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## Environmental Justice and Domestic Climate Change Policy

by Alice Kaswan

*Editors' Summary: Legislators and regulators should incorporate environmental justice concerns and opportunities into climate change policies. In this Article, Prof. Alice Kaswan first addresses the environmental justice benefits and risks of cap-and-trade programs. The environmental benefits include enabling higher reduction goals, imposing absolute caps on emissions, and creating technology adoption and innovation incentives. Environmental concerns here center on the programs' morality, their real-world efficacy in reducing emissions and inspiring innovation, the distributional impacts resulting from greenhouse gas co-pollutants, and the lack of public participation. She then describes a number of mechanisms for incorporating environmental justice considerations into cap-and-trade programs in a manner that balances the sometimes conflicting goals of equity and efficiency. She goes on to identify a number of economic risks and opportunities created by climate change policies, including but not limited to cap-and-trade policies. Finally, she addresses the environmental justice risks presented by new technologies like ethanol.*

### I. Introduction

There is little dispute about the dire consequences of escalating climate change. The Intergovernmental Panel on Climate Change (IPCC), which includes respected scientists from around the globe, predicted a wide range of global impacts in its 2007 report.[1] Emissions reductions are essential. Given the nation's reliance on fossil fuel combustion, however, emissions mitigation could require profound technological and societal changes. Developing mitigation and adaptation strategies will present some of the most significant public policy challenges of our time.

What considerations should be brought to bear in developing the requisite public policies, and more particularly, what role should environmental justice concerns play? At a 2006 conference panel on developing cap-and-trade programs, Dan Skopec, then an undersecretary of the California Environmental Protection Agency, said the following about efforts to incorporate environmental justice considerations into climate change policy:

> [A] lot of people use the issue of global warming to tackle the problems that they've been working on for the last 10, 15, 20, 30 years, and I think that these problems are not necessarily related to global warming. I think that's a folly that we all have to be careful about. The challenge of global warming is so great, it is going to be a major adjustment to our economy. . . . The challenge is so great that it should be the sole focus of this effort. Using the umbrella of global warming to satisfy other agendas is really going to distract from the solution and create inefficiency.[2]

The depth of the problem and the extent of its ramifications lead me to the opposite conclusion. In addition to their environmental consequences, climate change policies addressing transportation, energy production, industry, commercial enterprises, housing, land use, and agriculture will inevitably have significant social and economic repercussions—on the poor, on consumers, and on affected industries. Notwithstanding the critical importance of significant greenhouse gas (GHG) reductions, policies designed in a vacuum, focusing solely on reduc-

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1. *See* IPCC, Climate Change 2007: Impacts, Adaptation, and Vulnerability, Summary for Policymakers (2007), *available at* http://www.ipcc.ch/SPM13apr07.pdf [hereinafter IPCC Impacts Summary for Policymakers]. This document summarized Working Group II's contribution to the IPCC *Fourth Assessment Report*. To view the full report, see IPCC, Working Group II, Climate Change Impacts, Adaptation, and Vulnerability (2007), *available at* http://www.ipcc-wg2.org/; *see also* IPCC, Climate Change 2007: Synthesis Report of the IPCC Fourth Assessment Report, Summary for Policymakers (2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf.

2. *Global Warming I: Developing Cap-and-Trade Programs to Reduce Greenhouse Gas Emissions*, 16 Envtl. L. News 34, 42 (2007), Panel Presentation by Dan Skopec at California State Bar Environmental Law Section Conference (Mar. 31, 2006).

tions, could create significant and unintentional adverse consequences. Moreover, policies to address climate change have the potential to address long-standing societal problems, like distributional inequities. Constructive GHG policies require a broad vision incorporating environmental, economic, and social considerations.

To date, the national debate on climate change policies has given insufficient attention to their environmental justice implications. This Article addresses that vacuum and provides initial policy recommendations in order to foster a more robust national conversation. Most of this Article addresses the environmental trade offs presented by GHG cap-and-trade policies in light of the complexity and controversy of the issues they raise. Subsequently, the Article notes the economic implications of a number of climate change policies, including cap-and-trade programs, and explores the potential environmental justice issues raised by ethanol.

Part I of this Article provides an introduction to the environmental justice movement and its vision of a just climate change policy. With the exception of California, it also notes the absence of environmental justice considerations in existing climate change policies at the federal and state levels.

