

# ARTICLES

## Political Costs and the Challenge of Tradable Environmental Allowance Markets

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### ABSTRACT

*Traditional accounts of tradable environmental allowance markets focus on the economics of their operation and the instrumental costs of their design, such as the definition, monitoring, and enforcement of rights. Less attention has been given to the role of political costs in influencing whether these market-based mechanisms get enacted at all, and their form and fate if they do. These costs help to explain the divergence between strong theoretical arguments in favor of tradable environmental allowance markets and their more limited real world success. This Article analyzes how costs arising from the political process—that is, costs to political actors of pursuing particular policies—affect the decision to advance tradable market-based environmental policies, and whether these policies are sustained. This Article does so through an examination of two tradable environmental allowance markets established in New Zealand: one governing fisheries and another regulating greenhouse gas emissions. The political acceptability of these environmental markets was affected by internal and external influences, including wider economic reforms, policy entrepreneurs, and failure of other policy options. Moreover, both policies have faced post-enactment political challenges that have threatened to undermine their design. New Zealand’s experience suggests that tradable environmental allowance markets have limited political range, making them vulnerable to policy failure or manipulation and, though they can be successful in certain political environments, they are unlikely to form the basis of wide ranging environmental policy reform.*

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## INTRODUCTION

Policymakers are facing increasingly significant environmental problems arising from open access or common-pool resources. The “tragedy of the commons”—overexploitation arising from the difficulty of controlling and managing access to these resources—threatens communities around the world in the form of depleted fisheries, loss of access to water, sea-level rise, and unbreatable air. A range of policy mechanisms have been developed by central governments in an attempt to control overexploitation by regulating access to the commons. Traditionally these policies have focused on regulatory “command-and-control” mechanisms or price mechanisms centered on taxes and charges.<sup>1</sup> Increasingly, regulators are experimenting with the creation of property or property-like rights, and the development of markets to enable those rights to be traded.

Economic theory suggests that these market-based environmental policies hold substantial promise for the management of common-pool and open access resources relative to command-and-control regulation. Conceptually, a primary distinction between the operation of traditional regulation and tradable mechanisms is that the latter gives greater responsive discretion to the regulated resource users in how they respond to costs of regulation.<sup>2</sup> This flexibility promotes reduction in resource use by least cost reducers (for polluting activities) or the cessation of resource use by highest cost users (for extractive activities).<sup>3</sup> Writing in 1985, Ackerman and Stewart proclaimed the market’s “formidable administrative advantages,” and argued that introducing a system of marketable permits into environmental law would produce significant economic savings,

1. See, e.g., Robert N. Stavins, *What Can We Learn from the Grand Policy Experiment? Lessons from SO<sub>2</sub> Allowance Trading*, 12 J. ECON. PERSP. 69, 69 (1998).

2. TERRY L. ANDERSON & GARY D. LIBECAP, *ENVIRONMENTAL MARKETS: A PROPERTY RIGHTS APPROACH* 22 (2014).

3. See, e.g., Robert N. Stavins, *Market-Based Environmental Policies: What Can We Learn from U.S. Experience (and Related Research)?*, in *MOVING TO MARKETS IN ENVIRONMENTAL REGULATION* 319, 320 (Jody Freeman & Charles D Kolstad eds., 2007).

improvements in technology, and new investment.<sup>4</sup> Moreover, they argued, this highly beneficial reform need not be difficult to implement. The introduction of a tradable environmental allowance regime could turn on four quite manageable “bureaucratic tasks:” assessment of current pollution levels, allocation of rights by auction, registration of title to facilitate transfer, and penalty for polluters who discharge more than their permitted amounts.<sup>5</sup>

The concept of tradable environmental allowances is no longer new.<sup>6</sup> Environmental markets have become more prevalent since the mid-1980s, in part riding the wave of market-oriented economic reform that swept many western democracies in the decades that followed.<sup>7</sup> Today, a number of established markets exist around the world, covering a range of resources.<sup>8</sup> Significant new markets are also being developed, such as China’s proposed nationwide emissions trading scheme, which when introduced will be the largest domestic emissions trading market in the world.<sup>9</sup> Despite these notable accomplishments, successful implementation of tradable markets—for the most part—has not been the norm.

A number of significant attempts to introduce tradable environmental allowance markets have failed,<sup>10</sup> and in many other instances, they have simply not been considered. The real-world prevalence of environmental markets does not compare to their theoretical potential and the prediction of scholars, such as Ackerman and Stewart.<sup>11</sup> The difference between the theoretical attractiveness of

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4. Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 *STAN. L. REV.* 1333, 1346 (1985) [hereinafter Ackerman & Stewart, *Reforming Environmental Law*]. See also Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 *COLUM. J. ENVTL. L.* 171 (1988) [hereinafter Ackerman & Stewart, *The Democratic Case*].

5. Ackerman & Stewart, *Reforming Environmental Law*, *supra* note 4, at 1347.

6. Writing in 1992, Krier argued that “the idea of relying more fully on market-based incentives to control environmental problems is by now almost old hat.” See James E. Krier, *The Tragedy of the Commons, Part Two*, 15 *HARV. J. L. & PUB. POL’Y* 325, 325 (1992); see also J. H. DALES, *POLLUTION, PROPERTY AND PRICES: AN ESSAY IN POLICY-MAKING AND ECONOMICS* (1968) (for an early discussion of the role of property and markets in environmental management).

7. Environmental markets now exist for carbon, water, and biodiversity resources in a range of jurisdictions. See, e.g., *Marketwatch*, ECOSYSTEM MARKETPLACE (2016), <http://www.ecosystemmarketplace.com/marketwatch/>.

8. See, e.g., Robert N. Stavins, *Experience with Market-Based Environmental Policy Instruments*, in 1 *HANDBOOK OF ENVIRONMENTAL ECONS*, 355, 392-406 (K.G. Mäler & J.R. Vincent eds., 2003); see also *Marketwatch*, ECOSYSTEM MARKETPLACE (2016), <http://www.ecosystemmarketplace.com/marketwatch/> (listing carbon markets, water markets, and biodiversity markets around the world).

9. See, e.g., ZhongXiang Zhang, *Carbon Emissions Trading in China: The Evolution from Pilots to a Nationwide Scheme 2* (Centre for Climate Economic & Policy Working Paper No. 1503, 2015).

10. Notable failures include the Waxman-Markey Bill in the United States and the demise of the Australian Carbon Pollution Reduction Scheme. See DECLAN KUCH, *THE RISE AND FALL OF CARBON EMISSIONS* (2015). Other examples of “seesawing carbon policies” have also been seen in Canada, China, the European Union, India, Japan, and New Zealand. See Preston Teeter & Jörgen Sandberg, *Constraining or Enabling Green Capability Development? How Policy Uncertainty Affects Organization Responses to Flexible Environmental Regulations*, *BRIT. J. MGMT.* (2016) (online, pre-publication).

11. Ackerman and Stewart were not the only ones to predict substantial growth in market-based environmental management. As Teeter & Sandberg observe, there is a vast theoretical literature suggesting that “flexible environmental policies constitute a true win-win scenario in which both the environment and regulated

tradable environmental allowance markets and the reality of their implementation is evidence of greater impediments to their implementation and operation than their advocates have traditionally appreciated.

Accounts of tradable environmental allowance markets frequently focus on the economic costs associated with their development and operation. The divergence between the theory and reality of tradable environmental allowance markets is a consequence, at least in part, of these economic models failing to effectively account for the political costs involved in enacting and sustaining an effective tradable environmental allowance market. This Article examines how political costs—costs facing political actors<sup>12</sup> in the policymaking and political process—influence the adoption, design, and durability of tradable environmental allowance markets. The enactment of a regulatory mechanism depends on the actions of political actors, which have attendant costs. These political costs contribute to whether tradable environmental allowance markets are established, whether they retain their design integrity, and whether they are maintained.

The enactment and durability of tradable environmental allowance markets depend on a range of external and internal factors that influence the political cost of creating and sustaining an effective market-based mechanism. As a result, the circumstances in which an effective tradable environmental allowance market can be enacted are relatively narrow. Thus, although environmental markets can prove to be politically acceptable and environmentally effective in some contexts, they are unlikely to provide the basis for the sort of wide-reaching reform advocated for by Ackerman and Stewart. This is consistent with the claim that market proponents often exaggerate the cost-effectiveness of environmental markets,<sup>13</sup> and that prevailing economic paradigms provide an insufficient account of ecological understandings relevant to voters.<sup>14</sup> More often, tradable

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organizations benefit.” *Id.* at 1-2. See also Robert W. Hahn, *Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor’s Orders*, 3 J. ECON. PERSP. 95, 112 (1989) [hereinafter Hahn, *Economic Prescriptions for Environmental Problems*] (“Because marketable permit approaches have been shown to have a demonstrable effect on cost savings without sacrificing environmental quality, this instrument can be expected to receive more widespread use.”); Jonathan B. Weiner, *Global Environmental Regulation: Instrument Choice in Legal Context*, 108 YALE L. J. 677, 682 (1999) (“incentive-based instruments such as taxes and tradeable allowances should generally be chosen over technology requirements and fixed emissions standards because the incentive-based instruments are typically far more cost-effective and innovation-generating than their alternatives”).

12. In this Article, the term “political actor” is used generally to encapsulate those responsible for making decisions within the political process, such as politicians and officials within administrative agencies who have regulation-making powers.

13. Robert N. Stavins, *Tradable Costs and Tradable Permits*, 29 J. ENVTL. ECON. & MGMT. 133, 133 (1995) (describing the high transaction costs that often plague environmental markets).

14. See, e.g., Douglas A. Kysar, *Law, Environment, and Vision*, 97 NW. U. L. REV. 675, 676-77 (2003) (“[T]he failure of existing environmental trading programs to inspire serious democratic deliberation about environmental goals is caused in no small part by a fundamental conceptual flaw in our background assumptions about the natural world and its relation to our economic activity. Specifically, because mainstream economic accounts generally fail to recognize absolute limits imposed by nature on the ability of humans to appropriate

environmental allowance markets are not enacted at all, or those that are end up watered down and lose their effectiveness as market-based instruments.<sup>15</sup>

New Zealand's experience with tradable environmental allowance markets demonstrates many of the different ways in which political costs can influence tradable environmental allowance markets. New Zealand has been a proving ground for many new products and ideas, ranging from new software to models of central banking and multi-party parliamentary governance, to name a few.<sup>16</sup> As a small, stable, and relatively wealthy state with a market-based economy, few regulations, and a strong commitment to the rule of law, New Zealand is well suited to serve as a proxy for larger markets and polities. Many of these innovations have developed locally, fostered by a culture of pragmatism and ingenuity.<sup>17</sup> It is hardly surprising, then, that New Zealand has been at the forefront of implementing innovative environmental policies, including integrated environmental management, individual transferable fishing quotas, and emissions trading. This Article draws upon New Zealand's experiments with tradable environmental allowance markets<sup>18</sup> to provide insights on the political conditions that contribute to their success and their failure.

This Article proceeds on the following course. Part I gives a background to the management of open access resources. The problem and solution to "the commons" is seen as a series of economic concerns, but lurking behind the economic theory is a range of political costs that constrain policy responses. Part

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and utilize natural resources, they also fail to provide an adequate conceptual basis on which to make political judgments required by tradable permit schemes.").

15. René Kemp & Serena Pontoglio, *The Innovation Effects of Environmental Policy Instruments—A Typical Case of the Blind Men and the Elephant?*, 72 *ECOLOGICAL ECON.* 28, 34 (2011).

16. See, e.g., *Kiwis as Guinea Pigs*, *THE ECONOMIST* (May 21, 2015), <http://www.economist.com/news/business/21651858-small-technophile-country-great-place-test-digital-products-kiwis-guinea-pigs> (describing software testing in New Zealand); JOHN SINGLETON ET AL., *INNOVATION AND INDEPENDENCE: THE RESERVE BANK OF NEW ZEALAND 1973-2002* 1-33 (2006) (describing central banking innovations); Jonathan Boston & David Bullock, *Experiments in Executive Government Under MMP in New Zealand: Contrasting Approaches to Multi-Party Governance*, 7 *N.Z. J. PUB. & INT'L L.* 39 (2009) (describing innovations in multiparty parliamentary governance arrangements); JANE KELSEY, *THE NEW ZEALAND EXPERIMENT: A WORLD MODEL FOR STRUCTURAL ADJUSTMENT?* (2015) (critiquing New Zealand's social and economic reforms); PATRICIA GRIMSHAW, *WOMEN'S SUFFRAGE IN NEW ZEALAND* (2013) xiv (New Zealand was the first country to grant women's suffrage).

17. New Zealand culture perceives itself as resourceful and able to problem solve. This derives from a history of pioneer farmers and is known locally as "good old kiwi ingenuity" or "the Number 8 wire mentality" (referring to 40mm gauge fencing wire that farmers can, apocryphally, use to fix any problem). See, e.g., Claudia Bell, *Resisting Global Homogeneity but Craving Global Markets: Kiwiana and Contemporary Design Practice in New Zealand*, in *DESIGNING WORLDS: NATIONAL DESIGN HISTORIES IN AN AGE OF GLOBALIZATION* 76, 79 (Kjetil Fallan & Grace Lees-Maffei eds., 2016).

