ENVIRONMENTAL JUSTICE IN THE RENEWABLE ENERGY TRANSITION

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INTRODUCTION

"A green economy in the context of sustainable development and poverty eradication…"

- Theme, 2012 United Nations Rio+20 Conference on Sustainable Development

Renewable energy is at the heart of virtually every discussion of a "green economy" – the theme of this year's United Nations' Rio+ 20 Conference on Sustainable Development.[1] Overreliance on fossil fuels is known to be unsustainable, but the energy we derive from it is indispensible to modern society. Renewable energy and energy efficiency are widely recognized as the most promising alternatives for reducing fossil energy consumption, mitigating climate change, and advancing the goal of energy sustainability.

[1] United Nations Rio+20 Conference on Sustainable Development, "*Objective and Themes*," http://www.uncsd2012.org/objectiveandthemes.html (last visited July 2012). The concept of a "green economy" includes many sectors in addition to energy, including agriculture, waste management, fisheries, forestry, and tourism. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) (2011) http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf (for renewable energy, see 198-239).

The prospect of "green jobs" immediately conjures images of wind turbine assembly lines, of solar panels being installed on rooftops. Yet sustainable development, as the Conference theme suggests, means more than "greener" economic development. Instead, it captures the interrelationship between the environment, the economy, and human well-being in the effort to meet "the needs of the present without compromising the ability of future generations to meet their own needs."[2] The Rio+20 Conference commemorated and continued the work begun 20 years ago when the idea of sustainable development was first officially conceptualized on a global scale in the Rio Declaration on Environment and Development and a plan of action, Agenda 21.[3] Agenda 21 anchors the international scope of these aims and commitments to national actions. It makes clear that, as John Dernbach explains, sustainable development "needs to be realized in the particular economic, natural, and other settings of each specific country" – each country is responsible for advancing sustainable development on its own soil.[4]

The concept of environmental justice is closely tied to sustainable development, but refines it with the proposition that people of color and low-income communities should neither bear a disproportionate share of environmental burdens nor be disproportionately deprived of environmental

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[2] BRUNDTLAND COMMISSION/WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE 43 (1987). There has been significant debate about how to define and conceptualize sustainable development which I will not repeat here. *See, e.g.*, FOUNDATIONS OF SUSTAINABLE DEVELOPMENT (Dean Frieders, Ed., 2012) (addressing conceptual and contextual aspects of sustainable development); ACTING AS IF TOMORROW MATTERS: ACCELERATING THE TRANSITION TO SUSTAINABILITY (John C. Dernbach, Ed., 2012) (overview of US sustainability efforts since 1992 Earth Summit); Lamont C. Hempel, *Conceptual and Analytical Challenges in Building Sustainable Communities*, *in* TOWARD SUSTAINABLE COMMUNITIES: TRANSITION AND TRANSFORMATIONS IN ENVIRONMENTAL POLICY 33-62 (Daniel A. Mazmanian & Michael E. Kraft, Eds., 2nd ed. 2009) (with a focus on the local level); JULIAN AGEYMAN ET AL., JUST SUSTAINABILITIES: DEVELOPMENT IN AN UNEQUAL WORLD (2003) (addressing conceptual and practical intersection of sustainable development with environmental justice); John C. Dernbach, *Sustainable Development as a Framework for National Governance*, CASE W. RES. L REV. 1 (1998) (synthesizing international sustainable development frameworks and translating for US application).

[3] Professor John Dernbach's article in this Symposium issue, *Sustainability as a Means of Improving Environmental Justice*, 19 J. ENVTL. & SUSTAINABILITY L. ___ (2012) addresses sustainable development in detail. For the referenced documents, see U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/5/ Rev.1, 31 I.L.M. 874 (1992), *available at:* http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm (last visited Aug.2012); U.N. Conference on Environment and Development, Agenda 21, U.N. Doc. A/CONF.151.26 (1992), *available at:* http://www.un.org/esa/dsd/agenda21/ (last visited Aug. 2012). A critique of how effectively the Rio+20 Conference advanced its goals is beyond the scope of this article. For early analysis, see, e.g., Nicholas A. Robinson, *The United Nations Rio+20 Conference: Measured Deliberations*, __ Environmental Policy & Law __ (forthcoming 2012).