Part II addresses the environmental implications of the most politically prominent market-based approach: cap-and-trade programs.[3] I first note some of the potential environmental benefits of a cap-and-trade program, including the potential to set higher reduction goals in light of lower compliance costs, the benefits of establishing a concrete cap, and technology adoption and innovation incentives. Recognizing the long-standing concerns that environmental justice advocates have nonetheless had about cap-and-trade programs, this Article then analyzes the potential environmental justice risks posed by cap-and-trade programs. Like some environmentalists, environmental justice advocates question both the morality and the efficacy of trading programs. In addition, environmental justice advocates have routinely critiqued market-based approaches to environmental protection because trading systems fail to account for the distribution of pollution. Environmental advocates are concerned about a GHG trading system's impacts on the distribution of GHGs' more harmful co-pollutants. The Article explores the controversy over whether carbon trading could create or allow co-pollutant hot spots, notwithstanding existing regulatory measures to control co-pollutants. It also addresses the impact of carbon trading on the equitable distribution of co-pollutant reduction benefits and a trading program's likely impacts on public participation in permitting decisions.

I urge policymakers to avoid false dichotomies for or against market-based systems, and to instead consider mechanisms for designing cap-and-trade programs that integrate environmental justice concerns. I consider how California's Global Warming Solutions Act (GWSA or AB 32) creates a legal structure that allows a cap-and-trade system, but requires that any such system avoid adverse distributional impacts. I then review several options for integrating environmental justice that could be considered severally or in combination.

Finally, I address the fundamental tensions between environmental justice and economic and administrative efficiency. Markets may lower the cost of achieving environmental ends, but efficiency is not the only relevant parameter for designing environmental policy. Policymakers appear to be focusing too narrowly on the prerequisites for an effective market, rather than considering a broader range of goals, including environmental justice. Achieving a broader range of goals could complicate the market, but lead to a richer and ultimately more effective environmental policy. In considering the environmental challenges ahead, the most efficient system will not necessarily be the most effective.

Having considered environmental issues in Part II, Part III will turn to climate change policies' potential economic implications for disadvantaged communities. On the downside, climate change policies will inevitably impose across-the-board costs that could have regressive impacts on the poor. A just climate change policy would address that impact. Land use policies could also adversely impact poor, inner-city communities unless efforts are made to preserve affordable housing. On the upside, cap-and-trade programs could generate public and private resources that could be directed toward economically disadvantaged communities. In general, the major economic and industrial changes resulting from climate change regulation could be channeled into development opportunities for economically depressed sectors.

Part IV acknowledges the importance of new technologies such as biofuels, but notes the risks that could arise in their development and deployment, with a particular focus on ethanol.

This Article provides an overview of the positive and negative environmental justice implications of a variety of the most significant emerging climate change policies. Whether readers agree or disagree with its specific proposals, it is intended to spark a dialogue about the appropriate role of environmental justice in climate change policies.

## II. Environmental Justice and Climate Change

### *A. Introduction to the Environmental Justice Movement and Its Initial Climate Change Principles*

To understand the environmental justice issues presented by climate change policies, it is critical to understand the roots of the environmental justice movement and the nature of its claims. In the 1980s, communities of color became increasingly aware of the inequitable concentration of undesirable land uses in their neighborhoods.[4] Since then, numerous studies have largely confirmed that poor and of color communities are disproportionately exposed to pollution.[5]

3. Academics and scholars have frequently suggested carbon taxes as another market-based approach to climate change. The political climate does not appear to be ripe for such taxes, however. Legislative and administrative proposals have focused much more on cap-and-trade proposals than on tax proposals, and this Article follows suit.

4. *See* Luke W. Cole & Sheila R. Foster, From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement 20 (2001).

5. *See* James P. Lester et al., Environmental Injustice in the United States: Myths and Realities (2001) (reviewing studies and conducting additional distributional studies that revealed that race and, to a somewhat lesser extent, class, are correlated with environmental risk). *See generally* Cole & Foster, *supra* note 4, at 54-58 & app. A (describing and listing studies on the inequitable distribution of undesirable land uses); Alice Kaswan, *Distributive Jus-*

Emerging primarily in communities of color, the environmental justice movement built upon the civil rights tradition and its strong focus on grass-roots activism.[6]

The environmental justice movement presents a number of types of claims for justice. Activists seek distributive justice: for example, they oppose facility sitings or permitting actions that would create or increase existing pollution disparities.[7] They also seek participatory justice: they seek an influential role in the decisions that could impact their communities.[8] Environmental justice advocates perceive environmental issues in context: in seeking "social justice," environmental burdens are significant not only in environmental terms, but are considered a product of broader social, economic, and political forces.[9] The movement's environmental policy goals are therefore designed to achieve not only environmental benefits, but community empowerment as well.[10]