18. In this Article, I generally adopt Carol Rose's nomenclature of "tradable environmental allowances" to refer to the spectrum of various policies that rely on tradable property and property-like rights to regulate the use of the environment, with a note to many other names used to describe the same concept. See Carol M. Rose, *Common Property, Regulatory Property, and Environmental Protection: Comparing Community-Based Management to Tradable Environmental Allowance*, in *DRAMA OF THE COMMONS* 233, 234 (National Research Council eds., 2002) [hereinafter Rose, *Common Property*].

II examines these political constraints in more detail to develop an account of how political costs can provide sources of resistance and support for the enactment and durability of tradable environmental allowance markets. This account does not purport to be exhaustive, but offers a number of factors that may be compelling in the enactment and durability of a tradable environmental allowance market. Part III examines this model in the context of two examples of tradable environmental allowance market policies adopted in New Zealand. The first example is the Quota Management Scheme (QMS) governing the management of fisheries stocks. The second is the New Zealand Emissions Trading Scheme (NZ ETS). Though both market-based schemes share some commonalities and manage to overcome the hurdle of political implementation, their differences help to illustrate the effect of political costs on tradable environmental allowance markets. This Article concludes with some lessons for the development and durability of tradable environmental allowance markets, arguing that New Zealand's experience illustrates that political costs pose important challenges not fully accounted for in the accounts of early theoretical proponents.

### I. MANAGING THE COMMONS

Environmental problems can be generated by open and common access to resources. The inability to control access to resources will lead to overexploitation because those exploiting the resources are not required to bear the costs of doing so; those costs are instead borne by the wider community interested in the resource.<sup>19</sup>

Garrett Hardin famously attached a tragic epithet to “the commons” because, he considered, in the commons “ruin is the destination toward which all men rush.”<sup>20</sup> As it happens, Hardin's choice of “the commons”—open common land (such as village greens) in early modern England where, by custom, villagers could use the common land for individual consumptive purposes (such as grazing, wood-gathering, or turf cutting)—was not an apt example of the problem he described.<sup>21</sup> But others observed the same tragedy in other contexts, such as fisheries, in which overexploitation was demonstrated to occur where the cost of fishing efforts (and thereby access to the resource) was low.<sup>22</sup> The fisherman has no incentive to leave fish in the sea “because there is no assurance

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19. Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243, 1244 (1968).

20. *Id.* (“Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons.”).

21. Susan Jane Buck Cox, *No Tragedy on the Commons*, 7 ENVTL. ETHICS 49 (1985) (showing that the commons system was an effective land management practice that was used successfully over centuries).

22. Peter Anderson, ‘*On Rent of Fishing Grounds*’: A Translation of Jens Warming's 1911 Article, with an Introduction, 15 HIST. POL. ECON. 391 (1983) (an English translation of Warming's article, originally published in Danish); see H. Scott Gordon, *The Economic Theory of a Common-Property Resource: The Fishery*, 62 J. POL. ECON. 124, 141 (1954). Anthony Scott expanded on Gordon's work by adopting a dynamic assessment of

that they will be there for him tomorrow if they are left behind today.”<sup>23</sup> The commons of Hardin’s herders may not have fallen victim to tragedy, but, for fisherman, the tragedy of the oceans has had substantial environmental and economic consequences.<sup>24</sup>

The challenges of managing open-access resources occur at many levels. Smaller communities might be able to create norms and institutions to coordinate their behavior to overcome the collective action problems relating to the use of a particular river or inshore fishery.<sup>25</sup> Community-based systems can be effective in the absence of,<sup>26</sup> or despite,<sup>27</sup> central regulation but are limited by scale, social structures, and out-of-group resource pressures.<sup>28</sup> But such systems depend upon community “close knittedness,” shared norms and social structure, and relatively low costs of monitoring and enforcement.<sup>29</sup> The twentieth century saw the rise of environmental problems associated with open access resources at national and supranational levels. These problems generally exceed the capacity of community-based management and the responsibility to address them has fallen to central government and its policy makers to develop means of regulatory intervention.

A number of regulatory instruments have been used to control access to resources, such as the ocean and the atmosphere. So-called “command-and-control” regulation involves central government dictating how resource users access the resource. The regulator may prohibit resource use altogether by banning particular activities (for example, the use of chlorofluorocarbons in propellants), or limiting *when* a resource user can access a resource (for example, fishing seasons) or *how* they go about doing so (for example, requiring carbon-scrubbers on smokestacks or limiting the types of fishing nets that can be used). Alternatively, a regulator may attempt to use a price mechanism to control

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ownership characteristics of common-property resources, and the effect of rights assignment. See Anthony Scott, *The Fishery: The Objective of Sole Ownership*, 63 J. POL. ECON. 116 (1955).

23. Gordon, *supra* note 22, at 135.

24. SAMUEL BOWLES, MICROECONOMICS, BEHAVIOUR, INSTITUTIONS AND EVOLUTION 28 (Colin F. Camerer & Ernest Fehr eds., 2004) (referring to the “tragedy of the *fishers*”) (emphasis added).

25. See ELINOR OSTROM, GOVERNING THE COMMONS (James E. Alt & Douglas C. North eds., 1990) (explaining how communities can develop community based management systems that effectively create exclusion); see also JAMES M. ACHESON, THE LOBSTER GANGS OF MAINE (1988); Arun Agrawal, *Common Property Institutions and Sustainable Governance of Resources*, 29 WORLD DEV. 1649, 1657 (2001); James M. Acheson, *The Lobster Fiefs Revisited: Economic and Ecological Effects of Territoriality in the Maine Lobster Industry*, in THE QUESTION OF THE COMMONS 37, 41 (Bonnie J. McCay & James M. Acheson eds., 1987) (describing the ability of a community to create a “perimeter defense”); Carol M. Rose, *The Several Futures of Property: Of Cyberspace and Folk Tales, Emission Trades and Ecosystems*, 83 MINN. L. REV. 129, 144, 155 (1998) [hereinafter Rose, *The Several Futures of Property*] (describing community based management systems as looking like a “commons” on the inside, but property from the outside).

26. See, e.g., OSTROM, *supra* note 25.

27. ROBERT C. ELLICKSON, ORDER WITHOUT LAW (1991) (describing how the cattle ranchers and farmers of rural Shasta County California, adopted rules of liability ascription that did not accord with applicable statute and common law rules).

28. Rose, *Common Property*, *supra* note 18, at 250.

29. See, e.g., OSTROM, *supra* note 25; ELLICKSON, *supra* note 27.

resource access by making resource users pay, directly or indirectly, for that right. One price mechanism may involve setting a tax or charge on access to the resource. If the tax is set correctly, those resource users who cannot absorb the cost will diminish. Another option involves the issuance of property-like allowances that permit a certain amount of resource use (for example, a number of tons of carbon emitted or fish landed). Property-like characteristics are created through scarcity; the number of allowances issued is capped to reflect the desired overall resource use giving the allowance value.

Permitting the trading of these allowances creates an allowance market. The theoretical advantage of pricing resource use through a market is that it will result in pollution reductions by those polluters who can achieve reductions at the lowest cost (measured in input/pollutant markets) and allocation of rights to the highest value users (measured in extractive markets). For example, if there are fewer pollution permits in the market than current pollution levels, and there are asymmetric costs of pollution reduction across market participants, market theory predicts that polluters who can reduce emissions cheaply will prefer to do so and to sell their permits to other polluters who cannot. Polluters for whom emission reduction is costly will prefer to purchase units rather than incur the costs of emissions reduction. By contrast, a command-and-control model or tax will typically force all resource users to incur the same pollution reduction burden, irrespective of their relative costs of pollution reduction. This means that lower-cost reducers will be willing to reduce their emission by a smaller quantity than would be efficient, and higher-cost reducers will be forced to bear the burden of costly emissions reductions that could be achieved by others at a lower cost. Accordingly, whereas regulatory policies may achieve emissions reductions (or allocation of resources), they tend to do so at a higher-than-optimal cost (that is, the same reductions could be achieved for less if they came from a different combination of emitters). By providing discretion to resource-users, economic theory suggests that least-cost resource management is within the market's grasp.

None of these options are costless. Rose argues that the policy goal is to choose the strategy that will maintain resource use at the desired level with the lowest total regulatory cost.<sup>30</sup> A "property" policy strategy may entail high levels of cost. In particular, initial "organizational costs" may be high because of difficulties agreeing on an acceptable resource cap and defining, allocating, and monitoring rights.<sup>31</sup> Because of these high costs, Rose argues that the property strategy will likely become more favored as the pressure on resources increases.<sup>32</sup> However, as resource pressure increases, the relative costs of implementing a property-based policy diminish relative to the costs of environmental degradation on the

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30. Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 2 DUKE L. J. 1, 12 (1991).

31. *Id.* at 21-22.

32. *Id.* at 23.

resource users. In the context of air pollution, this costs-based model predicts that a property policy will be preferable at a high level of environmental pressure because it minimizes total costs (even if organization and policing costs are high) and reduces failure or overuse costs with sufficient monitoring effort.<sup>33</sup>

The scholarship on tradable environmental allowance markets has, for the most part, focused on economic costs and benefits associated with their operation and development.<sup>34</sup> Accounts of the economic advantages of markets are insufficient, even if correct, because they fail to factor in the costs associated with creating and enacting environmental markets through a political process. Similarly, economic accounts of the costs of the creation of property rights are incomplete because they focus only on the costs of rights definition and enforcement and do not consider the costs to political actors of choosing a property or property-like policy. Economic costs associated with any policy option will of course be politically salient, but would not tell the whole story.

## II. THE POLITICAL COSTS AND TRADABLE ENVIRONMENTAL ALLOWANCE MARKETS

Lurking behind the costs of *the policy* are the costs of *choosing* that policy within the political process. Using the political system is not a costless process able to simply enact economically efficient or environmentally efficacious policies. Rather, political actors must determine how best to expend their limited political capital in their position as elected representatives of a constituency. Strong economic arguments may reduce the political cost of enacting the legislation necessary to establish a tradable environmental allowance market, but economic arguments may not always translate into the political arena. Instead, the political cost of enacting tradable environmental allowance markets may be magnified or reduced by a range of external and intrinsic considerations, discussed below. These factors will also influence the integrity and durability of policies that have been enacted: political costs may lead to the political manipulation of markets (thereby reducing their theoretical economic and environmental advantages) or their repeal. Part II provides a more detailed look at models of political costs and how they can affect policy choice, first by locating the source of political costs, then analyzing how those costs arise in the context of tradable environmental allowance markets.

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33. *Id.* at 28-29.

34. These costs are typically described using the general term "transaction costs." See, e.g., Stavins, *supra* note 13.

### A. POLITICAL ACTORS

Political actors are necessarily concerned with questions of political acceptability because any decision to enact (or reject) a policy comes with a cost to those actors, relative to policy alternatives. Any particular policy will require that political actors take various costly steps within the political process. Moreover, different policy options will typically have different distributional effects, which may also impose costs on political actors. For example, a policy that favors the interests of elites might create political costs in the form of popular unhappiness undermining future electoral prospects. Similarly, a policy that favors wider social goals may alienate special interests and reduce the financial or other contributions those groups may make to a political campaign.

Fundamentally, even if a policy is desirable, or optimal, by some academic criterion (such as efficiency), it must still be politically salable. If it is not, political actors will be unwilling to bear the political cost of participating in its enactment. Alternatively, they will amend the policy proposal to enhance its political acceptability, but in doing so may remove characteristics on which its economic or environmental efficacy depends. Once a policy has been enacted, adverse effects falling upon a particular constituency may amend or repeal a political necessity even if there is nothing “wrong” with the policy. A tradable environmental allowance market is particularly vulnerable to this type of interference: a political temptation to issue more units to ease distributional effects, such as the cost burden faced by a particular interest group, will generally undermine the property-like characteristics on which the policy depends. Few economic accounts of the merits of policies, or their evolution, account well for these “political costs,”<sup>35</sup> which form a prior condition to the enactment and successful operation of the policy.

### B. POLITICAL COSTS

Political costs can be identified if the political process is modeled as a “political market.” Keohane, Revesz, and Stavins provide a model of this nature.<sup>36</sup> Such a model is, of course, only a stylized representation of political behavior and much turns on the assumptions made. Nevertheless, such models can be useful tools for illustrating the general political effects with respect to shifts in the aggregate demand and supply functions in different circumstances. The authors examine demand- and supply-side theories of how political actors

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35. Edward Woerdman, *Emissions Trading and Transaction Costs: Analyzing the Flaws in the Discussion*, 38 *ECOLOGICAL ECON.* 293, 296 (2001) (“Only a few authors acknowledge that any welfare assessment of permit trading needs to be adjusted to take into account the transaction costs thrown up by the political process itself . . .”).