[4] AGENDA FOR A SUSTAINABLE AMERICA 4 (John C. Dernbach, ed. 2009). *See* Agenda 21, ¶ 1.6.

benefits.[5] Environmental justice first drew attention to the surfeit of landfills and other polluting facilities in poor and minority communities and a failure in environmental law, policy, and advocacy to address inequality in toxic exposure. Over several decades, environmental justice critiques have informed issues ranging from enforcement of environmental law, to structures for public participation in environmental decision-making, to transportation equity, to workplace and school exposure to toxics.[6] Today, the same core justice concerns are proving equally important to climate policy designed to contend with extra-local effects of human activity.[7]

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[5] For introductions to the origins of environmental justice as a distinct law, policy, and social justice concern, see, e.g., Ole W. Pedersen, *Environmental Principles and Environmental Justice*, 12 ENV. L. REV. 26 (2010) (in relation to precautionary principle, polluter pays principle, and sustainable development); Phaedra C. Pezzullo & Ronald Sanders, *Introduction Revisiting the Environmental Justice Challenge to Environmentalism*, *in* ENVIRONMENTAL JUSTICE AND ENVIRONMENTALISM: THE SOCIAL JUSTICE CHALLENGE TO THE ENVIRONMENTAL MOVEMENT 1-14 (Ronald Sandler & Phaedra C. Pezzullo, eds. 2007); THE LAW OF ENVIRONMENTAL JUSTICE (Michael Gerrard & Sheila Foster, eds., 2007); CLIFFORD RECHTSCHAFFEN & EILEEN GAUNA, ENVIRONMENTAL JUSTICE: LAW, POLICY & REGULATION (2002); LUKE COLE & SHEILA FOSTER, FROM THE GROUND UP: ENVIRONMENTAL RACISM AND THE RISE OF THE ENVIRONMENTAL JUSTICE MOVEMENT (2001). On environmental justice and Native Nations, *see* JAMES M. GRIJALVA, CLOSING THE CIRCLE: ENVIRONMENTAL JUSTICE IN INDIAN COUNTRY (2008). On environmental justice in an international context, *see, e.g.,* JONAS EBBESSON & PHEOBE OKOWA, EDS. ENVIRONMENTAL LAW AND JUSTICE IN CONTEXT (2009); Carmen Gonzalez, *Environmental Justice and International Environmental Law* in Routledge Handbook of International Environmental Law (Shawkat Alam, et al, eds.) Routledge, forthcoming 2012, available on SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2011081

[6] ENVIRONMENTAL JUSTICE FOR ALL: A FIFTY-STATE SURVEY OF LEGISLATION, POLICY, AND CASES vii-xi (Steven Bonorris, ed., 4th ed. 2010), *available at*: http://www.uchastings.edu/public-law/docs/ejreport-fourthedition.pdf [hereinafter Bonorris, ed.]. For scholarship analyzing environmental justice in specific contexts, *see e.g.*, Hari Osofsky et al., *Environmental Justice and the BP Deepwater Horizon Oil Spill*, __ NYU ENVTL. L. J. __ (forthcoming 2012), available at SSRN: http://ssrn.com/abstract=1949421; David W. Case, *The Role of Information in Environmental Justice*, 81 MISS. L. J. 701 (2012); Alexandra Dapolito Dunn, *Siting Green Infrastructure: Legal and Policy Solutions to Alleviate Urban Poverty and Promote Healthy Communities*, 37 B.C. ENVTL. AFF. L. REV. 41 (2012); Daria E. Neal, *Healthy Schools: A Major Front in the Fight for Environmental Justice*, 38 ENVTL. L. 473 (2008); Craig Anthony (Tony) Arnold, *Planning Milagros: Environmental Justice and Land Use Regulation*, 76 DENV. U. L. REV. 1 (1998).

