gs1.apx.com/myModule/rpt/myrpt.asp?r=113>. The registry tracking certified Gold Standard CERs and ERUs is available at <https://gs1.apx.com/myModule/rpt/myrpt.asp?r=114>.

⁹⁵ The Gold Standard, Gold Standard FAQs, <http://www.cdmgoldstandard.org/Gold-Standard-FAQs.194.0.html> (last visited Feb. 13, 2011) (click on “Gold Standard FAQs” and then click on “Certification and Marketing of GS Carbon Credits”).

⁹⁶ See Eva Wuchold, Senior Project Manager, First Climate, Remarks at the Gold Standard Third Annual Academy in Istanbul (Feb. 23, 2010) (presentation slides available at http://www.cdmgoldstandard.org/fileadmin/editors/files/1_communication/academy/Academy_2010_Presentations/Academy230210_EXTERNAL_EW-Stimulating_Demand_In_An_Evolving_Carbon_Market_Scenario.pdf); see also KATHERINE HAMILTON ET AL., FORTIFYING THE FOUNDATION: STATE OF THE VOLUNTARY CARBON MARKETS 2009 at 94–95, available at http://www.ecosystemmarketplace.com/documents/cms_documents/StateOfTheVoluntaryCarbonMarkets_2009.pdf.

⁹⁷ See, e.g., Hauke Hermann et al., FREE ALLOCATION OF EMISSIONS ALLOWANCES AND CDM/JI CREDITS WITHIN THE EU ETS: ANALYSIS OF SELECTED INDUSTRIES AND COMPANIES IN GERMANY 28 (2010) (discussing surrender of Gold Standard CERs by German companies to meet EU ETS compliance obligations).

⁹⁸ See HAMILTON ET AL., *supra* note 96, at 92–93. Additional research is needed on the identities and motivations of buyers of Gold Standard CERs. At least some portion of the Gold Standard CERs that have been issued to date have been surrendered for compliance purposes by covered entities under the EU ETS. See Mauro Fadda, Local Expert Central & South America, The Gold Standard Foundation, Remarks at the Latin American Carbon Forum 2009 in Panama City, Panama (June 2009) (presentation slides available at http://www.latincarbon.com/2009/docs/presentations/VoluntaryMarket&VERStandards_Fadda.pdf); see also ROB ELSWORTH, HYDRO CERs AND THE EU ETS 2009 4 (2010), available at http://www.sandbag.org/site_media/pdfs/reports/Hydro_CERs_and_EU_ETS.pdf.

⁹⁹ The Gold Standard, *Gold Standard FAQs*, <http://cdmgoldstandard.org/Gold-Standard-Faqs.194.0.html> (last visited Feb. 13, 2011).

whether a country under Kyoto or a private company under the EU ETS, use premium CERs for compliance purposes. Taken together, these examples of green differentiation in the compliance carbon markets are unprecedented. They simply do not track the experiences in other environmental compliance markets.

VI. EXPLANATIONS—WHY IS THIS HAPPENING?

If experience from other environmental compliance markets does not predict green differentiation in the compliance carbon markets, then what's going on? While more empirical research is needed to answer this question, no one seems to be conducting this research or even asking the question. To guide future work in this area, we suggest below a range of possible explanations.

From a purely economic perspective, one might explain this as a simple hedging strategy premised on the notion that “green” credits are more likely to retain their value in future iterations of the carbon markets and therefore warrant a premium today. Given the uncertainty associated with the post-2012 process and the proliferation of various regional, national, and sub-national markets, savvy buyers may be willing to pay more for green AAUs and Gold Standard CERs today because they are more likely to hold their value in the markets of tomorrow. This explanation suggests that the identity of the buyers should not matter. In other words, one would expect to see both governments *and* large corporate enterprises with multiple potential compliance obligations in future markets active in the purchase of green compliance credits. That does not appear to be the case, however, given the dominance of governments as buyers of these credits.¹⁰⁰ Something else must be going on.

A broader political economy explanation starts from the fact that buyers of these green compliance units are primarily governments, and views these purchases as responses to demands from important domestic political constituencies. From this perspective, the market for green AAUs and Gold Standard CERs is largely the result of political pressure brought to bear on governments in Europe and Japan by environmental groups.¹⁰¹ By paying a premium for higher quality “green” credits, these governments are making good on promises not to use hot air for compliance purpose.¹⁰² Among other things, this explanation suggests that one cannot understand market dynamics without also understanding the identities and interests of the buyers and their relationship to various constituencies.

¹⁰⁰ See *supra* Part III.A.

¹⁰¹ Part of the explanation for the green AAU market may also have to do with the monopsonistic structure of the market. Given the large potential supply of AAUs relative to demand, and the fact that there are only a small number of buyers, suppliers have little choice but to create a new currency to address the specific quality demands of these buyers. This is consistent with the underlying political economy explanation.

¹⁰² See *supra* text accompanying notes 47–48.