36. See Nathaniel O. Keohane, Richard L. Revesz & Robert N. Stavins, *The Choice of Regulatory Instruments in Environmental Policy*, 22 *HARV. ENVTL. L. REV.* 313 (1998).

come to choose particular policies. Demand-side theorists see policy choice as turning on the demand of firms and interest groups for particular regulatory outputs that advance their economic interests, such as creating barriers of entry or otherwise imposing costs on their competitors.<sup>37</sup> Those seeking the benefits of regulation will “bid” for it through offers of resources to political decision makers who, as economic agents, will supply regulation according to the benefits received from meeting this demand.

By contrast, supply-side theorists focus on the legislators and regulators themselves, and what causes them to support particular policies. On this account, the decisions of political actors turn on a range of factors including the interests of constituents,<sup>38</sup> the position of colleagues,<sup>39</sup> personal ideologies,<sup>40</sup> and the utility they derive from policymaking and holding office.<sup>41</sup> The supply function can be described according to three components: the opportunity cost of effort, the psychological cost of supporting an unfavorable policy, and, crucially, the opportunity cost of supporting an instrument that is not favored by the policymaker’s constituency.<sup>42</sup> The function therefore depends upon the ideological predisposition of the political actor, their perception of constituent preferences, and the increasing opportunity costs of providing additional support for a particular policy instrument (recognizing a finite amount of political capital).<sup>43</sup>

Keohane, Revesz, and Stavins combine these demand- and supply-side theories into an equilibrium model focused on the exchange between legislators and constituents or interest groups.<sup>44</sup> This “political market” describes legislators’ support for a particular policy instrument within a specific policy context.<sup>45</sup> Political actors are presumed to be economic actors and therefore seek to maximize their utility in the form of political, and therefore electoral, support. The shape of the legislator’s supply function is determined by three factors: opportunity costs of efforts, ideological costs, and constituency costs.<sup>46</sup> This function reflects the legislator’s “effective support” for the policy at various levels of political cost. This supply function intersects with a demand function derived from the support of interest groups who can provide support to the political actor.<sup>47</sup> The equilibrium determines the level of support provided.

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37. *Id.* at 319-21.

38. *Id.* at 321.

39. *Id.*

40. *Id.* at 322.

41. *Id.* at 333.

42. *Id.* at 335.

43. *Id.* at 335, 337.

44. *Id.* at 325.

45. *Id.*

46. *Id.* at 326.

47. *Id.* at 325-26.

Although the Keohane, Revesz, and Stavins model is limited to the costs between political actors and constituents, there may also exist influential sources of political cost between political actors (for example, between different parties in coalition governments, or between factions in a single party), or between political actors and bureaucratic actors (for example, between politicians and departmental officials).

In a recent article examining the so-called “invariance hypothesis,” Fennell and McAdams recognize the importance of what they term “political action costs” as impediments to tax-based redistribution.<sup>48</sup> The authors do not purport to develop a detailed theory of “political action costs,”<sup>49</sup> but nevertheless provide a useful starting point of a conception of political costs across the policy process. Individuals, groups, legislative bodies, and officials all incur costs associated with political fights over policies having different distributional consequences.<sup>50</sup> This can be attributed to public choice theory, as Fennell and McAdams argue, but such costs could arise from fights founded in ideology or a political actor’s sense of moral duty to his or her constituents. The important point is that these costs are not only real, but they have a real impact on political policymaking.<sup>51</sup> Fennell and McAdams postulate a number of situations where political costs arise.<sup>52</sup> Their descriptions are set in the context of distributional effects, in light of the subject of their paper, but can be used as starting points to extrapolate more general propositions.<sup>53</sup>

First, the *search/identification* stage requires the identification of an opportunity for policy change. Political costs arise from the search for policy problems or opportunities.<sup>54</sup> A political actor has limited resources with which to proactively identify opportunity and to filter concerns raised by constituents and lobbyists. These resources are expended when a particular concern or idea is pursued. Resource limitation creates a political opportunity cost by limiting the ability of the political actor to pursue other issues.

Second, in the *policy development* stage, the policy proposal must be brought to the attention of the relevant political actor so that it can be developed and

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48. Lee Anne Fennell & Richard H. McAdams, *The Distributive Deficit in Law and Economics*, 100 MINN. L. REV. 1051 (2016) (arguing that political action costs disrupt the argument of Kaplow and Shavell that a tax-and-transfer is distributionally superior to doctrinal rules which is premised on a hypothesis of distributional invariance).

49. *Id.* at 1081.

50. *Id.* at 1080.

51. *See, e.g., id.* (observing that the expensive and long-lasting political battles founded in the distributional effects of policies only make sense if distributional invariance is false).

52. *Id.* at 1082.

53. *Id.* at 1083. In this connection, Fennell and McAdams refer to three phases: (1) search or opportunity spotting; (2) decision influencing; (3) execution, enforcement, and maintenance. These categories are altered, expanded, and added to the framework I set out below.

54. *Id.*

progressed from a policy and political perspective.<sup>55</sup> In most cases, a political actor will have limited power, influence, and access to the resources connected with the policymaking process, such as departmental officials who will usually be needed in order to develop a workable policy proposal. To do this, other actors must be convinced that the problem identified is real and that the solution proposed is the right one so that the policy proposal progresses.

Third, the *enactment and implementation* stage is where the policy must be enacted and implemented by the relevant political decision makers.<sup>56</sup> This is the location where political costs are most salient. Although the problem identification and policy development states described above entail political costs, those costs will be less than the cost of enactment: it is cheaper to draw up the plans for a house than to build it. To enact a policy, political actors must agree according to the relevant decision threshold of the decision-making institution. Obtaining sufficient support may require compromise, horse trading, or the giving of assurances. It is at this stage that a policy proposal may be particularly vulnerable to alteration or modification as attempts are made to accommodate a wide range of interests relevant to other political actors whose support is needed to enact the policy.

In the fourth and final stage, the policy must be enforced and maintained. Distributional effects or a lack of policy effectiveness can create political costs that result in the modification or undoing of the policy after it has been enacted.<sup>57</sup> Many voters or interest groups lack the ability, the means, or the incentive to become informed of policy proposals and formulate *ex ante* opinions at the time a policy proposal is made or ultimately enacted. The consequence of this voter disenfranchisement is that the supply-side dominates at the policy formulation and implementation stages. However, once a policy begins to operate, the costs of that policy may come to bear on disinterested voters who now come to recognize or act upon their interest. They may lobby political decision makers, bring court challenges, or otherwise protest. These delayed political costs can turn the amendment or repeal of the policy into a political necessity.

At both the third and fourth stages, divides between interests create political costs. Divisions may exist in the constituency as a whole or between special interest groups. Such divisions may be drawn along many lines. In the context of an environmental policy, existing resource-users may espouse claims of right with respect to their resource access, regardless of legal foundation, and mount opposition to regulation of the resource that has political resonance. On the other hand, environmentalists may criticize policies as not going far enough to control resource exploitation. Yet others may cite distributional effects of market policies

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55. *Id.*

56. *Id.*

57. *Id.*

as a basis of opposition.<sup>58</sup> For this reason, disputes over the allocation of rights can be particularly pervasive sources of political interest and resistance. In a purely Coasian sense, the initial allocation of tradable rights should not matter if transaction costs are low: rights will find their way to the highest user. However, transaction costs are rarely low, and Coasian bargaining is not concerned with the *distributive* consequences of the initial allocation of rights, which may be plainly unfair (for example, by having the effect of giving market power to incumbents thereby precluding transfer of allowances to the most cost-efficient resource users),<sup>59</sup> and therefore politically salient.

### C. POLITICAL COSTS AND TRADABLE ENVIRONMENTAL ALLOWANCE MARKETS

Efforts to enact and sustain a tradable environmental allowance market will be affected by political costs. Markets will fail where transaction costs are high,<sup>60</sup> or where information is incomplete or asymmetric.<sup>61</sup> Where a market is created by regulation, it must not only overcome the possibility of government failure,<sup>62</sup> but also political costs that influence its enactment and durability. In the context of tradable environmental allowance markets, there are a number of important factors that will frequently influence the location of the “political” demand and supply functions.

One of these is the allocation of rights to resource users. The allocation of rights is of particular importance because it can have substantial distributional consequences, which in turn affect the costs facing political actors: the economic and environmental effectiveness of the market will depend on *who* receives the rights and *how much* resource access is created through the issuance of allowances. There are two broad types of mechanisms for determining who initially receives rights.

The first is to allocate rights through a free auction. This is the approach preferred by many economists because it ensures that rights are allocated to those

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58. See Bruce Yandle & Stuart Buck, *Bootleggers, Baptists, and the Global Warming Battle*, 26 HARV. ENVTL. L. REV. 177, 193 (2002) (referring to competing attitudes to the distributional effects of rights allocation under the Kyoto Protocol).

59. See, e.g., Evelyn Pinkerton & Danielle N. Edwards, *The Elephant in the Room: The Hidden Costs of Leasing Individual Transferable Fishing Quotas*, 33 MARINE POL'Y 707, 712 (2009) (explaining how transaction costs and asymmetric information can cause tradable environmental allowance markets to operate inefficiently and produce significant wealth effects associated with the initial allocations of rights).

60. See, e.g., Ronald H. Coase, *The Problem of Social Cost*, 3 J. L. & ECON. 1, 15-16 (1960).

61. See, e.g., Joseph E. Stiglitz, *The Contributions of the Economics of Information to Twentieth Century Economics*, 115 Q. J. ECON. 1441, 1457-58 (2000); Michael Rothschild & Joseph E. Stiglitz, *Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information*, 90 Q. J. ECON. 629, 638 (1976); George A. Akerlof, *The Market for “Lemons”: Qualitative Uncertainty and the Market Mechanism*, 84 Q. J. ECON. 488, 500 (1970); George J. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213 (1961).

62. See, e.g., Ernest W. Williams, Jr. & Ronald H. Coase, *The Regulated Industries: Discussion*, 54 AM. ECON. REV. 192, 195 (1964).

who value them the most at the outset.<sup>63</sup> An auction can disadvantage existing users who have developed their businesses on the premise of free access and whose margins may be unsustainable if required to bid for resource rights in circumstances where prospective (and potentially wealthier or liquid) entrants drive up the price. From an economist's perspective, this is not necessarily troubling, indeed, it is preferable. If existing users value the rights less than others then changes in the composition of resource users are efficient. Politically, however, a policy change that results in the closure of factories or the laying up of fishing boats can be deeply unpopular, even if a change in who uses the resource is wealth-enhancing at a macro level. Existing resource users are often able to coordinate on the basis of their shared interests to exert significant political influence on the government. This helps to explain why auctions have rarely been used to allocate rights:<sup>64</sup> the status quo has a more powerful political pull than the future.

The alternative to allocation through auction is grandfathering: allocating rights to existing resource users either pro rata or on the basis of historical baselines (such as catch or emission volumes). This favors the status quo, minimizes the redistribution of rights away from existing users, and better accords with political claims of rights associated with first possessors.<sup>65</sup> However, these grandfathered allocations can entrench existing inefficient resource users by concentrating rights and discriminating against prospective entrants. Grandfathering can also result in an unfair distribution of rights and economic power to existing resource users on the basis of historical activities. But as discussed, this unfairness is less politically salient than the reverse.<sup>66</sup> Grandfathering does not isolate policy architects from the political influence of existing users who will advocate for the choice of advantageous historical baselines to enhance the allocation of rights. This can distort the market and provide significant windfalls to particular participants.<sup>67</sup> The important point is that grandfathering has been the predominant form of rights allocation in tradable environmental

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63. The Coase theorem predicts that rights will end up in the hands of those who value them the most—regardless of how those rights are initially allocated—in a zero-transaction cost world. Auction processes (and other methods of allocation) can entail transaction costs that ultimately impair the efficient distribution of rights.

64. ANDERSON & LIBECAP, *supra* note 2, at 130.

65. See, e.g., Steven Shavell, *On Optimal Legal Change, Past Behavior, and Grandfathering*, 37 J. LEGAL STUD. 37 (2007) (arguing that grandfathered allocations provide social stability).

66. Keohane, Revesz & Stavins, *supra* note 36, at 365 (arguing that grandfathered tradable permits are less costly for regulators to supply than auction permits because “the costs imposed on industry are less visible and burdensome”).