[7] The term "climate justice" is often used to characterize this broadening of environmental justice themes to include the effects on low-income communities of color from domestic and international climate law and policy. See generally, *Climate Justice Initiative*, NAACP http://www.naacp.org/programs/entry/climate-justice (last visited June 2012) (based on environmental justice premises); J. ANDREW HOERNER & NIA ROBINSON, A CLIMATE OF CHANGE: AFRICAN AMERICANS, GLOBAL WARMING, AND A JUST CLIMATE POLICY FOR THE US (2008) http://www.climateaccess.org/sites/default/files/Hoerner%20and%20Robinson_Climate%20of%20Change.pdf (linking climate policies and environmental justice). See also Gavin Kearney, *Environmental Justice and Climate Change Policy: Lessons from the Regional Greenhouse Gas Initiative*, 44 CLEARINGHOUSE L. REV. 230 (2010) (on climate policy's environmental

Environmental justice reinforces that even policy focused on global problems will ultimately be grounded in its local effects.

To advance the Symposium's study of "Environmental Justice Issues in Sustainable Development," this article considers environmental justice in the specific context of renewable energy goals. As a key component of sustainable development and a central concern for green economy advocates, renewable energy is uniquely situated on the policy spectrum, tying local communities that host renewable projects to global strategies for curbing unsustainable warming trends. The fact that warming trends threaten disproportionate effects on the poorest members of society underscores the importance of sustainable development to environmental justice. Yet, early on, some anticipated the potential for conflict between sustainable development and environmental justice, predicting the broader sustainable development agenda might prove insensitive to environmental justice concerns.[8] And indeed, in the renewable energy context, the broad-stroke compatibility between renewable energy goals and environmental justice may obscure the potential for conflicts in implementation. At the same time, I argue, renewable energy offers unique opportunities both to avoid environmental *in*justice and to affirmatively advance environmental justice as well.

Part I of the article addresses the role of renewable energy in sustainable development and its potential for advancing environmental justice objectives. With a focus on the U.S. and electricity generation, Part II evaluates environmental justice in the related contexts of renewable energy policy and project development. Environmental justice remains relevant to how energy facilities are sited, but also bears on how "renewable energy" or "clean energy" is defined in law. More broadly, it is proving relevant to issues of exclusion and access to renewable energy benefits, including those associated with a "green economy." The article concludes by addressing

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justice impacts and untapped potential to serve environmental justice more effectively); Rebecca Tsosie, *Climate Change, Sustainability and Globalization: Charting the Future of Indigenous Environmental Self-Determination*, 4 ENVTL. & ENERGY L. & POL'Y J. 188, 211 (2009) (describing climate justice as leading the way for a "second generation" of environmental justice); Alice Kaswan, *Greening the Grid and Climate Justice*, 39 ENVTL. L. 1143 (2009) (discussing climate justice as expansion of environmental justice within energy context); Maxine Burkett, *Just Solutions to Climate Change: A Climate Justice Proposal for a Domestic Clean Development Mechanism*, 56 BUFF. L. REV. 169 (2008) (discussing climate justice as expansion of environmental justice to include impacts of climate policy on environmental justice communities). *Cf.* ERIC A. POSNER & DAVID WEISBACH, CLIMATE CHANGE JUSTICE (2010) (rejecting notion that "intuitive ideas about justice" will be effective guides for climate policy).

[8] *See* J.B. Ruhl, *The Coevolution of Sustainable Development and Environmental Justice: Cooperation, Then Competition, Then Conflict*, 9 DUKE ENVTL. L. & POL'Y FORUM 161 (1998), see also Andrew Dobson, *Social Justice and Environmental Sustainability: Ne'er the Twain Shall Meet?* in AGYEMAN ET AL., *supra* note 2 at 84-98.

possibilities for enhancing, and avoiding conflicts between, what are, at their most basic, compatible goals: renewable energy expansion for sustainable development and environmental justice.