In the climate change context, environmental justice groups are beginning to articulate overarching principles. Domestically, the Environmental Justice and Climate Change Initiative developed a list of 10 climate justice principles.[11] Recognizing the particular vulnerability of the poor and people of color, a number of the principles focus on the potential consequences of climate change and the critical importance of reducing GHG emissions.[12] Several other principles focus on the implications of climate change policies, including a call for adaptation assistance for poor communities,[13] as well as compensation for workers and others impacted by the potential economic costs of climate change policies.[14] The environmental justice movement's participatory goals are reflected in the call for community participation.[15] The principles express caution about the emergence of international and national carbon markets.[16] California environmental justice groups have been even more critical of market-based approaches.[17]

In the international arena,[18] the climate justice debate has reflected broader principles in international politics, like human rights[19] and corrective justice.[20] Despite the differ-

*tice and the Environment*, N.C. L. Rev. 1031, 1069-77 (2003) (discussing studies of the distribution of undesirable land uses).

6. *See* Cole & Foster, *supra* note 4, at 20-21. Other movements contributed to the emergence of the environmental justice movement, including the anti-toxics movement, Native American movements, and the labor movement, *see id.* at 22-28, but the civil rights movement was and has remained a critical driving force. *Id*. at 20.

7. *See* Vicki Been, *What's Fairness Got to Do With It? Environmental Justice and the Siting of Locally Undesirable Land Uses*, 78 Cornell L. Rev. 1001, 1028-55 (describing the distributive conceptions of environmental justice); Kaswan, *supra* note 5, at 1043-44 (describing the environmental justice movement's claim for distributive justice).

8. *See* Kaswan, *supra* note 5, at 1045-47 (describing the environmental justice movement's claim for participatory justice, framed as political justice).

9. *See* Sheila Foster, *Justice From the Ground Up: Distributive Inequities, Grassroots Resistance, and the Transformative Politics of the Environmental Justice Movement*, 86 Cal. L. Rev. 775, 791-92 (1998) (observing that environmental injustice is rooted in a web or economic and social forces); Kaswan, *supra* note 5, at 1047 (describing claim for social justice); Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ELR 10681, 10698-99 (Sept. 2000) (describing movement's pursuit of social justice).

10. *See* Cole & Foster, *supra* note 4, at 13-15 (describing environmental justice movement's goal of transforming and empowering communities).

11. *See* Environmental Justice & Climate Change Initiative, *10 Principles for Just Climate Change Policies in the United States*, http://www.ejcc.org/ejcc10short_usa.pdf (last visited Mar. 27, 2008) (listing 10 principles); Ansje Miller & Cody Sisco, Ten Actions of Climate Justice Policies (2002), *available at* http://www.ejrc.cau.edu/summit2/SummIIClimateJustice%20.pdf (explaining the 10 principles). The Environmental Justice and Climate Change Initiative is an effort by 28 domestic organizations, including environmental justice organizations, religious organizations, Native American organizations, and other nonprofits to advocate for climate change action. *Id.*

12. Principle 1 is "Stop Cooking the Planet"; Principle 5 states that "Global Problems Need Global Solutions," and focuses on the need for global cooperation to solve the climate change challenge; Principle 6 is "The U.S. Must Lead"; Principle 7 states that we should "Stop Exploration for Fossil Fuel"; Principle 9 urges "Caution in the Face of Uncertainty," and argues that uncertainty about the impacts of climate change should not be used as an excuse for inaction; and Principle 10 is "Protect Future Generations."

13. Principle 2, "Protect and Empower Individuals and Communities," states that policies to help communities adapt to the inevitable consequences of climate change should address the underlying inequities that make poor communities particularly vulnerable. *See* Miller & Sisco, *supra* note 11, at 2-4.

14. Principle 3, "Ensure Just Transition for Workers and Communities," recognizes that addressing climate change will have economic consequences, and argues for compensation and other measures to ease the transition for displaced workers and those particularly impacted by the higher energy and food prices that likely lie ahead. *Id*. at 4.

15. Principle 4 states that policy makers must "Require Community Participation," so that people can "have a say in the decisions that affect their lives." *Id*. at 1.

16. Principle 8 states that policymakers should "Monitor Domestic and International Carbon Markets." *Id.* at 2. Principle 8 does not oppose carbon markets, but it highlights the movement's concerns about pollutant hot spots, especially in connection with trades to the developing world, where co-pollutants may not be effectively regulated. *See id.* at 8.