A related explanation focuses on fiscal responsibility. Because the buyers of these credits are primarily governments, it is appropriate to view these purchases through the lens of public procurement. In this explanation, the decision to purchase premium green credits is largely a response to possible criticism over purchases of hot air. Greened credits provide a means of ensuring value and accountability for the expenditure of public funds and improving the integrity of the system. Purchasing greened credits provides a defense to charges of wasting taxpayer dollars.¹⁰³

The final explanation focuses on governments as green consumers. In this view, European and Japanese governments are genuinely concerned about the environmental integrity of their purchases and the success of the Kyoto framework. Buyers of green AAUs and Gold Standard CERs, in other words, are truly interested in buying environmental integrity rather than simply buying compliance. Because the standard AAU and CDM currencies fail to capture adequately the environmental and sustainability co-benefits that these Governments committed to under Kyoto, differentiated premium green currencies are emerging to satisfy additional demands for quality. The small number of major AAU buyers—essentially Japan and Western European nations—accentuates this effect. Once they agree not to buy hot air, suppliers have no choice but to create a new currency to address this narrowed demand.

Part I noted that Belgium and Spain are not acting like rational economic actors in their decisions to purchase green AAUs, but this assumes that they actually *should* behave like rational economic actors. It seems more likely that government buyers of Green AAUs (and some buyers of Green CERs) are expressly *not* like buyers in the wetlands mitigation banking or domestic emissions allowance markets.¹⁰⁴ To be sure, more empirical research is needed to fully understand the dynamics of greening in the Kyoto markets, but it is clear from this initial survey that the motivations behind Government purchasing decisions are important drivers of this greening and are not self-evident.

VII. LESSONS—DOES THIS MATTER?

The curious case of greening in the carbon markets may be just that—a curious case, a temporary one-off development that will eventually give way to more expected behavior as these markets grow and as regulatory authorities adopt new rules to squeeze some of the hot air out of the system. It's still early days. In a larger sense, however, the greening story matters

¹⁰³ This explanation is also consistent with the recent decision by Japan and other potential AAU buyers to pull out of large AAU deals with Hungary after it became apparent that the Hungarian government had not managed the proceeds from prior AAU sales in accordance with its GIS program. Kruppa, *supra* note 88 (reporting on collapsed AAU deals after report documenting Hungary's use of AAU sales proceeds to deal with budgetary shortfalls).

¹⁰⁴ One possible problem with this explanation, of course, is that the best way for these governments to demonstrate environmental integrity is to make real reductions at home rather than buy greened credits.

because it highlights the importance of understanding the identity of the buyers, their motivations, and the nature of the asset in the context of emerging compliance markets. In the Kyoto markets, the identity of the buyers is critical. Governments are the main buyers of green compliance credits and are not acting like their private sector counterparts. While environmental integrity does not typically matter in terms of compliance, it matters greatly to domestic political constituencies. As a result, the standard economic explanation of market behavior needs to be supplanted with a political economy explanation.

This story also shows the importance of understanding the nature of the asset and its ability (or lack thereof) to hold value. The global compliance carbon markets are fraught with uncertainty and highly fragmented. Because the future trajectory of the compliance markets remains unclear, the value of AAUs and CERs in a future post-2012 market, not to mention those emerging in other jurisdictions such as the United States, is not clear. Greening thus provides a possible hedge against such uncertainty—a way of ensuring that credits purchased today will hold their value in the future under any policy environment, as the Gold Standard claims for its credits. This suggests a dynamic process of market evolution. The structure and rules of future markets may well be shaped by the lobbying of parties with large holdings of greened credits, seeking to influence the political and administrative processes and ensure their credits retain their value.

Greening also makes sense in a world of fragmented climate governance marked by a series of loosely linked domestic and regional compliance markets. Any attempt to generate fungible instruments that can be accepted in multiple compliance systems will face significant information demands. In the absence of a single regulatory authority to impose uniform quality standards, and in the face of multiple credit issuing bodies, voluntary qualification schemes such as GIS and the Gold Standard could play an important role in providing the additional information necessary for buyers to navigate this increasingly fragmented world. Credible third-party certifiers assure market participants of the quality and pedigree of the underlying asset.

As a result of these greening pressures, the Kyoto carbon markets have not operated in accordance with Gresham's Law. If anything, the reverse appears to be happening, as premium green currencies are emerging alongside and, in some instances, driving out cheaper, standard currencies—something that has never happened in other regulatory environmental markets. This green differentiation is also fostering new opportunities in emerging carbon markets. Thus, ongoing discussion regarding reform of the CDM in the post-2012 period is focusing on many of the same concerns that motivated the Gold Standard; namely, the need to incorporate sustainability co-benefits into the program.¹⁰⁵ The European Union's recent decision to ban CERs from industrial gas projects in Phase III of the EU ETS (2013–2020)

¹⁰⁵ Mohamed T. El-Ashry, *An Overview of This Issue: Framework for a Post-Kyoto Climate Change Agreement*, 8 SUSTAINABLE DEV. L. & POL'Y, Winter 2008, at 2, 3; see also *supra* text accompanying notes 90–91.