I. THE ROLE OF RENEWABLE ENERGY IN SUSTAINABLE DEVELOPMENT

Fossil energy dominance, together with the legal frameworks that reinforce it, may well pose the greatest barrier to sustainable development goals.[9] The energy used around the world derives overwhelmingly from coal, oil, and natural gas.[10] Production and consumption of these resources has many harmful environmental effects: devastating land impacts, such as from surface mining and mountaintop removal for coal extraction; coal ash and other wastes in need of disposal or reuse; water pollution; and, of course, air pollution.[11] Power plants using fossil fuel combustion to generate electricity produce air emissions that are toxic to human health and the environment.[12] The transportation system is dominated by mobile sources dependent on oil, polluting the air from the tailpipe.[13] The energy sector produces more greenhouse gases than any other, powering a worldwide fossil fuel dependency that is largely responsible for climate change.[14] The harsh

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[9] Regarding legal frameworks that reinforce fossil fuels' dominance of the energy sector. *See e.g.*, JOSEPH TOMAIN, THE END OF DIRTY ENERGY POLICY (2011); Lincoln Davies, *Alternative Energy and the Energy-Environment Disconnect*, 46 IDAHO L. REV. 473 (2010); Steven Ferrey, *Restructuring a Green Grid: Legal Challenges to Accommodate New Renewable Energy Infrastructure*, 39 ENVTL. L. 977 (2009); and Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, __ VANDERBILT L. REV. __ (2012, forthcoming). *See also Energy Subsidies*, INTERNATIONAL ENERGY AGENCY, http://www.iea.org/weo/subsidies.asp (providing database of worldwide subsidies for fossil fuels).

[10] U.S. ENERGY INFO. ADMIN., INTERNATIONAL ENERGY OUTLOOK: DOE/EIA -0484(2011), 2, *see* fig. 2 (2011), *available at* http://www.eia.gov/forecasts/ieo/pdf/0484(2011).pdf.

[11] For a brief summary of the environmental impacts of individual non-renewable fuel sources, *see* K.K. DUVIVIER, THE RENEWABLE ENERGY READER 10-13 (2011).

[12] *See generally*, *Air and Radiation*, U.S. EPA, http://www.epa.gov/air/ (last visited June 2012) (providing detailed information about US air pollution and federally regulated air pollutants and their harmful effects); CLEAN AIR TASK FORCE, THE TOLL FROM COAL: AN UPDATED ASSESSMENT OF DEATH AND DISEASE FROM AMERICA'S DIRTIEST ENERGY SOURCE (2010), *available at:* http://www.catf.us/resources/publications/view/138 (last visited July 2012).

[13] *Transportation and Air Quality*, U.S. EPA, http://www.epa.gov/otaq/invntory/overview/index.htm (last visited July 2012) (providing detailed information on mobile sources of air pollution and federal regulatory programs for emissions control and fuel economy).

[14] U.S. ENERGY INFO. ADMIN., EMISSIONS OF GREENHOUSE GASES IN THE UNITED STATES 2009: DOE/EIDA-0573, § 1.2 "Energy-related carbon dioxide emissions by fuel and end use" (Mar. 2011) (showing combined contribution of nearly 75 percent), at: http://www.eia.gov/environment/emissions/ghg_report/. Estimates vary depending on how industrial emissions sources are accounted for, but electricity generation and transportation consistently add up to be the majority greenhouse gas contributor. *Compare*, *Sources of Greenhouse Gas Emissions*, U.S. EPA

effects of climate change on the poorest and most vulnerable will exacerbate global inequality, which is already pronounced in energy access disparities.[15] Energy poverty affects billions of people around the world – 20 percent of us live without basic energy services such as electricity and clean cooking facilities.[16] Sustainable development depends on universalizing energy access to eradicate hunger and advance health, education, and gender equality.[17]