17. *See* The California Environmental Justice Movement's Declaration on Use of Carbon Trading Schemes to Address Climate Change (2008), *available at* http://www.ejmatters.org/declaration [hereinafter California EJ Movement's Declaration].

18. The International Climate Justice Network, comprised of 14 organizations from around the world, developed the Bali Principles of Climate Justice (the Bali Principles) in 2002. *See* Press Release, Climate Justice Principles Released by Coalition (Aug. 28, 2002); Bali Principle of Climate Justice (Aug. 29, 2002), *available at* http://www.indiaresource.org/issues/energycc/2003/baliprinciples.html. A couple of months later, a Climate Justice Summit was held contemporaneously with an annual climate change meeting and resulted in the Delhi Climate Justice Declaration. *See* Delhi Climate Justice Declaration (2002), *available at* http://www.indiaresource.org/issues/energycc/2003/delhicjdeclare.html.

19. The human rights orientation is reflected in the following Bali Principles: Principle 1 (right to be free from climate change and its impacts); Principle 9 (climate change victims' right to compensation); Principle 11 (right to affordable and sustainable energy); Principle 14 (energy workers' right to safe work environment); Principle 17 (right to socioeconomic models that safeguard rights to food and a clean environment); Principle 18 (communities' rights to own and manage the resources on which they rely); Principle 20 (Indigenous People's right to self-determination); Principle 22 (importance of women's rights); Principle 23 (importance of youth rights); and Principle 27 (right of unborn generations). Bali Principles of Climate Justice, *supra* note 18. The Delhi Declaration similarly emphasizes the human rights implications of climate change policy. *See* Delhi Climate Justice Declaration, *supra* note 18 ("We affirm that climate change is a human rights issue—it affects our livelihoods, our health, our children and our natural resources.").

20. *See* Principle 6 (opposing the role of transnational corporations in promoting unsustainable patterns and influencing national and international policies); Principle 7 (stating that industrialized governments and transnational corporations "owe the rest of the world" an "ecological debt"); Principle 8 (demanding that energy industries be held strictly liable for the impact of GHGs and other pollutants). Bali Principles of Climate Justice, *supra* note 18. *See also* Delhi Climate Justice Declaration, *supra* note 18 (observing that climate change is "caused primarily by industrialized nations and transna-

ence in context, international environmental justice advocates, like their domestic counterparts, focus on participatory rights.[21] In addition, market-based measures, such as international emissions trading, have been met with deep skepticism and concern.[22]

The foregoing indicates how the environmental justice movement's central principles map onto the problem of climate change. However, many of the principles have yet to be translated into concrete climate change proposals.[23]

### *B. The Role of Environmental Justice in Existing Climate Change Policies*

In this part, I provide an overview of the status of environmental justice provisions in existing climate change policies. The survey reveals that most would benefit from more explicit attention to environmental justice, and that California could serve as a model for such efforts.

As of the time of this writing, the primary federal approach to reducing domestic GHG emissions consists of facilitating voluntary industry measures to reduce emissions with the goal of reducing GHG intensity, not actual emissions.[24] Numerous bills to provide actual reduction targets and develop mandatory programs for achieving them were introduced in the 110th Congress.[25] A few of these bills consider the statutes' potential economic consequences through provisions that would compensate low-income utility customers[26] and workers or regions especially affected by regulation.[27] None of the bills explicitly addresses the potential adverse environmental consequences of the GHG reduction programs themselves, or assures environmental justice more broadly.

At the state level,[28] California is a national leader in incorporating environmental justice. AB 32,[29] adopted in 2006, recognizes the importance of developing climate change policies that take a wide variety of factors into consideration, including environmental justice. The California Air Resources Board (CARB), the primary agency responsible for implementing AB 32, is to develop approaches to meet the state's emissions reduction goals

> in a manner that minimizes costs and maximizes benefits for California's economy, improves and modernizes California's energy infrastructure and maintains electric system reliability, maximizes additional environmental and economic co-benefits for California, and complements the state's efforts to improve air quality.[30]

tional corporations" and that "unsustainable consumption exists primarily in the North").

21. Note Bali Principle 3 (affirming indigenous peoples right to represent themselves); Principle 5 (stating that "communities, particularly affected communities [should] play a leading role in national and international processes to address climate change"); and Principle 20 (affirming indigenous peoples and local communities' right "to participate effectively at every level of decision-making"). BALI PRINCIPLES OF CLIMATE JUSTICE, *supra* note 18.