67. A classic example was the so called “hot air” allocation of emissions units to eastern European states under the Kyoto Protocol. These states benefited from the Protocol's 1990 base year which predated the substantial economic declines that occurred following the collapse of the Soviet Union. As a result, the emissions targets (and therefore Assigned Amount Units) for states like Russia and the Ukraine greatly exceeded their actual level of emissions. The ability to sell these units to other Kyoto participants resulted in west-to-east wealth transfers as a result of grandfathering. See, e.g., David G. Victor, Nebojsa Nakicenovic &

allowance markets. This explains one of the departures between the theory and practice. Ackerman and Stewart assert, for example, the advantages of rights auctions without acknowledging that the political cost of allocation by auction is usually prohibitive.<sup>68</sup>

Overcoming the hurdles of enactment does not mark the end of the political policy process. Another factor for the location of the “political” demand and supply functions, and the integrity and durability of a tradable environmental allowance market, is the political implications of its operation. This factor is typically borne out in attempts to repeal tradable markets, alter the level of compliance with their terms, or make amendments to their design. Market-based mechanisms with low political popularity are likely to face repeal or amendment, or flagrant non-compliance: any of which may serve to undermine the operational performance or environmental efficacy of the policy.<sup>69</sup>

Moreover, governments change, and attitudes to economic and environmental policies can change with them. The source of these changes may simply be ideological—a new government may disavow market-based policies as a matter of principle. Similarly, a new government may have broad objections incurring the economic costs of implementing meaningful environmental policy at all, resulting in a wind back of the work of the previous government to advance market-based environmental policies. The impetus for policy change may also come from special interest groups exerting influence under the new regime. As Anderson and Libecap observe, paradoxically, new rents created under successful tradable environmental allowance regimes can create new winners and losers, thereby causing new political distributional pressures<sup>70</sup> and changing the political-cost calculus.

In design terms, the tradeoff between security of property rights and the flexibility to ensure environmental effectiveness can be thought of as a function of political integrity. An environmental market must be able to be calibrated if it is to achieve its goal of least-cost environmental management. If the market fails to achieve the environmental ends that amount to its *raison d'être*, the government will come under increasing pressure from environmentalists to recalibrate the market or to abolish it altogether in favor of other policy options. At the same time, if regulated resource-users are uncertain about definition, durability, and

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Nadejda Victor, *The Kyoto Protocol Emission Allocations: Windfall Surpluses for Russia and Ukraine*, 49 CLIMATE CHANGE 263 (2001).

68. Ackerman & Stewart *Reforming Environmental Law*, *supra* note 4, at 1343-44.

69. This can be seen in the example of the New Zealand Emissions Trading Scheme, discussed in detail below.

70. ANDERSON & LIBECAP, *supra* note 2, at 133 (“Property rights created by government may be potentially at more risk paradoxically when they are successful and new rents and wealth emerge. Old distributional criticisms can resurrect when differential outcomes become more apparent between winners and losers. New political and social pressures can arise to redistribute or constrain property rights. Such redistribution can undermine the effectiveness of property rights and environmental markets.”).

scope of their rights, the value of allowances will fall and investment will be discouraged.<sup>71</sup> These competing imperatives suggest that an environmental allowance ought not to be “too clear a property right” to balance certainty and flexibility.<sup>72</sup> Flexibility comes with a political cost. Once rights are created and established, an attempt by a government to alter the allocation or number of units in the market—adverse to the interests of rights holders—will likely be met with resistance from industry participants, and potentially the courts.<sup>73</sup> Flexibility may also make a market vulnerable to post-enactment political manipulation if the stakeholder group’s disinterest or disenfranchisement results in political costs not being accounted for in the process of enactment.

Comprehensiveness is an important feature of tradable environmental allowance market design. A tradable environmental allowance market operates on the basis of property or property-like rights created by the state. The precise legal character of these rights is complex, and jurisdictionally dependent.<sup>74</sup> However, regardless of the *formal* legal character of the rights underlying a tradable environmental allowance market, those rights depend on property *characteristics*. Where these rights relate to a resource it is important that the rights system covers the whole resource, or as much of it as possible, not a mere part. A lack of comprehensiveness undermines the property characteristics of the rights in the market.

If the rights system is less than comprehensive, adverse unintended consequences and moral hazards may arise in the form of externalities and market failure. That is, by resolving one problem (controlling access to one part of a resource), a system of property rights can create others (encouraging over-exploitation of another part). If the market does not cover all resource users, it is likely to create arbitrage effects, leakage, and distributional unfairness. This

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71. Robert W. Hahn & Gordon L. Hester, *Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program*, 6 YALE J. REG. 109, 149-52 (1989); Daniel H. Cole, *New Forms of Private Property: Property Rights in Environmental Goods*, in ENCYCLOPEDIA OF LAW AND ECONOMICS 274, 295-96 (B. Bouckaert & G. De Geest eds., Edward Elgar, 2000); Carol M. Rose, *Expanding Choices for the Global Commons: Comparing Newfangled Tradable Allowance Schemes to Old-Fashioned Common Property Regimes*, 10 DUKE ENVTL. L. & POL'Y F. 45, 61-62.

72. Hahn, *Economic Prescriptions for Environmental Problems*, *supra* note 11, at 101.

73. C. Splash, *The Brave New World of Carbon Trading*, 15 NEW POL. ECON. 169, 180 (2010) (“Allocating permits is equivalent to attributing polluters a property right . . . Once permit systems are established, and permits have been allocated, a government has created property rights for pollution which the courts may well protect.”). In the United States allowances in environmental markets have typically been deemed not to constitute property rights to avoid constitutional arguments about compensation for cancellation or expropriation. See Marshall J. Berger, Richard B. Stewart, E. Donald Elliot & David Hawkins, *Providing Economic Incentives in Environmental Regulation*, 8 YALE J. REG. 463, 480 (1991).

74. See, e.g., SABINA MANEA, *THE INSTRUMENTALIZATION OF PROPERTY: LEGAL INTERESTS IN THE EU EMISSIONS TRADING SYSTEM* (2014) (discussing the challenges of classifying legal interests under the European Union Emissions Trading System). For a discussion of these rights as “hybrid property” see, e.g., Richard B. Stewart, *Privprop, Regprop, and Beyond*, 13 HARV. J. L. & PUB. POL'Y 91 (1990); James E. Krier, *Marketable Pollution Allowances*, 25 U. TOL. L. REV. 449 (1994).

occurred under the Kyoto Protocol: the differentiation in obligation between Annex 1 (developed) and non-Annex 1 (developing) participants led to the “outsourcing” of emissions-producing activities from Annex 1 to non-Annex 1 states.<sup>75</sup> The lack of comprehensive coverage of resource users undermined the integrity of the market mechanism.<sup>76</sup> Similarly, if the market does not cover all aspects of the resource that are affected by resource users, the protection of one area of resource concern (for example a desire to limit the catch volume of a particular target fish species) can have effects on other, uncontrolled, aspects of the resource (to continue the example, pressure on other target fish stocks or increases in non-target catch).<sup>77</sup> This interacts with what Rose describes as “overuse” or “failure” costs.

In this sense, the political integrity of a policy depends heavily on information. Incomplete information can be a cause of political instability or intractability, or at the least a source of transaction costs that influences the definition of rights, and therefore the creation and success of tradable environmental allowance markets. It is costly to “define rights, monitor trespasses, and to expel intruders.”<sup>78</sup> These costs affect the establishment and operation of tradable environmental allowance markets, which depend on a system of “regulatorily-created, transferable property-like rights.”<sup>79</sup> Without these property-like rights the markets will not function. A tradable environmental allowance market will typically carry the imprimatur of the government through the promulgation and enforcement of sanctions for noncompliance allowance holding or surrender requirements. However, sanctions may have little effect if it is too costly to monitor resource use in order to detect delinquent resource users.<sup>80</sup> Resource users will not value allowances if it is easy to use the resource illicitly and the probability of detection and sanction is low. If exclusivity is not established, the market for allowances will collapse for want of scarcity: if users can simply continue to access the resource without sanction after the market is established there will be

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75. Yan Yunfeng & Yang Laike, *China's Foreign Trade and Climate Change: A Case Study of CO<sub>2</sub> Emissions*, 38 ENERGY POL'Y 350 (2010) (finding that between 1997 and 2007, in anticipation of the first Kyoto Protocol commitment period, between 10.30% to 26.54% of China's annual CO<sub>2</sub> emissions were produced during the manufacture of goods for export).

76. Rahel Aichele & Gabriel Felbermayr, *Kyoto and Carbon Leakage: An Empirical Analysis of the Carbon Content of Bilateral Trade*, 97 REV. ECON. & STAT. 104 (2015) (finding empirical proof of “carbon leakage” under the Kyoto Protocol). “Carbon leakage” refers to a shift in carbon intensive production from countries with emissions reduction commitments to those without.

77. See, e.g., Rose, *The Several Futures of Property*, *supra* note 25, at 170-71 (“Fishers may indiscriminately destroy the non-target fish species as so-called by-catch; or, in order to avoid paying for quota, they may shift their efforts and overfish the “free” non-target fish.”).

78. *Id.*

79. *Id.* at 163.

80. Tom Tietenberg, *The Tradable-Permits Approach to Protecting the Commons: Lessons for Climate Change*, 19 OX. REV. ECON. POL'Y 400, 404 (2003) (observing that these problems can be particularly pervasive in tradable environmental allowance regimes because underlying profitability incentives creates a doubled-edged sword that can encourage desirable resource use and cheating in equal measure).

no demand for allowances.<sup>81</sup> These costs of property are fundamentally informational as they arise from the information-creating activities of ascertainment and description of rights, and the linked concepts of monitoring and expulsion, which depend on the identification of intruders and scofflaws. Overcoming these informational impediments depends on technological advancement to reduce costs of obtaining information about resources and those who use them.<sup>82</sup>

### III. EXPERIMENTS WITH FISHERIES MANAGEMENT AND EMISSIONS MARKETS IN NEW ZEALAND

New Zealand has been an early adopter of tradable environmental allowance markets. It has been a world leader in the use of market-based fisheries management<sup>83</sup> and adopted the world's first "all sectors, all gases" emissions trading scheme.<sup>84</sup> The enactment of these market-based mechanisms arose in complex political contexts. Moreover, both have faced post-enactment political challenges.

This Part considers the design and operation of the A. Quota Management System and, B. New Zealand Emissions Trading Scheme, and how they have been influenced by political costs. The development of these schemes shows a number of influences on political costs, including external drivers and controversies over rights. Drivers external to the policy itself, such as economic reform or international obligation, can influence whether a tradable environmental allowance market is enacted, by shifting both the political supply and demand curves to the right. Controversies over rights can also affect policy choice but often do not become crystallized until the implementation phase. A tradable environmental allowance market must be able to balance flexibility to respond to rights

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81. Ackerman & Stewart, *The Democratic Case*, *supra* note 4, at 183 ("If polluters did not expect rigorous enforcement for the term of their permits, this fact would show up at the auction in dramatically lower bids: Why pay a lot for the right to pollute legally when one can pollute illegally without serious risk of detection.").

82. Daniel C. Esty, *Environmental Protection in the Information Age*, 79 N.Y.U. L. REV. 115, 187-88 (2004) ("To the extent that information technologies ameliorate valuation disputes, make property rights easier to define and defend, and generally lower transaction costs, they eliminate a number of the obstacles that have prevented broader adoption of market-based regulatory strategies."); *see also* Rose, *The Several Futures of Property*, *supra* note 25, at 166-67; Sharon Hatch Hodge, *Satellite Data and Environmental Law*, 14 PACE ENVTL. L. REV. 691 (1997); Lawrence H. Goulder, *Markets for Pollution Allowances: What Are the (New) Lessons?*, 27 J. ECON. PERSP. 87, 90 (2013) (observing that monitoring in United States' air pollutants market proved to be relatively cheap and accurate).

83. James Sanchirico & Richard Newell, *Catching Market Efficiencies: Quota-Based Fisheries Management*, 150 RESOURCES 8, 9 (2003).

84. Toni E. Moyes, *Greenhouse Gas Emissions Trading in New Zealand: Trailblazing Comprehensive Cap and Trade*, 35 ECOLOGY L. Q. 911 (2008) (describing the first iteration of the New Zealand Emissions Trading Scheme as "trailblazing" in its ambition and comprehensiveness); Nan Jiang et al., *New Zealand's Emissions Trading Scheme*, 43 N.Z. ECON. PAPERS 69 (2009). *But see* David Bullock, *Emissions Trading in New Zealand: Development, Challenges and Design*, 21 ENVTL. POL. 657 (2012) [hereinafter *Bullock Emissions Trading in New Zealand*] (outlining the rapid policy changes that limited the ambition and scope of the New Zealand Emissions Trading Scheme soon after it was enacted).

controversies while maintaining sufficient certainty to ensure the property-like characteristic of regulatory rights. The New Zealand experience illustrates the conditions in which political costs can be overcome to facilitate the enactment of a tradable environmental allowance market, but also how political costs can affect the integrity of such markets once established.

#### A. THE QUOTA MANAGEMENT SYSTEM

The New Zealand Quota Management System (QMS) was created in 1986<sup>85</sup> and was the first fisheries management system to embrace comprehensive transferable rights.<sup>86</sup> Since the QMS was enacted it has undergone a number of significant changes as policymakers have benefited from operational learning.