Renewable energy advances sustainable development in a number of important ways. First, renewable energy is not a finite resource, so its use can be sustained – indeed, its theoretical potential far exceeds the energy consumed by all economies on Earth combined.[18] As of last year, more than half of the countries in the world had adopted renewable energy targets or other policies designed to promote renewables.[19] Global investment in renewable energy and renewable fuels increased 17 percent in 2011, reaching a new record of $257 billion.[20] These trends indicate recognition of the benefits of increasing renewable energy production to meet new demand and displace fossil energy. Meeting demand for electricity with renewables makes the energy sector less *un*sustainable - sustainability may not yet be technologically achievable, but renewable energy represents its possibility.

Second, renewable energy largely avoids the environmental effects that have made fossil fuels so problematic. In displacing sources of pollution, which have disproportionately affected environmental justice communities, a sector-wide shift toward renewable energy serves a central environmental

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http://www.epa.gov/climatechange/ghgemissions/sources.html (last visited Jul. 2012) (showing combined contribution of over 60 percent).

[15] *See, e.g.*, Lakshman Guruswamy, *Energy Justice and Sustainable Development*, 21 COLO J. ENVTL. L. & POL'Y 231 (2010); Ruth Gordon, *Climate Change and the Poorest Nations: Further Reflections on Global Inequality*, 78 U. COLO. L. REV. 1559 (2007); Rebecca Tsosie, *Indigenous People and Environmental Justice: The Impact of Climate Change*, 78 U. COLO. L. REV. 1625 (2007).

[16] *See* "Energy Poverty: How to make modern energy access universal?" - special excerpt of the INTERNATIONAL ENERGY AGENCY ET AL., WORLD ENERGY OUTLOOK 2010, *available at* http://www.sustainableenergyforall.org/images/content/Special_Excerpt_of_WEO_2010.pdf

[17] *Id.* at 15.

[18] IPCC SPECIAL REPORT ON RENEWABLE ENERGY SOURCES AND CLIMATE CHANGE MITIGATION 165 (O. Edenhofer, et al., eds., 2011), *available at* http://srren.ipcc-wg3.de/report/IPCC_SRREN_Ch01.pdf [hereinafter IPCC RENEWABLE ENERGY REPORT]; *see also* NAT'L ACADEMY OF SCIENCES, ELECTRICITY FROM RENEWABLE RESOURCES: STATUS, PROSPECTS, AND IMPEDIMENTS 3 (2010) *available at* http://www.nap.edu/openbook.php?record_id=12619.

[19] *Renewable Energy Policy Network for the 21st Century*, RENEWABLES 2011 GLOBAL STATUS REPORT 17 (2011) *available at* http://www.map.ren21.net/GSR/GSR2012.pdf (reporting on policies in 118 countries).

[20] Angus McCrone, et al., *Global Trends in Renewable Energy Investment 2012* 12 (June 2012) *available at*: http://fs-unep-centre.org/publications/global-trends-renewable-energy-investment-2012.

justice objective of reducing industrial pollution.[21] Renewable energy projects may not eliminate existing polluting facilities, but they can reduce the number of new fossil energy plants. Although no energy source is entirely benign, renewables offer a pathway toward global climate stabilization and may subject local communities to less environmental harm.[22] This is also important for global sustainable development consensus, which defends the right of developing countries to social and economic advancement.[23] As Lakshman Guruswamy puts it, "[t]he right of these countries to sustainable development is inconceivable without electricity."[24] Renewable energy can answer this need while helping to decouple economic development from its historical pairing with increased energy consumption and greenhouse gas emissions – a goal encapsulated by the notion of a "green economy."[25] Indeed, as the most recent reporting on global renewable energy investment indicates, "there is, so far, no better example of economic 'greening' than what has been achieved in the last seven years in the power sector."[26] In 2011, excluding existing large hydropower, renewable energy "accounted for 44 percent of new generation capacity added worldwide, up from 34 percent in 2010 and just 10.3 percent back in 2004."[27] With this growth, renewables may allow developing countries to benefit from technological "leapfrogging" - the opportunity to avoid undergoing the same pollution-intensive stages industrialized countries have gone through to achieve economic development.[28] The best-known policy of this kind is the Kyoto Protocol's Clean Development Mechanism, which, although criticized in practice, is a

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[21] Kaswan, *supra* note 7, at 1146 (making similar point in the climate justice context – an extension of environmental justice that encompasses the effects of climate policies on environmental justice communities).