22. Under the Bali Principles, market mechanisms for addressing climate change "should be subject to principles of democratic accountability, ecological sustainability and social justice." BALI PRINCIPLES OF CLIMATE JUSTICE, *supra* note 18 (Principle 13). The Delhi Declaration takes a more skeptical view of international market mechanisms, stating that they are "false solutions and are exacerbating the problem." DELHI CLIMATE JUSTICE DECLARATION, *supra* note 18. It rejects "the market-based principles that guide the current negotiations to solve the climate crisis."

23. *See* Maxine Burkett, *Just Solutions to Climate Change: A Climate Justice Proposal for a Domestic Clean Development Mechanism*, 56 BUFF. L. REV. 3 & 53 (forthcoming 2008) (noting that issues of climate justice have been overlooked in policy and academic circles). In her article, Professor Burkett provides one of the first concrete policy proposals for integrating environmental justice into climate change policy.

24. The Bush Administration seeks to reduce GHG intensity by 18% by the year 2012. U.S. DEP'T OF STATE, USA ENERGY NEEDS, CLEAN DEVELOPMENT AND CLIMATE CHANGE: PARTNERSHIPS IN ACTION 4 (2006), *available at* http://www.state.gov/g/oew.climate. GHG intensity essentially measures energy efficiency: the amount of GHG emissions per unit of economic output.

    Since the U.S. Supreme Court held that U.S. Environmental Protection Agency (EPA) has the authority to address GHGs under the Clean Air Act (CAA), the Agency has initiated additional measures that could, conceivably, move beyond current voluntary initiatives. *See* Massachusetts v. EPA, 127 S. Ct. 1438, 1459-62, 37 ELR 20075 (2007). President George W. Bush directed EPA to develop motor vehicle emissions standards for GHGs. *See* Press Release, White House, President Bush Discusses CAFÉ and Alternative Fuel Standards (May 14, 2007), *available at* http://www.whitehouse.gov/news/releases/2007/05/20070514-4.html. The Administration has the authority to develop stationary source controls and to list $CO_2$ as a criteria pollutant, but does not appear eager to exercise it.

25. *See* Alice Kaswan, *The Domestic Response to Global Climate Change: What Role for Federal, State, and Litigation Initiatives?*, 42 U.S.F. L. REV. 39, 74-76 (2007) (providing brief description of bills introduced as of July 2007). In addition, in October 2007, Sens. Joseph I. Lieberman (I-Conn.) and John W. Warner (R-Va.) introduced America's Climate Security Act of 2007. S. 2191, 110th Cong. (2007), *available at* http://usclimatenetwork.org/federal/lieberman-warner-bill/ACSA.pdf.

26. *See* America's Climate Security Act of 2007, S. 2191, 110th Cong., §3503(b)(2) (Lieberman-Warner bill provision allocating allowances to utilities to mitigate economic impacts on low- and middle-income consumers), §3403(b) (allocating allowances to states based upon the state's expenditures under the federal Low-Income Home Energy Assistance Act), §3403(c)(1)(A) (allocating allowances to states to mitigate impacts on low-income energy consumers); Low Carbon Economy Act of 2007, S. 1766, 110th Cong. §403 (Bingaman-Specter bill provision designating certain auction proceeds for low-income and rural assistance programs); Global Warming Reduction Act of 2007, S. 485, 110th Cong. §702(a)(B) (Kerry-Snowe bill provision establishing a goal of mitigating energy cost increases to consumers, "particularly low-income consumers"). The McCain-Lieberman bill would require the U.S. Department of Commerce to research the impacts of climate change (not climate change policy) on low-income populations, but does not specify actions to be taken in light of such findings. S. 280, 110th Cong. §402.

27. *See* S. 2191 §§4601-4605 (Lieberman-Warner bill provision establishing a fund for worker training and assistance); S. 485 §702(C) (Kerry-Snowe bill provision establishing a goal of providing transition assistance to "employees and regions affected by a transition away from the use of high carbon-emitting energy sources"); Global Warming Pollution Reduction Act, S. 309, 110th Cong. §706(b) (Sanders-Boxer bill provision allowing allowances to be allocated to "communities, individuals and companies that have experienced disproportionate adverse impacts as a result of . . . the transition to a lower carbon-emitting economy . . . .").

28. EPA and the Pew Center on Global Climate Change websites provide comprehensive information on state climate change policies. *See* U.S. EPA, *State and Regional Climate Action Table*, http://www.epa.gov/climatechange/wycd/stateandlocalgov/state_actions list.html (EPA website listing state climate change policies); Pew Ctr. on Global Climate Change, *What's Being Done . . . in the States*, http://www.pewclimate.org/what_s_being_done/in_the_states.