The modern QMS, largely in place since 2001, has individual transferable quota (ITQ) at its heart. ITQ has property characteristics: it is a right that can be transferred, leased, caveated, or mortgaged.<sup>87</sup> The value of the ITQ comes from being the regulatory basis on which catch entitlements are determined. ITQ holders are entitled to annual catch entitlements (ACE).<sup>88</sup> Each year a total allowable catch volume (TAC) is set (or rolled over from the previous year) for each fish stock governed by the QMS using the best available information about the ecology of the fishery and its maximum sustainable yield,<sup>89</sup> which is then used to determine ACE.<sup>90</sup> Currently the QMS covers 100 species (or species groupings) divided into 638 separate stocks, each managed independently.<sup>91</sup> Allowances for recreation and customary fishing, and other sources of fishing-related mortality, are deducted from the TAC to give the total allowable commercial catch (TACC) for each fishery.<sup>92</sup> It is the ACE that gives the right to take a volume of fish. Quota holders are allocated ACE representing a pro rata percentage of the TACC.<sup>93</sup> Each month, ACE holdings are compared to catch records and interim-deemed values assessed against the fisher in respect of any

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85. Fisheries Amendment Act 1986 (Act No. 34/1986) (N.Z.).

86. Basil M. H. Sharp, *From Regulated Access to Transferable Harvesting Rights: Policy Insights from New Zealand*, 21 MARINE POL'Y 501, 515 (1997).

87. Fisheries Act 1996, pt 8 (Act No. 88/1996) (N.Z.).

88. *Id.*, pt 4 s 67.

89. *Determining the Total Allowable Catch*, MINISTRY FOR PRIMARY INDUSTRIES (2009), <http://fs.fish.govt.nz/Page.aspx?pk=81&tk=400> ("Under the QMS, the Minister [for Primary Industries] is responsible for ensuring that fishstocks are maintained at or above a level that can produce the Maximum Sustainable Yield (MSY). MSY reflects the greatest yield that can be achieved over time while maintaining a stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock. Controls are set so that the biomass level can support the maximum sustainable yield (BMSY). This provides the conditions to maximise the yield of the fishery without compromising sustainability.").

90. Fisheries Act 1996, pt 4 s 66.

91. *New Zealand's Quota Management System*, MINISTRY FOR PRIMARY INDUSTRIES (2009), <http://fs.fish.govt.nz/Page.aspx?pk=81&tk=248>.

92. Fisheries Act 1996, pt 4 s 21.

93. *Id.*, pt 4 s 67.

excess catch. At the end of the year, a final catch balancing occurs whereby the fisher must have either acquired sufficient ACE to cover its actual catch,<sup>94</sup> or deemed values will be payable for the excess catch landed.<sup>95</sup> Deemed values are set at a level intended to incentivize fishers to hold ACE rather than pay deemed values, and also take into account economic values of particular species and the extent to which annual catch is likely to exceed the TACC.<sup>96</sup>

Possessing ACE is necessary to catch fish commercially but it is not sufficient. In order to fish commercially a fisher must also have a permit.<sup>97</sup> The permit both entitles a fisher to fish commercially and requires them to, inter alia: fish from a registered vessel; record catch, effort, and landings; land all fish caught; not “dump” unwanted catch; and land fish to licensed fish receivers.<sup>98</sup> The permitting system enables the Ministry of Primary Industries to monitor participants in the fishing industry and their fishing efforts. The permitting process, and the nature of rights under the QMS, means that there is no necessary connection between quota holders and fishers. Permit holders may be quota holders, but many are not. In fact, many permit holders do not hold quota of their own (and therefore are not entitled to ACE) but instead have arrangements with quota holders under which they fish using the quota holders’ ACE. Accordingly, the consolidation of quota holders does not necessitate the consolidation of fishers.<sup>99</sup> This is supported by quota aggregation limits that place limits on the amount of quota held by any one person.<sup>100</sup> The New Zealand fishery has also seen an increasing concentration of quota, but seen increasing participation of small-scale fishers in the inshore fisheries, largely driven by the ACE regime.<sup>101</sup>

The development of the QMS shows the influence of economic reforms and policy entrepreneurs on the political cost of tradable environmental allowance

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94. *Id.*, pt 4 s 76.

95. *Id.*, pt 4 s 75.

96. *Id.*, pt 4 s 75(2).

97. *Id.*, pt 6 s 89.

98. *Id.*, pt 10 s 191.

99. *Cf.*, Tracy Yandle & Christopher M. Dewees, *Consolidation in an Individual Transferable Quota Regime: Lessons from New Zealand 1986-1999*, 41 ENVTL. MGMT 915 (2008) (demonstrating consolidation in New Zealand fisheries between 1986 and 1999, but explaining that the source of this consolidation is complex and was driven at least in part by the collapse of the New Zealand inshore fisheries immediately preceding the introduction of the QMS).

100. *New Zealand’s Quota Management System*, MINISTRY FOR PRIMARY INDUSTRIES (2009), <http://fs.fish.govt.nz/Page.aspx?pk=81&tk=423>.

101. James Stewart & Peter Callagher, *Quota Concentration in the New Zealand Fishery: Annual Catch Entitlement and the Small Fisher*, 35 MARINE POL. 631, 642 (2011) (“Although legislative limits on quota aggregation have limited continued quota aggregation by some individual entities, overall quota ownership continues to become more concentrated . . . ACE has become less concentrated for inshore species . . . suggesting improved profitability for small-scale fishers in this segment of the fishery. The reduced concentration in ACE for important inshore species correlates with the introduction of the ACE regime, suggesting that the mechanism has allowed increased participation by small-scale fishers. The ACE regime reduces transaction costs and provides clear information on price, reducing asymmetric information, potentially improving the viability of the small fisher.”).

markets. Historically, New Zealand's fisheries were largely inshore-based (with significant Japanese, Korean, and Soviet fishing occurring beyond New Zealand's twelve-nautical mile territorial sea). Until 1963, the inshore fishery was heavily regulated by a licensing system that controlled the use of equipment, and placed geographic restrictions on fishing areas and ports of origin.<sup>102</sup> The inshore fishery was completely deregulated in 1963 and, with the support of government subsidies, New Zealand saw substantial investment and growth in fisheries.<sup>103</sup> New Zealand claimed the full extent of its 200-nautical mile exclusive economic zone in 1978, giving it jurisdiction over a vast area of the Pacific Ocean.<sup>104</sup> The deep-water fishery was regulated through the licensing of foreign fishing fleets and regulations were introduced to restrict entry to the inshore fishery in the face of increasing biological pressure.<sup>105</sup>

Clark, Major, and Mollett identify three significant events in 1983 that drove the creation of the New Zealand QMS.<sup>106</sup> First, economic and biological problems within the inshore fishery had become so significant that a direct policy intervention could not be avoided: New Zealand's inshore fishery was characterized by severe biological pressure, falling catch relative to fishing effort, and substantial overcapitalization.<sup>107</sup> Second, the Fisheries Act 1983 recognized dual goals of meeting biological objectives while maximizing fishing yield through a system of management plans and permitting, but it did little to actually achieve this balance in a regulatory sense.<sup>108</sup> Nevertheless, the 1983 legislation was particularly significant as a first step in institutional reform that moved fisheries regulation away from strong governmental supply of incentives and regulation toward more flexible mechanisms.<sup>109</sup> Finally, an economics-based management system for deep-water trawl fisheries was introduced based on individual transfer-

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102. Ian N. Clark et al., *Development and Implementation of New Zealand's ITQ Management System*, 5 MARINE RESOURCE ECON. 325, 326 (1988).

103. *See id.*

104. Territorial Sea, Contiguous Zone, and Exclusive Economic Zone Act 1977 (Act No. 28/1977) (N.Z.).

105. Clark et al., *supra* note 102, at 326.

106. *See id.*

107. Kristen M. Batkin, *New Zealand's Quota Management System: A Solution to the United States' Federal Fisheries Management Crisis*, 36 NAT. RESOURCES J. 855, 865 (1996).

108. Basil M. H. Sharp, *From Regulated Access to Transferable Harvesting Rights: Policy Insights from New Zealand*, 21 MARINE POLICY 501, 511 (1997) ("... the new *Fisheries Act 1983* contained no provisions from [individual transferable quota]—in short, it was legislation born during an era where a strong central government preferred to regulate.").

109. *Id.* at 516 ("Within the prevailing institutional structure, government also exercised its rights to manage. Management was by way of regulating access. The role of government during the period was significant because it supplied both development incentives and regulations. The institutional structure resulted in outcomes that were not sustainable. Institutional reform opened up new territory in the world of fisheries management. Reform was introduced in two stages. First, the initial conditions for implementing the quota management system were established by removing excess effort from the fishery and reducing catch levels, which allowed stressed stocks to rebuild. The second stage involved establishing tradeable rights to harvest the total allowable catch.").

able quotas, with the intention of proactively controlling the exploitation of deep-water fisheries before ecological proposals arose.<sup>110</sup> The increased interest in the economic opportunities of the deep-water fishery coincided with the government's declaration of a 200-nautical mile exclusive economic zone. These initial steps would prove important to the introduction of a more comprehensive quota management system in 1986.<sup>111</sup>

A fourth factor, barely mentioned by Clark, Major, and Mollett,<sup>112</sup> was the sharp turn towards economic liberalization in the New Zealand public sector and political system after decades of insular and protectionist economic policy. By the early 1980s, and contrary to the prevailing economic views of the government of the day, market-based approaches were becoming popular among senior officials within the Treasury, which carried significant influence within the New Zealand bureaucracy.<sup>113</sup> The election of the Fourth Labour Government in 1984 saw the beginning of radical market-based economic reform between 1984 and 1993, culminating in New Zealand "moving from what had probably been the most protected, regulated and state-dominated system of any capitalist democracy to an extreme position at the open, competitive, free-market end of the spectrum."<sup>114</sup> The presence of pro-market policy entrepreneurs at all levels of the New Zealand government in the mid-1980s,<sup>115</sup> and a contemporaneous economy-wide project of market liberalization, was crucial to the political acceptance of the QMS as a new direction in New Zealand fisheries management. The development of the QMS highlights an important factor in the development of tradable environmental allowance markets: the relative political acceptability of markets. Market-based environmental regulations remain controversial in many

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110. *Id.*

111. Clark et al., *supra* note 102, at 326.

112. *Id.* at 327 ("In line with its overall economic policy, it has been the government's declared intention to bring market forces to bear in the realm of fishery management.").

113. Jack H. Nagel, *Social Choice in a Pluralitarian Democracy: The Politics of Market Liberalization in New Zealand*, 28 B. J. POL. S. 223, 242-43 (1998); Lewis Evans, Arthur Grimes, Bryce Wilkinson & David Teece, *Economic Reform in New Zealand 1984-95: The Pursuit of Efficiency*, 34 J. ECON. LIT. 1856, 1862 (1996) ("Officials, most notable within the Treasury, were also intensively following developments in microeconomic theories concerning public choice, market competition and governance: contrasting issues including property rights, asymmetric information and transaction costs; and institutional economics more generally."). The dominant ideological culture of agencies can be crucial policy development, discourse, and implementation. See, e.g., BRIAN J. COOK, BUREAUCRATIC POLITICS AND REGULATORY REFORM: THE EPA AND EMISSIONS TRADING 61 (1988) (describing the "dominant enforcement culture" within the Environmental Protection Agency during the 1970s as having acted "to suppress most attempts to apply economic incentive ideas to EPA's regulatory programs").

114. *Id.* at 223.

115. Shaun Goldfinch, *Remaking New Zealand's Economic Policy: Institutional Elites as Radical Innovators 1984-1993*, 11 GOVERNANCE 177 (1998) (describing how a small number of powerful individuals and institutions dominated economic policy making in New Zealand in the mid-1980s, facilitating fast and radical economic reform); Evans, Grimes, Wilkinson & Teece, *supra* note 113, at 1856 ("The early pace of the reforms reflects in good part the . . . strong intellectual and administrative support from key public sector advisors . . .").

quarters. The ability to situate proposals for tradable environmental allowance markets within a political system that embraces pro-market policies at an economy-wide level is significant, particularly if the proposal comes in the course of wider economic reforms. Moreover, the role of pro-market policy entrepreneurs within governmental agencies can prove crucial.

#### B. THE NEW ZEALAND EMISSIONS TRADING SCHEME

New Zealand adopted an emissions trading scheme in 2008 to aid its efforts to reduce greenhouse gas emissions in accordance with its obligations under the Kyoto Protocol and beyond. Following New Zealand's signature and subsequent ratification of the Kyoto Protocol in 2002,<sup>116</sup> there was intense policy debate as to what mechanisms would be deployed to meet New Zealand's emissions reduction commitments. The government strongly favored a tax or charge, which it hoped would provide a simple and stable price mechanism. New Zealand's unusual emissions profile<sup>117</sup> made it necessary for emissions policy to address agricultural emissions, which dominate New Zealand's contribution to global greenhouse gas emissions.

In 2003, the government announced plans to impose an agricultural-emissions research levy on livestock farmers to support efforts to reduce livestock emissions. The proposal proved deeply unpopular with New Zealand's strong farming lobby, who quickly dubbed the levy the "flatulence tax."<sup>118</sup> Despite the relatively small cost of the levy (which was likely to have cost the average farmer about NZ\$300 a year), vocal public protests by farmers—culminating in a farm-owning Member of Parliament driving a tractor up the steps of Parliament<sup>119</sup>—led to the levy being scrapped. This formed the beginning of a narrative trend of farmers employing arguments about New Zealand's unusual emissions profile, and claims that reducing livestock emissions was too difficult, to influence the direction of climate change policy.<sup>120</sup> No doubt influenced by the "flatulence tax"

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116. New Zealand ratified the Kyoto Protocol by passing the Climate Change Response Act 2002, the purposes of which included "enabl[ing] New Zealand to meet its international obligations under the [Framework] Convention and [Kyoto] Protocol."