can be seen as a recognition of the value of green differentiation based on Gold Standard type quality criteria, a development that builds upon and reinforces green differentiation dynamics in the CER market.¹⁰⁶ Similarly, general proposals for sector-based offset programs in the design of California and U.S. compliance systems and the recent initiative by the Government of Japan to develop its own bilateral offset program also appear to be incorporating greening strategies developed under GIS efforts and the Gold Standard.¹⁰⁷

These developments suggest an interesting thought experiment. The greening stories we have described came on the back end, after the market rules had been created. Consider, instead, what would happen if the compliance markets expressly incorporated *from the outset* different currencies (dark green, light green, brown) that sought to capture different levels of quality regarding environmental and sustainability performance?¹⁰⁸ In other words, is there a way to design green differentiation into the compliance markets from the outset in a manner that would facilitate a “race to the top”—a flight to quality from the start? Much of this would depend, as our analysis suggests, on the identity of the buyers and the role of civil society in leveraging existing mechanisms for transparency and accountability to push for high quality credits. Perhaps it would all collapse as a result of too much complexity.¹⁰⁹ But it seems to be happening on its

¹⁰⁶ See *EU Bans Industrial Offsets from 1 May 2013*, POINTCARBON NEWS, Jan. 21, 2011, at 1 (discussing decision by EU climate change committee supporting European Commission proposal to ban CERs generated from HFC-23 and adipic acid N₂O projects); *“Green” CERs Valued at 90-Cent Premium*, POINTCARBON NEWS, Jan. 24, 2011, at 1–3 (discussing green differentiation in the CER market in response to EU decision to ban HFC-23 credits including the launch of new green CER contracts for the post-2012 EU ETS). In the European Parliament debates regarding revisions to the post-2012 EU ETS, one of the committee proposals would have permitted only “Gold Standard type” CERs and ERUs in the post-2012 phase. See *Draft Report on the Proposal for a Directive of the European Parliament and of the Council Amending Directive 2003/87/EC so as to Improve and Extend Greenhouse Gas Emission Allowance Trading System of the Community*, 26–27, 34 (Nov. 6, 2008).

¹⁰⁷ See CAL. AIR RES. BD., PROPOSED REGULATION TO IMPLEMENT THE CALIFORNIA CAP-AND-TRADE PROGRAM, Appendix A: Proposed Regulation Order §§ 95991–95994 (Oct. 28, 2010) (establishing requirements for sector-based offset credits); CAL. AIR RES. BD., PROPOSED REGULATION TO IMPLEMENT THE CALIFORNIA CAP-AND-TRADE PROGRAM, Part I Vol. I, Staff Report: Initial Statement of Reasons II-48, III-22 to III-29 (Oct. 28, 2010) (elaborating on sector-based offset program); *Japan Adopts 15 “Bilateral Offset Mechanism Projects,”* JAPAN TODAY, Aug. 11, 2010, <http://www.japantoday.com/category/technology/view/japan-adopts-15-bilateral-offset-mechanism-projects>.

¹⁰⁸ This is already happening to some extent in various proposals to develop compliance grade credits for Reduced Emissions from Deforestation and Forest Degradation (REDD). See William Boyd, *Climate Change, Fragmentation, and the Challenges of Global Environmental Law: Elements of a Post-Copenhagen Assemblage*, 32 U. PA. J. INT’L L. 457, 546 (2010) (discussing efforts to accommodate various social and environmental safeguards in the effort to develop compliance-grade REDD assets); BRIAN C. MURRAY, LYDIA P. OLANDER & DONALD P. KANAK, NICHOLAS INST. FOR ENVTL. POL’Y SOLUTIONS, FORGING A PATH FOR HIGH-QUALITY COMPLIANCE REDD CREDITS 6 (2009), available at http://www.law.harvard.edu/programs/about/pifs/symposia/fcfs/2010-fcfs-briefing-materials/murray_olander_kanak.pdf.

¹⁰⁹ Incorporating additional qualities and cobenefits into the currencies for compliance carbon, for example, could prove to be a very challenging task.

own. Would it not make more sense to learn from this unexpected development and build it into market designs going forward?

VIII. CONCLUSION

Quality concerns have long been an issue in environmental markets—from wetlands mitigation banking to carbon. But such concerns have never translated into any sort of differentiation among currencies in a compliance context, until now. As this Article has demonstrated, green differentiation is happening in the Kyoto compliance markets—a phenomenon we have characterized as Gresham's Law in reverse. As with most things in life, a combination of various factors likely explains this curious case of greening in the Kyoto markets. In our view, the most important factor driving this phenomenon is the role of governments as buyers. This suggests that carbon markets (and other environmental compliance markets) that place governments in the position of buyers will likely not operate in the same manner as other regulatory environmental markets. When governments are major buyers, there are important factors at play beyond the cost of compliance. In these circumstances, we should expect differentiation of currencies to satisfy the different motives behind government purchasing decisions. At a minimum, finding ways to harness green differentiation in future carbon markets merits further research and focus on the design of such markets.