29. CAL. HEALTH & SAFETY CODE §§38500-99, *available at* http://www.climatechange.ca.gov/documents/ab_32_bill_20060927_chaptered.pdf. AB 32 requires the state to reduce to its 1990 levels of emissions by 2020. *Id.* §38550. That goal is expected to lead to a 25% reduction below 2006 levels. *See* Media Release, California Climate Action Team, State Takes Early Action to Reduce Greenhouse Gases (Mar. 12, 2007), *available at* http://www.calepa.ca.gov/PressRoom/Releases/2007/PR4-031207.pdf.

30. CAL. HEALTH & SAFETY CODE §38501(h). AB 32 also states that in developing implementing regulations, CARB should "[c]onsider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health." *Id.* §38562(b)(6). To the extent a

Procedurally, the law instructs CARB to develop its policies in consultation with many relevant stakeholders, including "the environmental justice community, industry sectors, business groups, academic institutions, [and] environmental organizations."[31] The law also mandated the creation of an Environmental Justice Advisory Committee and required that it be "comprised of representatives from communities in the state with the most significant exposure to air pollution, including, but not limited to, communities with minority populations or low-income populations . . . ."[32] To develop its scoping plan for regulations, AB 32 also requires CARB to hold public workshops "in regions of the state that have the most significant exposure to air pollutants, including, but not limited to, communities with minority populations [and] communities with low-income populations . . . ."[33]

Substantively, several AB 32 provisions require CARB to consider impacts on low-income minority populations and to ensure that climate change policies do not undermine the achievement of other environmental goals.[34] These provisions are described in more detail below, where I detail AB 32's requirements for integrating environmental justice into a market system as a prelude to exploring actual mechanisms for doing so.

AB 32 also provides a model for how climate change regulation could provide economic benefits to disadvantaged communities, fueled by investments in new technology and its implementation. The relevant provision[35] is discussed below, where I discuss the economic opportunities presented by climate change regulation.[36] At least on paper, California is thus a national leader in recognizing the interrelationships between climate change policy and broader economic and environmental issues.

## III. Cap-and-Trade Programs

### *A. Cap-and-Trade Program Basics*

The first key area for considering the role of environmental justice is in the design and operation of a cap-and-trade program for GHGs. Cap-and-trade programs have figured prominently in proposals for addressing climate change. Most of the federal climate change bills introduced in the 110th Congress contemplate a cap-and-trade program.[37] The most developed state initiative for GHG reductions, the Regional Greenhouse Gas Initiative, is a cap-and-trade program for electric utilities in the Northeast.[38] Although California's climate change legislation did not mandate a cap-and-trade program, it permitted the implementing agency to adopt one, and the governor has strongly promoted that option.[39]

Given the prominence of cap-and-trade programs, I will describe several key design features in this part and explore their environmental justice implications in subsequent parts. Under a cap-and-trade program, the relevant government entity would set a cap on the total emissions of carbon dioxide ($CO_2$) or GHGs. The cap would be translated into a set number of pollution allowances which the regulatory entity would distribute to polluting facilities.

The method of allowance distribution is a key variable in cap-and-trade program design. The implementing agencies could give the allowances for free. Since the cap would be below the existing overall emissions level, facilities would not receive enough allowances to cover their existing emissions. Facilities would have three mechanisms for aligning their emissions with their allowances: (1) reduce emissions to match the number of allowances; (2) reduce emissions by more than is necessary to match the number of allowances and sell the excess; or (3) buy allowances until they equal the actual emissions level. Options (2) and (3) embody the trade aspect of a cap-and-trade program: rather than all facilities having to reduce by the same percentage, facilities can trade allowances so that those who reduce more enable others to reduce less or not at all.

Another option for allocating allowances is to auction some or all of the allowances; in other words, a regulatory agency would sell pollution rights.[40] A pure auction would result in less trading than a free distribution of allowances based on past emissions, since facilities would presumably purchase the number of allowances they need to cover their expected emissions. In a pure auction system, trading would likely occur, if at all, only to address unanticipated differences between the amount purchased and the amount ultimately needed. Those who could reduce emissions for less

market-based system is adopted, the statute specifies that CARB should "[m]aximize additional environmental and economic benefits for California . . . ." *Id.* §38570(b)(3).

31. *Id.* §38501(f).

32. *Id.* §38591(a).

33. *Id.* §38561(g).

34. *Id.* §38562(b)(2) (prohibiting disproportionate impacts on low-income communities); *id.* §38570(b)(1) (requiring that CARB consider whether market-based systems will lead to direct, indirect, and cumulative impacts, especially on heavily polluted communities); *id.* §38562(4) (stating that the law should complement the state's efforts to meet clean air goals); *id*. §38570(b)(2) (stating that CARB should ensure that market-based systems do not increase co-pollutants).