117. In 2010, the agriculture sector represented over 46% of New Zealand's total emissions (primarily methane, from ruminant enteric fermentation, and nitrous oxide from fertilizer use). See United Nations Climate Change Secretariat, "Summary of GHG Emissions for New Zealand" (2012), [http://unfccc.int/files/ghg\\_emissions\\_data/application/pdf/nzl\\_ghg\\_profile.pdf](http://unfccc.int/files/ghg_emissions_data/application/pdf/nzl_ghg_profile.pdf); MINISTRY FOR THE ENVIRONMENT, NEW ZEALAND'S GREENHOUSE GAS INVENTORY 1990-2008, 82 (2010). By contrast the emissions profiles of most developed states are dominated by energy generation and transportation emissions.

118. David Fickling, *Farmers Raise Stink Over New Zealand 'Fart Tax'*, THE GUARDIAN, (Sept. 4, 2003) <https://www.theguardian.com/world/2003/sep/05/australia.davidfickling>; BBC News, *NZ Flatulence Tax Outrages Farmers* (June 20, 2003) <http://news.bbc.co.uk/2/hi/asia-pacific/3005740.stm>.

119. Keith Taylor, *MP Runs into Strife on Tractor*, NEW ZEALAND HERALD (Sept. 5, 2003) [http://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=3521866](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=3521866).

120. Jonathan Boston, *Developing a Long-Term Climate Change Mitigation Strategy*, 60 POL. SCI. 99, 115 (2008) (describing this narrative generally); Bullock, *Emissions Trading in New Zealand*, *supra* note 84, at 661 (linking this narrative to the farming lobby).

saga, plans to introduce an economy-wide carbon tax<sup>121</sup> failed after the Labour-led government lost parliamentary support for the tax following the 2005 general election.<sup>122</sup>

The strong popular and sectoral opposition to an emissions tax left the government with few political alternatives other than to propose a market-based mechanism to put a price on emissions. The trading scheme design put forward was a relatively strong one. It would encompass all economic sectors and all gases regulated by the Kyoto Protocol. Importantly, the agriculture sector would be included, although not for some years. Legislation creating the emissions trading scheme was passed in late 2008, shortly before the general election, and faced strong resistance from opposition parties in Parliament.

The failure to obtain broad bipartisan political consensus when the New Zealand Emission Trading Scheme (NZ ETS) was initially enacted left the legislation vulnerable to continued political attack. In the 2008 general election, the center-right National Party, supported by a business and farming base, won a substantial share of the vote. However, the National Party required the parliamentary support of the ACT party (a small, libertarian party, known for its skepticism of climate science) to govern.<sup>123</sup> The parties reached an agreement under which the ACT party would support a National-led government on confidence and supply votes in the House of Representatives. In return, the ACT party demanded immediate suspension of the NZ ETS (which had only been in force for a matter of months) and the establishment of a special Parliamentary “Emissions Trading Scheme Review” Committee to conduct a wide-ranging review of climate change policy, with a particular focus on whether a tax regime was preferable to the NZ ETS.<sup>124</sup> The ACT party’s ideological position—which favored open markets, low taxes, and reduction of governmental regulation—would ordinarily have been consistent with support for the introduction of a market-based mechanism.<sup>125</sup> However, ACT argued that a tax presented a simpler and more certain price mechanism with fewer administrative costs, yet possibly reflected an attempt to disrupt the introduction of policy that put a price on emissions owing to ACT’s skepticism on the merits of climate change action and its strong voter base in the business community.<sup>126</sup>

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121. The tax was to be capped at NZ\$25 per metric ton and was to take effect by the start of the first Kyoto commitment period in 2008.

122. David Bullock, *The New Zealand Emissions Trading Scheme: A Step in the Right Direction?* 7 (Inst. of Pol’y Studs., Working Paper No. 09/04, 2009).

123. The National Party also entered into so-called “confidence and supply” agreements with the Maori Party and United Future in order to obtain a legislative majority.

124. Bullock, *Emissions Trading in New Zealand*, *supra* note 84.

125. The center-right National Party might also have been a traditional supporter of a market-based mechanism, but it had opposed the previous Government’s proposals for taxes and had voted against the emission trading legislation.

126. Bullock, *Emissions Trading in New Zealand*, *supra* note 84, at 660.

The Committee recommended a “modified” emissions trading scheme, which was introduced in late 2009. The 2009 amendments,<sup>127</sup> and further amendments in 2012,<sup>128</sup> greatly weakened the NZ ETS by: delaying sectoral obligations under the scheme; extending transitional measures; and increasing the free allocation of units to “trade-exposed” industries on a comparative “intensity” basis, rather than on the basis of historic emissions (thereby effectively subsidizing continued emissions growth and removing the “soft cap” that existed under the original 2008 scheme).<sup>129</sup> The move from grandfathered-allocation to so-called “production” or “intensity” based allocations was controversial because it effectively amounted to substantial subsidies for emitters.<sup>130</sup>

One of the most damaging effects of the 2009 about-face was the significant uncertainty it created among those participating in the market. A 2013 survey of market participants found that over 80% of respondents disagreed or strongly disagreed with the proposition that the government had provided sufficient regulatory certainty.<sup>131</sup> The uncertainty created by changes to the NZ ETS contributed to a low unit price and this, along with concerns over further political manipulation, made emitters unwilling to effectively factor the price of carbon into their short- or long-term investments.<sup>132</sup> Tradable environmental allowance markets have many moving parts when compared to tax regimes—the main alternative policy option—which consists of a relatively simple system of obligations and exceptions. The complexity of tradable environmental allowance markets leaves them vulnerable to erosion by interest group politics and consequential uncertainty. Lobbying can extract ongoing political compromises through amendments to the scheme to delay participation, extend transitional measures, or increase or adjust allocations. The New Zealand experience highlights these vulnerabilities and demonstrates that although a tradable environmental allowance market can serve as a political compromise, it is not a panacea for the underlying political contest. Political implications can continue to impose costs that affect the design, certainty, and operation of the market.

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127. Climate Change Response (Moderated Emissions Trading) Act 2009 (Act No. 57/2009) (N.Z.).

128. Climate Change Response (Emissions Trading and Other Matters) Amendment Act 2012 (Act No. 89/2012) (N.Z.).

129. Bullock, *Emissions Trading in New Zealand*, *supra* note 84, at 662-73. The current version of the NZ ETS has been heavily criticized, *see, e.g.*, Geoffrey Palmer, *New Zealand's Defective Law on Climate Change*, 13 N.Z. J. PUB. & INT'L L. 115 (2015).

130. Bullock, *Emissions Trading in New Zealand*, *supra* note 84, at 667-68. The change to intensity allocation was justified on the basis of trade exposure and export competitiveness concerns.

131. Jessika Luth Richter & Lizzie Chambers, *Reflections and Outlook for the New Zealand ETS: Must Uncertain Times Mean Uncertain Measures?*, 10 POL'Y Q. 57, 61 (2014).

132. *Id.* at 62 (“It is clear that the ETS is still strongly influenced by politics, and this underlies much of the uncertainty and lack of ambition surrounding the policy.”). *See also*, Teeter & Sandberg, *supra* note 10 (arguing that the flexibility of tradable environmental allowance markets creates uncertainty that precludes long-term organization change).

The experience of the NZ ETS shows that tradable environmental allowance markets can serve as a political compromise to overcome the unpopularity of other policy options. The NZ ETS was not a first choice for bureaucrats or politicians, but it offered a political compromise that businesses could live with in circumstances where an emissions tax was politically infeasible.<sup>133</sup> The political acceptability was derivative of the *unacceptability* of competing policy options. A similar pattern occurred in Europe. The European Commission's proposal for an EU-wide carbon energy tax in 1992 was met with substantial political opposition from both individual states and industry lobbies.<sup>134</sup> Ultimately, this opposition led to the proposal being withdrawn in 1997. This failure was one of many factors driving the development and adoption of the European Union Emissions Trading Scheme.<sup>135</sup> The development of the European Union Emissions Trading Scheme was also driven by the contemporaneous adoption of an international emissions trading framework under the Kyoto Protocol. The European Union changed its stance from being one of the biggest opponents of the United States' proposal for incorporating an international emissions trading framework into the Kyoto Protocol, to embracing emissions trading at an international and domestic level.<sup>136</sup> Again, a tradable environmental allowance market served as a compromise where a tax was politically infeasible but international obligations and popular opinion required some form of emissions reduction policy be enacted.

### C. LESSONS FROM THE NEW ZEALAND EXPERIENCE

The examples in Part III A and B have shown that tradable environmental allowance markets can face significant political costs that hamper their enactment and post-enactment integrity. However, the examples given also demonstrate some of the circumstances in which sources of political resistance can be overcome. The history of the QMS and the NZ ETS both show a number of matters have reduced the political costs associated with their enactment. These features enable a number of lessons to be learned about the drivers and implications of political costs on the feasibility of proposals for tradable environmental allowance markets.

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133. It is notable that although the National-led government amended the scheme it retained a market-based mechanism, despite its junior coalition partner's support for a tax.

134. A. DENNY ELLERMAN ET AL., *PRICING CARBON: THE EUROPEAN UNION EMISSIONS TRADING SCHEME* 16-17 (Emilie Alberola et al., Cambridge Univ. Press 2010).

135. A. Denny Ellerman, *The EU Emission Trading Scheme: A Prototype Global System?* in *POST-KYOTO INTERNATIONAL CLIMATE POLICY: IMPLEMENTING ARCHITECTURES FOR AGREEMENT* 88, 88-118 (Joseph E. Aldy & Robert N. Stavens eds., Cambridge Univ. Press 2009).

136. See Chad Damro & Pilar Luaces Mendez, *Emissions Trading at Kyoto: From EU Resistance to Union Innovation*, 12 *ENVTL. POL.* 71, 71-94 (2003) (arguing that, at least in part, the development of the EU ETS occurred as a result of policy transfer from the international arena).

The first lesson for policymakers is that the theoretical economic merits of tradable environmental allowance markets will rarely be enough to overcome the political costs of implementation. Instead, political costs affect whether a tradable environmental allowance market is enacted, and if it is, the form that it takes. External drivers are often necessary to reduce political costs (such as economic reforms or international obligations) or to increase political gains (such as the failure of a comparable regulatory option to provide environmental outcomes or least cost environmental outcomes). The cost to political actors of enacting tradable environmental allowance markets will be less in jurisdictions with market economies, particularly those that have recently undergone pro-market reforms. In these jurisdictions, market concepts are less divisive and potential divisions are minimized where environmental markets are situated within wider market-based regulatory reform.

Distaste for market-based mechanisms is also reduced where the prevailing political landscape is socialized to market concepts. This explains why many tradable environmental allowance markets—such as the New Zealand QMS—followed major pro-market economic reforms. Where economic reforms occur, tradable environmental allowance markets will often find support from advocates and entrepreneurs within the bureaucracy as well as political elites who are invested in market-based policies and their design. Divides are reduced because interests of pro-market reformers and environmentalists, frequently political opponents, see their projects aligned. This alignment is greatest in the context of recent pro-market economic reform as stakeholders, who would usually be ambivalent or opposed to strong environmental regulation, are invested in market-based policies as part of their overall economic project and are therefore supportive of tradable environmental allowance markets. This explains in part the resistance of the New Zealand political right to the NZ ETS: because the NZ ETS proposal was not situated in the context of a wider project of economic reform, the traditionally pro-market National and ACT parties preferred to oppose the policy entirely. That is, the introduction of a market-based policy in isolation, although ideologically consistent, did not outweigh the perceived political harm of supporting a policy that was seen to impose additional costs on their voter base.

The influence of pro-market or economic liberalization reforms and institutional policy entrepreneurs in increasing the political acceptability of tradable environmental allowance markets can be seen elsewhere in the world. For example, a shift in institutional ideology within the United States Environmental Protection Agency in the late 1970s and early 1980s towards economic analysis can be directly linked to the development of the nascent market-based mechanisms employed in air-pollution control during that era.<sup>137</sup> The adoption of a

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137. COOK, *supra* note 113, at 62.

cap-and-trade regime for sulfur dioxide emissions in the United States in 1990 can be seen through a similar historical-political lens. In the late 1980s, proposals to resolve the acid rain problem had reached an impasse after a decade of debate.<sup>138</sup> Environmental groups advocated for regulations requiring the installation of sulfur dioxide scrubbers on power-plant smokestacks, while utility companies and industrial businesses leveraged their political strength to staunchly oppose the introduction of costly emissions reducing technology.<sup>139</sup> This political problem was so intractable that by the end of President Reagan's administration over 70 different acid rain bills had been introduced in Congress—none of which passed into law.<sup>140</sup> In Canada (Canada bearing the effects of much of this pollution), Prime Minister Mulroney had facetiously spoken of declarations of war in the face of American inaction.<sup>141</sup>

The election of George H.W. Bush, who had run on a platform of action on acid rain, provided an opportunity to move the policy-development process forward. Some within environmental organizations, like the Environmental Defense Fund, were beginning to doubt the effectiveness of command-and-control policies and saw merit in exploring market-based alternatives. Shortly after Bush's election, the president of the Environmental Defense Fund, Fred Krupp, telephoned the president's new White House counsel, Boyden Gray, to espouse the merits of emissions trading as a way through the political stalemate.<sup>142</sup> Moreover, like New Zealand in 1986, the political context was beneficial for the introduction of a new form of market-based regulation.