35. *Id*. §38565.

36. *See infra* Part III(B).

37. *See* Kaswan, *supra* note 25, at 76 (describing cap-and-trade programs in federal bills introduced as of summer 2007). The recent Lieberman-Warner bill also relies on cap a cap-and-trade mechanism. S. 2191 §§1101-4901 (proposing a cap-and-trade system). *See also* Pew Ctr. on Global Climate Change, *Economy-Wide Cap-and-Trade Proposals in the 110th Congress*, http://www.pewclimate.Org/docUploads/110th%20Congress%20Economy-wide%20Cap Trade%20Proposals%2010-18-2007.pdf (chart comparing key features of recent legislative proposals).

38. *See* Regional Greenhouse Gas Initiative (RGGI), Memorandum of Understanding (2005), *available at* http://www.rggi.org/docs/mou_final_12_20_05.pdf. In November 2007, several midwestern states entered a Midwestern Greenhouse Gas Accord in which they agreed to establish a regional GHG cap-and-trade program. Midwestern Greenhouse Gas Accord (Nov. 15, 2007), *available at* http://www.wisgov.state.wi.us/docview.asp?docid=12497.

39. Cal. Health & Safety Code §38570(a) (stating that the regulatory agency "may" adopt market mechanisms). Two months after approving AB 32, Gov. Arnold Schwarzenegger (R-Cal.) promulgated an executive order promoting a "comprehensive market-based compliance program," and created an advisory committee to provide initial recommendations on its structure. Exec. Order No. S-20-06 (Cal. 2006), *available at* http://gov.ca.gov/index.php?/executive-order/4484/. A market-based system is also likely because California has joined a regional initiative designed to integrate trading programs throughout the western states. *See* Western Regional Climate Change Initiative (Feb. 26, 2007), http://www.westernclimate initiative.org/ewebeditpro/items/O104F12775.pdf.

40. *See generally* U.S. EPA, Tools of the Trade: A Guide to Designing and Operating a Cap-and-Trade Program for Pollution Control 3-14 (2003) (describing auctions).

cost than the allowance price would presumably buy fewer allowances, while those whose costs of control exceed the allowance price would presumably buy more. Although this system leads to less trading than distributing allowances for free, it provides companies with the same flexibility as a more trade-centered program, since facilities can choose how much to reduce emissions (if at all) depending upon their own marginal costs of control. As a consequence, it would also result in differing levels of control at different facilities.

Another key issue in designing a cap-and-trade program is the sectoral and geographic scope of a program. Cap-and-trade programs could focus on particular sectors, like electric utilities,[41] or could embrace a wide range of sectors, including utilities, industry, commercial enterprises, and even mobile sources.[42] The geographic scope of a trading program could also vary widely. Programs can be designed to operate at different levels, including at the municipal,[43] state,[44] regional,[45] national,[46] or international level.[47] Even if a program is designed at one level (say, state), program designers must decide whether to link the program to others and allow trades outside the program's geographic boundaries. Thus, California, in designing a cap-and-trade program, will have to address whether and to what extent to allow trades for credits outside of California.[48] The larger the sectoral and geographic scope of the program, the larger the variation in the costs for reducing GHGs, the more that expensive sources will purchase allowances from cheaper sources, and the lower the overall costs of pollution control. Fewer actual reductions would occur in sectors or regions experiencing higher costs of control. Sectoral and geographic flexibility could thus have distributional consequences.

Offsets present another significant design issue: the extent to which facilities can buy credits for reductions made outside of the regulated sector. If the cap-and-trade system allowed facilities in a regulated sector (say, utilities) to purchase offsets, then a utility could not only trade allowances with other utilities, but purchase emission reduction credits from an unregulated entity that nonetheless reduced emissions (say, an unregulated cement plant) or an entity that sequestered carbon (say, a timber company that planted trees). Like expanding sectoral and geographic scope, allowing an entity to purchase offsets rather than reduce its own emissions has distributional consequences.

The discussion so far has addressed spatial trading. Intertemporal trading, otherwise known as emissions banking, could also have potential environmental justice impacts. If allowances can be banked, then companies could reduce their emissions below the required level and bank the extra credits for use in the future. Companies bank emissions to facilitate future increases in production, to ease the achievement of more stringent future targets,[49] and to provide a cushion against potentially unstable future allowance prices.[50] Allowing banking does, however, create the possibility of higher emissions at a source in the future as a consequence of lower emissions in the present.