The Bush administration came on the back of the substantial free-market economic reforms promulgated under the Reagan administration. The implementation of a cap-and-trade model was congruent with these wider economic reforms.<sup>143</sup> There were also a number of significant policy entrepreneurs, like

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138. Roger J. Marzulla & Douglas W. Smith, *Acid Rain Regulation*, in *THE CLEAN AIR ACT AMENDMENTS: BNA'S COMPREHENSIVE ANALYSIS OF THE NEW LAW* 143, 145 (1991).

139. For example, political action committees associated with industries interested in sulfur dioxide regulation contributed nearly \$612,000 to members of the House Energy and Commerce Committee in 1989, with the most substantial contributions coming from the electric utilities. See GARY C. BRYNER, *BLUE SKIES, GREEN POLITICS: THE CLEAN AIR ACT OF 1990* 93 (1993).

140. Kathy McCauley et al., *Crossing the Aisle to Cleaner Air: How the Bipartisan "Project 88" Transformed Environmental Policy*, UNIVERSITY OF PITTSBURGH INSTITUTE OF POLITICS CASE STUDY 7 (2008), <http://www.iop.pitt.edu/documents/casestudies/Crossing%20the%20Aisle%20to%20Cleaner%20Air.pdf>; see Marzulla & Smith, *supra* note 138, at 145 (observing that Sen. George Mitchell's (D-Maine) efforts to negotiate a bill at the close of the 100<sup>th</sup> Congress in 1988 might have resulted in success if time had not run out).

141. Philip Shabecoff, *Canada Sees Acid-Rain Talks*, N.Y. TIMES (Apr. 29 1988), <http://www.nytimes.com/1988/04/29/world/canada-sees-acid-rain-talks.html> ("When pressed by questions on his failure to obtain agreement on specific targets and timetables for reducing acid rain, Mr. Mulroney said, 'What do you do - declare war or persuade Americans of the value of acting?'").

142. Richard Conniff, *The Political History of Cap and Trade*, SMITHSONIAN MAGAZINE (Aug. 2009), <http://www.smithsonianmag.com/air/the-political-history-of-cap-and-trade-34711212/?no-ist>.

143. Unlike President Reagan, who was hostile to most governmental regulation, President Bush was willing to implement environmental regulations and had used this as a basis to distinguish himself from the Reagan administration during the election campaign. See BRYNER, *supra* note 139, at 94.

Gray, within the legislative and executive branches who were able to advance the case for a trading program.<sup>144</sup> Moreover, the sulfur dioxide regime was able to build on earlier localized tradable permit schemes associated with other air pollutants, leaded gasoline, and the contemporaneous developments in the international sphere under the Montreal Protocol on Substances that Deplete the Ozone Layer.<sup>145</sup>

The legislative success of the 1990 Clean Air Act amendment was also attributable to several astute political judgments.<sup>146</sup> The Bush administration's proposal was able to isolate the political opposition to the bill by limiting its application to utility providers and by adopting a design that "imposed the brunt of the compliance costs on a minority of the electric utilities."<sup>147</sup> The proposal was also successful in moving the terms of the debate away from *whether* to regulate to reduce sulfur dioxide emissions, to *how* the costs of those reductions would be distributed among polluters.<sup>148</sup> Fundamentally, however, the proposal to utilize a market-based mechanism straddled the divide between the industry lobbyists and the environmental movement: the use of a market mechanism was precisely the sort of modern regulatory mechanism advocated for by those on the right, while also having the support of the Environmental Defense Fund, and promoting a higher rate of emissions reductions than previous legislative endeavors.<sup>149</sup>

The development of the 1990 Clean Air Act amendment shared parallels with the messy circumstances involved in the creation of the United States' early emissions trading policies in the late 1970s. This involved a balancing of the Carter administration's promise for sound environmental policy and regulatory reform based on a greater use of economic analysis.<sup>150</sup> The approach of the Carter administration was heavily influenced by the appointment of officials from the Connecticut state government (who were committed to a program of "economic law enforcement")<sup>151</sup> and the pressing need for "a political solution to a major policy dilemma" in the form of widespread failures to meet air quality standards.<sup>152</sup> To that end, the introduction of emissions trading developed "an

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144. Robert N. Stavins, *Market-Based Environmental Policies* 35 n.130 (Resources for the Future Discussion Paper 98-26, Mar. 1998), <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-98-26.pdf>.

145. Stavins, *supra* note 1, at 69-70.

146. See Marzulla & Smith, *supra* note 138, at 146.

147. *Id.*

148. *Id.*

149. BRYNER, *supra* note 139, at 95, 145.

150. COOK, *supra* note 113, at 69.

151. *Id.*

152. *Id.* at 67-71. The crisis was caused by the fact that the failure of many areas of the country failed to meet air quality standards within the required statutory time frames, triggered a statutory prohibition on states issuing permits for new pollutant sources in those areas.

effort to overcome some of the Clean Air Act's faults."<sup>153</sup> Nevertheless, this pragmatic response served as a starting point for further developments in emissions trading policy in the early 1980s,<sup>154</sup> though not without controversy.<sup>155</sup>

The influence of international agreements and negotiations can alter the political cost function by adding a transnational element. China's recent announcement that it will adopt a nationwide emissions trading scheme<sup>156</sup> is driven in part by China's wider economic reforms embracing increasingly capitalist principles.<sup>157</sup> China has also likely been influenced by its participation in the international climate change negotiations under the United Nations Framework Convention on Climate Change (UNFCCC), the influence of which contributed to the country's heightened cooperation with the United States and the recent Paris Agreement.<sup>158</sup> In particular, China's early and active participation in the UNFCCC Clean Development Mechanism<sup>159</sup> familiarized Chinese officials with the design and operation of the international carbon market established by the UNFCCC,<sup>160</sup> and it led to interactions with other developed emissions markets like the European Union Emissions Trading System (EU ETS). These transnational interactions likely played an important role in increasing the political acceptability of a tradable environmental allowance market in China, notwithstanding its transitional economy. The NZ ETS was also driven by New Zealand's international obligations under the Kyoto Protocol, and the United States' sulfur dioxide program was influenced in part by pressure for action from the Canadian government.

Co-benefits of tradable markets may also drive the political acceptability of emissions reduction policies generally. The New Zealand QMS facilitates the gathering of scientific information about fish stocks because that information is needed to determine catch levels.<sup>161</sup> In China, where over three-quarters of urban

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153. RICHARD A. LIROFF, *REFORMING AIR POLLUTION REGULATION: THE TOIL AND TROUBLE OF EPA'S BUBBLE* 143 (1986).

154. COOK, *supra* note 113, at 80-83.

155. *See generally, e.g.*, Hahn & Hester, *supra* note 71.

156. *See, e.g.*, Zhang, *supra* note 9.

157. *See generally*, BARRY NAUGHTON & KELLE S. TSAI, *STATE CAPITALISM, INSTITUTIONAL ADAPTION, AND THE CHINESE MIRACLE* (2015) (describing the rise of "state capitalism" in China since the mid-2000s).

158. Indeed, the announcement of full implementation of the emissions trading scheme was made in a joint statement issued by President Xi Jinping and President Obama on September 25, 2015, shortly before the Paris negotiations began in December. *See* Office of the Press Secretary, U.S.-China Joint Presidential Statement on Climate Change, THE WHITE HOUSE (September 25, 2015), <https://www.whitehouse.gov/the-press-office/2015/09/25/us-china-joint-presidential-statement-climate-change>.

159. Tek Narayan Maraseni, *Selecting a CDM Investor in China: A Critical Analysis*, 53 ENERGY POL'Y 484, 485 (2013) (observing that by 2012 51% of all registered CDM projects were located in China). The Clean Development Mechanism was established under the Kyoto Protocol to enable developed state parties to earn emissions reduction units by funding emissions reduction in developing states.

160. Da Zhang et al., *Emissions Trading in China: Progress and Prospects*, 75 ENERGY POL'Y 9, 10 (2014).

161. *See* discussion *supra* Part III.A.

populations are exposed to air quality below national air quality standards,<sup>162</sup> the co-benefits of reduction of greenhouse gas emissions on air pollution and energy consumption,<sup>163</sup> which are likely to be significant,<sup>164</sup> undoubtedly influenced China's willingness to implement major emissions reductions policies in the absence of international obligations. It is less clear whether the co-benefits of greenhouse gas emissions reduction had any impact on the decision to use a tradable environmental allowance regime. China also views environmental markets as a source of economic benefit from their linkages to international markets and ability to supply projects for the Clean Development Mechanism.<sup>165</sup>

The failure of existing policies or policy proposals can also enhance the political acceptability of tradable environmental allowance markets. Markets are scarcely considered a "first best" option by policymakers and are often not considered until the resource in question faces a crisis or there is deep dissatisfaction with the policy or political status quo.<sup>166</sup> The desire for effective policy can reduce the political cost of experimenting with market-based environmental policies. In New Zealand, tradable environmental allowance markets were not prevailing policy options in the fisheries or emission context until it was clear that existing regulatory policies were inadequate and that policy alternatives were politically intractable. The NZ ETS and the EU ETS both followed unsuccessful and politically costly campaigns to enact emissions taxes or charges. Similarly, the success of comparable tradable environmental allowance markets within a jurisdiction can make the development of further environmental markets more acceptable. Although different in design, the experience of New Zealand political

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162. Min Shao et al., *City clusters in China: air and surface water pollution*, 4 FRONTIERS ECOLOGY & ENV'T 353, 353 (2006) ("[M]ore than three-quarters of the urban population are exposed to air quality that does not meet the national ambient air quality standards of China.").

163. See, e.g., Ping Jiang et al., *Analysis of the co-benefits of climate change mitigation and air pollutions regulation in China*, 58 J. CLEANER PRODUCTION 112, 112-20 (2013) (describing co-benefits in areas including transport, building, and waste management); see, e.g., Zhiciao Ma et al., *Co-benefits analysis on climate change and environmental effects of wind-power: A case study from Xinjiang, China*, 57 RENEWABLE ENERGY 35, 35-42 (2013) (describing co-benefits of greater renewable generation).

164. See, e.g., Chen Changhong et al., *Reductions in emissions of local air pollutants and co-benefits of Chinese energy policy: a Shanghai case study*, 34 ENERGY POL'Y 754, 754-62 (2006); Paul Ekins, *How large a carbon tax is justified by the secondary benefits of CO<sub>2</sub> abatement?*, 18 RESOURCE & ENERGY ECON. POL'Y 161, 161-87 (1996); Xiaodong Wang & Kirk R. Smith, *Secondary Benefits of Greenhouse Gas Control: Health Impacts in China*, 33 ENVTL. SCI. TECH. 3056, 3056-61 (1999).

165. See, e.g., THE WORLD BANK ET AL., CLEAN DEVELOPMENT MECHANISM IN CHINA: FIVE YEARS OF EXPERIENCE, 2004 TO 2009, xiii (2010) <http://siteresources.worldbank.org/INTEAPREGTOPENVIRONMENT/Resources/ChinaWebBook.pdf> ("China has become the world's largest Certified Emissions Reduction (CER) supplier . . . the country has successfully developed added value by leveraging carbon finance to support its domestic sustainable development priorities.").

166. ANDERSON & LIBECAP, *supra* note 2, at 128 (" . . . a political response to open access in the assignment of property rights is often not considered until the problem reaches crisis proportions. At a crisis stage, the costs of the open-access or regulatory *status quo* become much clearer, swamping distributional concerns (there are no advantages to any party from maintaining existing conditions, where there may be no future returns) and galvanizing efforts to finally resolve the problem.").

actors and bureaucrats with the QMS created a level of familiarity and acculturation with market-based concepts that supported the NZ ETS.

Moreover, tradable environmental allowance markets can be affected by error or political manipulation. The number of allowances issued is crucial because a tradable environmental allowance market depends on its allowance cap both to produce environmental outcomes and to create the property-like characteristics that give allowances their value. The over-allocation of allowances will not just permit greater than desired access to the resource, but also depress the allowance price and the effectiveness of the market mechanism. If this occurs, the tradable environmental allowance market may become politically unsustainable. Over-allocation can occur where informational difficulties cause the cap to be set at a level that allows too much access to the resource. Successful markets are designed with flexibility to adjust the number of allowances in the market to meet changing information about the resource and defuse potentially politically damaging miscalibrations.