The decision about whether, to what extent, and how to adopt a cap-and-trade program rather than a more traditional regulatory program for controlling GHG emissions turns on a multiplicity of factors, not just the implications for environmental justice. Scholars have debated the systems' relative morality,[51] economic efficiency,[52] administrative efficiency,[53] efficacy at creating incentives for additional pollution reduction,[54] efficacy at creating incentives for the development of innovative pollution control technology,[55] im-

41. For example, the RGGI program addresses only the electric utility sector. *See* RGGI Memorandum of Understanding, *supra* note 38, §1.

42. Los Angeles adopted a cap-and-trade program for addressing local air pollutants, known as the Regional Clean Air Incentives Market (RECLAIM), which included a wide range of sectors, including utilities as well as many additional air pollution sources. *See* Lesley K. McAllister, *Beyond Playing "Banker": The Role of the Regulatory Agency in Emissions Trading*, 59 ADMIN. L. REV. 269, 288 (2007).

43. Los Angeles' RECLAIM program created a local cap-and-trade program for certain criteria air pollutants. *See id.* at 287-88.

44. As noted above, California is considering a state-centered cap-and-trade program as one of its policy options. *See supra* note 39 and accompanying text.

45. The RGGI program is an example of a regional trading program. *See supra* note 40 and accompanying text.

46. Many of the federal bills propose a national cap-and-trade program. *See* Kaswan, *supra* note 25, at 76.

47. The Kyoto Protocol to the United Nations Framework Convention on Climate Change, the primary international treating addressing climate change, creates an international trading system. *See* Kyoto Protocol, arts. 6, 12, and 17.

48. Some degree of trading outside of the state is likely, since California has signed the Western States Climate Change Initiative, in which several western states agreed to establish a regional emissions goal and a regional trading system to accomplish that goal. *See* Western Regional Climate Change Initiative, *supra* note 39.

49. *See* A. DENNY ELLERMAN ET AL., EMISSIONS TRADING IN THE U.S.: EXPERIENCE, LESSONS, AND CONSIDERATIONS FOR GREENHOUSE GASES 14 (2003), *available at* http://www.pewclimate.org/global-warming-in-depth/all_reports/emissions_trading/ (noting that many firms reduced emissions and banked allowances in Phase I of the Acid Rain Program to provide an advantage in meeting the more stringent requirements to be imposed in Phase II of the program) [hereinafter ELLERMAN ET AL.; Byron Swift, *How Environmental Laws Work: An Analysis of the Utility Sector's Response to Regulation of Nitrogen Oxides and Sulfur Dioxide Under the Clean Air Act*, 14 TUL. ENVTL. L.J. 309, 325-26 (2001) (describing incentives to bank in Phase I to generate allowances that would increase in value during Phase II).

50. *See* ELLERMAN ET AL., *supra* note 49, at 37.

51. *See* Richard T. Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 DUKE ENVTL. L. & POL'Y F. 231 (1999) (critiquing Los Angeles' cap-and-trade programs based upon environmental justice concerns), at 269-71 (suggesting that a cap-and-trade program turns an ethical wrong—polluting—into a right); Burkett, *supra* note 23, at 48 (suggesting that cap-and-trade programs allow companies to profit from complying with a preexisting ethical duty not to pollute).

52. For arguments that cap-and-trade programs are economically efficient, see, e.g., Daniel J. Dudek & John Palmisano, *Emissions Trading: Why Is This Thoroughbred Hobbled?*, 13 COLUM. J. ENVTL. L. 217, 223, 231-34 (1988); Swift, *supra* note 49, at 381-82 (describing economic efficiency generated by the acid rain trading program).

53. *Compare* Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1342-43 (1985) (describing greater administrative efficiency of market-based systems over cap-and-trade) and Swift, *supra* note 49, at 400-02 (describing relative administrative efficiency of pure cap-and-trade program), *with* McAllister, *supra* note 42, at 287-312 (describing high administrative costs associated with Los Angeles' air pollutant trading program).

54. *See* EPA, *supra* note 40, at 1-2 to 1-3.

55. *Compare* Ackerman & Stewart, *supra* 53, at 1349-50 (discussing incentive effect created by decreasing caps and increasing allowance prices), Dudek & Palmisano, *supra* note 52, at 234-36 (discussing how trading system creates incentives to develop more cost-effective pollution control mechanisms), Swift, *supra* note 49, at 391-95, EPA, *supra* note 40, at 1-4 (describing incentives for innovations in pollution abatement), *with* David M. Dreisen, *Is Emissions Trading*