New Zealand policymakers learned an early lesson about the importance of flexibility shortly after the QMS was introduced. When the QMS began in 1986, the quota was expressed as a fixed tonnage, representing a portion of the annual TACC.<sup>167</sup> This resulted in allocation of quota that was property-like in nature. Rights could not be altered without compensation to rights holders because they were granted as a fixed quantity.<sup>168</sup> The government effectively had to buy back quota whenever it determined fisheries were being overfished. This resulted in the payout of some NZ\$47m in the first few years of the QMS's operation.<sup>169</sup> By 1989, it became clear that the initial TACC had significantly exceeded the maximum sustainable yield in a number of major fisheries (particularly the fish species orange roughy and hoki) and would need to be reduced.<sup>170</sup> Continuing to pay compensation for reductions in quota was uneconomic and politically unacceptable to the government. The prospect of substantial costs spurred innovation. The government's solution was to legislatively redefine quota holders' property rights: quota holders were now entitled to a percentage share of the TACC rather than a fixed tonnage of fish.<sup>171</sup> Accordingly it was possible for the government to vary the TACC without affecting the rights of quota holders.

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167. Fisheries Act 1983, s 28C (N.Z.).

168. Fisheries Act 1983, s 28OG (N.Z.) (provided the government with the ability to reduce ITQ with the payment of compensation).

169. Gina Straker et al., *A Regulatory History of New Zealand's Quota Management System: Setting Targets, Defining and Allocating Quota*, MOTU ECON. AND PUBLIC POL'Y SEARCH (2002) [http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/57069/H\\_135.pdf?sequence=1](http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/57069/H_135.pdf?sequence=1).

170. *Id.*; see also Pamela M. Mace et al., *The Evolution of New Zealand's Fisheries Science and Management Systems under ITQs*, 71 ICES J. MARINE SCI. 204, 205 ("When New Zealand's QMS was introduced . . . the possibility that these [offshore] waters had already been overexploited by foreign fleets was generally not considered.").

171. Fisheries Amendment Act 1990 (Act No. 29/1990) (N.Z.).

The effect of this amendment was to shift the risk of over-allocation from the government to fishers and to reduce a fisher's ability to accurately assess the value of their quota, which would vary with the TACC. However, the ability of the government to amend the allocation model enabled the QMS to remain politically sustainable and to adjust to meet changing environmental concerns.

The flexibility of a tradable market has been used to resolve political costs after enactment from stakeholders who have had little say in the policy process. In New Zealand, this source of political resistance came from indigenous groups whose customary rights came into conflict with the QMS. The QMS had the effect of essentially depriving New Zealand's indigenous Maori population of the ability to develop commercial fisheries because it granted full and exclusive fisheries rights to quota holders (allocation being based on historical commercial fishing volumes). Maori had little input in the policy development process, and the QMS did not account for their customary interests. In late 1987, a number of Maori groups sought and obtained injunctions in the High Court restraining certain administrative decisions required to implement the QMS.<sup>172</sup> Shortly thereafter the Waitangi Tribunal issued its Muriwhenua Fishing Claim report, criticizing the 1986 legislative amendments establishing the QMS for their substantial adverse effects on Maori commercial fishing interests and communities.<sup>173</sup> The injunctions prompted the government to negotiate with Maori on the future of fisheries rights under the new management framework so that the QMS could be implemented. The resulting settlement of Maori commercial and customary fisheries claims provided for cash payments enabling Maori to purchase a 50% shareholding in a major private fisheries company (and quota holder) and for the allocation of 20% of the quota of any new species brought into the QMS.<sup>174</sup> Ultimately, this settlement enabled Maori to become a major player in the commercial fisheries industry. Maori now exert an influence on some 40% of all quota by volume and control over NZD\$700m in fisheries assets (at 2003 values).<sup>175</sup> The flexibility of the QMS, as a system based on quantified and delineated rights, was important in resolving the Government's constitutionally dubious decision to enact the QMS without regard for Maori interests. The flexibility of the market-based mechanism enabled substantial provisions to be

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172. *New Zealand Maori Council v. Attorney-General* [1987] 1 NZLR 641 (CA).

173. REPORT OF THE WAITANGI TRIBUNAL ON THE MURIWHENUA FISHING CLAIM, WAI 22 (1988) [https://forms.justice.govt.nz/search/Documents/WT/wt\\_DOC\\_68478237/Muriwhenua%20Fishing.pdf](https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_68478237/Muriwhenua%20Fishing.pdf) (referring to the effects of the fisheries legislation on the *Muriwhenua* claimants: "The failure to provide adequately for their Treaty fishing interests has prejudicially affected the claimant tribes in a number of ways. It has involved them in protected and expensive proceedings and negotiations involving the bureaucracy, Parliament, and the courts. It has also cost them a proper access to their fishing resource. It has meant that loss of income, jobs, trade, and opportunities to develop their own industry; and it has impacted severely on many of their important communities.").

174. Valmaine Toki, *Adopting a Maori Property Rights Approach to Fisheries*, 14 N.Z. J. ENVTL. L. 197, 208 (2010).

175. *Id.* at 220.

made for Maori interests *within* the normal operating bounds of the scheme, rather than requiring repeal or substantial amendment to the scheme itself. This enabled the QMS to survive the direct challenge it faced from indigenous interests while also, by accident rather than design, providing an effective and pragmatic means of resolving grievances that might not have been seen as acceptable had they been raised before the QMS was enacted.

However, flexibility can be problematic. Distributional effects can be stark and may not resonate with interested groups until after a tradable environmental allowance market has been established. Flexibility may leave markets vulnerable to political pressure for distributional reassignment after enactment. In this way, the flexibility to adjust the market mechanism after enactment can be a double-edged sword. An inability to rectify strong distributional complaints can lead to political pressure to repeal the tradable environmental allowance market altogether. On the other hand, too much flexibility can undermine the environmental integrity of the market. Market flexibility can also facilitate political interference in the market resulting in uncertainty and reducing the environmental effectiveness of the policy.<sup>176</sup> As in the case of the NZ ETS, the ability for the government to substantially vary fundamental aspects of the scheme served to substantially increase feelings of uncertainty in emissions unit holders and depress the price.

Finally, new information can also create political pressure, especially when it suggests or establishes that resource users are abusing a market mechanism. Concerns about illegal dumping and high-grading (dumping fish perceived to be low quality) under the QMS had existed for some years, but enforcement was thought to be reducing those problems.<sup>177</sup> However, a recent report found evidence of substantial dumping, suggesting that between 1950 and 2010 commercial discards by New Zealand flagged vessels may have been as high as 34.8%.<sup>178</sup>

The report suggested that discards remained high under the QMS, meaning the total catch since the introduction of the QMS is estimated to be 2.1 times greater than reported.<sup>179</sup> These figures have been disputed by the fishing industry and the

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176. See, e.g., U. Rashid Sumaila, *A Cautionary Note on Individual Transferable Quota*, 15 *ECOLOGY & SOC'Y* 36, 37 (2010) (discussing the possibility of politically motivated interference in stock abundance assessment and catch setting).

177. Tracy Yandle & Christopher M. Dewees, *Privatizing the Commons . . . Twelve Years Later: Fishers' Experiences with New Zealand's Market-Based Fisheries Management*, in *THE COMMONS IN THE NEW MILLENNIUM: CHALLENGES AND ADAPTION* 101, 114 (Nives Dolšak & Elinor Ostrom eds., 2003). Section 72(1) of the Fisheries Act 1996 prohibits the discarding or dumping of fish that fall within the Quota Management System subject to a number of exceptions.

178. Glen Simmons et al., *Reconstruction of Marine Fisheries Catches for New Zealand (1950-2010)* INSTITUTE FOR OCEANS AND FISHERIES 13 (2016), [http://www.searoundus.org/doc/publications/wp/2016/Simmons\\_2016.pdf](http://www.searoundus.org/doc/publications/wp/2016/Simmons_2016.pdf).

179. *Id.* at 44.

government's Ministry for Primary Industries,<sup>180</sup> which has pointed to international studies ranking the New Zealand fisheries management system among the best in the world.<sup>181</sup> The report caused a public outcry, which was fueled by documents showing that the government chose not to prosecute the operators of a number of fishing vessels that had been filmed dumping fish and failing to report catches of protected species (including one vessel that caught, and failed to report, a critically endangered Hector's dolphin).<sup>182</sup> The vessels had been part of a trial program using camera technology to record activities on the deck, and the crew knew this. Remarkably, the crew was not deterred from discarding fish despite the presence of the cameras. A subsequent independent report found that the Ministry for Primary Industries' investigatory and prosecution processes were flawed.<sup>183</sup> The saga provided substantial ammunition to traditional opponents of the QMS and created new calls for regulatory reform.<sup>184</sup> In response to these concerns, the government has sped up its plans to install video cameras on the decks of all commercial fishing boats<sup>185</sup> as part of an "Integrated Electronic Reporting and Monitoring System" (IERMS) which will combine onboard camera monitoring with vessel positioning data and real-time catch effort reporting.<sup>186</sup>

The problem of catching and deterring cheating is one common to all regulatory systems where people attempt to avoid taxes and evade regulators. The challenge for market-based mechanisms is that, by creating a set of valuable and tradable rights, the effect of resource users operating illicitly outside the scheme is to undermine the fundamentals of the scheme itself.

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180. Nicholas Jones, *Revealed: Half of Fish Caught in NZ Waters Not in Official Records*, NZ HERALD (May 16, 2016), [http://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11639478](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11639478).

181. *The Health of New Zealand's Fisheries*, MINISTRY FOR PRIMARY INDUSTRIES (2016), <https://www.mpi.govt.nz/law-and-policy/legal-overviews/fisheries/the-health-of-new-zealands-fisheries>.

182. Paloma Migone, *MPI's Own Officials Think Fish Dumping is High*, RADIO NZ NEWS (May 19, 2016), <http://www.radionz.co.nz/news/national/304235/mpi-s-own-officials-think-fish-dumping-is-high>; Conan Young, *MPI Official Admits Fish Dumping Widespread*, RADIO NZ NEWS, (Sept. 19, 2016), <http://www.radionz.co.nz/news/national/313631/mpi-official-admits-fish-dumping-widespread>.

183. *Independent Review of Prosecution Decisions*, MINISTRY FOR PRIMARY INDUSTRIES (2016), <https://www.mpi.govt.nz/protection-and-response/environment-and-natural-resources/sustainable-fisheries/independent-review-of-prosecution-decisions>.

184. See, e.g., Laura Bootham, *MPI 'Captured' By Fishing Industry—Greenpeace*, RADIO NZ NEWS (Sept. 17, 2016), <http://www.radionz.co.nz/news/national/313540/mpi-'captured'-by-fishing-industry-greenpeace>; Gareth Morgan, *Fishing Quota Management System Needs Reform*, THE MORGAN FOUNDATION (Sept. 19, 2016), <http://morganfoundation.org.nz/fishing-quota-management-system-needs-reform>; The Listener, *Editorial: Illegal Fish Dumping Has Taken Place On a Scandalous Scale*, NOTED (Sept. 13, 2016), <http://www.listener.co.nz/commentary/features/quota-dumping-system>.

185. Even this proved controversial when it was discovered that the tender for an initial camera monitoring program had been awarded to a joint venture connected to a number of major quota holders. See Nicholas Jones, *Greenpeace Critical of Fishing Contract*, NZ HERALD (May 29, 2016), [http://m.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11647037](http://m.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11647037).

186. *The Health of New Zealand's Fisheries*, *supra* note 181.

## CONCLUSION

Understanding the forces that lead to the creation of tradable environmental allowance markets yields insights into their operation, durability, and effectiveness.<sup>187</sup> These forces go beyond economic and environmental arguments as to their merits, and include prior influences of political process. Political actors are affected by the political cost of enacting tradable environmental allowance markets, which may be significant. The examples given in this Article show that environmental markets are rarely first-best political options (even if they are favored by policymakers, academics, or particular elites). They are often politically unpopular, and therefore costly.

Environmental market-based policies typically require additional drivers—such as wider economic reform, failures of substitute policies or proposals, or international influence—to overcome political costs that would otherwise impede policy implementation and to ensure proposals retain the crucial property-like characteristics underlying their mechanism. Even then, environmental market-based policies remain vulnerable to manipulation, amendment, and repeal to accommodate special interests or political convenience. Theoretical models have paid insufficient attention to the influence of political costs in the enactment, design, and durability of tradable environmental allowance markets. Proper consideration of the effects of these costs goes some of the way to explaining the differential between the predicted prevalence of tradable environmental allowance markets and their more modest real-world implementation and success. Those advocating for the adoption of tradable environmental allowance markets must account for the political costs involved in enacting and sustaining them to provide a realistic account of the possible role for markets in regulating resource use.

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187. Hahn, *supra* note 11, at 110 (“[I]t is possible to gain important insights into the likely performance and choice of instruments by understanding the forces that led to their creation . . . . Analyzing the underlying beliefs about property rights to pollution may be vital both for the political success of the measure and for how well it works in terms of pure economic efficiency.”).