[22] *See, e.g.*, Stephen Pacala & Robert Socolow, *Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies*, 305 SCIENCE 968-72 (Aug. 13, 2004) (identifying renewable energy as one among a number of "wedge" approaches that, in combination, can be used to stabilize climate change). Even wind and solar energy facilities depend on materials production and manufacturing processes, involve site clearing and construction, and will eventually require decommissioning and disposal or recycling of components, all of which have environmental impacts.

[23] *See* United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26/Rev.1 (Vol.I), Annex I, Principles 2 and 3 (Aug. 12, 1992), *available at*: http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm.

[24] Lakshman Guruswamy, *Energy, Environment & Sustainable Development,* 8 CHAP. L. REV. 77, 77-78 (2005).

[25] IPCC RENEWABLE ENERGY REPORT, *supra* note 18, at 716 *available at*: http://srren.ipcc-wg3.de/report/IPCC_SRREN_Ch09.pdf.

[26] McCrone, et al., *supra* note 20, at 11.

[27] *Id.*

[28] *See, e.g.*, U.N. SECRETARY-GENERAL'S ADVISORY GROUP ON ENERGY AND CLIMATE CHANGE (AGECC), *Energy for a Sustainable Future: Summary Report and Recommendations* 8 (2010), *available at* http://www.un.org/wcm/webdav/site/climatechange/shared/Documents/AGECC%20summary%20report[1].pdf.

policy designed to facilitate just this sort of infrastructure in developing countries.[29] A green economy also offers new prospects for what the United Nations refers to as "social inclusion," reducing poverty by providing training for jobs and improving incomes.[30] The United Nations Environment Programme and International Labour Organization have documented green job prospects across many sectors, with estimates of approximately five million direct and indirect renewable energy jobs in 2009-10.[31] Green jobs reduce poverty by improving incomes and providing healthier work environments.[32]

Third, renewable energy holds promise for addressing energy justice issues, such as access and energy security, with less environmental impact.[33] In an effort to raise awareness of energy poverty, the United Nations declared 2012 the "Year of Sustainable Energy for All" to promote three primary goals: "(1) ensuring universal access to modern energy services; (2)

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[29] The Kyoto Protocol, a 1997 international agreement on greenhouse gas mitigation that went into effect in 2005, allows developed countries to earn credit toward their obligations under the Protocol in part via the Clean Development Mechanism (CDM) by constructing emissions-reducing projects, including renewable energy, in developing countries. Further detail is beyond the scope of this article, but for overview, analysis, and critique of the CDM, *see, e.g.*, Marie Blévin, *The Clean Development Mechanism and the Poverty Issue*, 41 ENVTL. L. 777 (2011) (detailing the CDM and critiquing its failure to take poverty eradication into account and proposing modifications to better account for poverty); Steven Ferrey, *The Failure of International Global Warming Regulation to Promote Needed Renewable Energy*, 37 B.C. ENVTL. AFF. L. REV. 67 (2010) (explaining why the CDM has not been successful at fostering renewable projects); Michael Wara, *Measuring the Clean Development Mechanism's Performance and Potential*, 55 UCLA L. REV. 1759 (2008) (finding that the incentives of CDM have encouraged strategic market manipulation). *Cf.* Burkett, supra note 7 (arguing that the CDM concept, in spite of criticisms, should be adapted for utilization in the US).

[30] *See generally Working Toward Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, GREEN JOBS INITIATIVE/UNITED NATIONS ENVIRONMENT PROGRAMME (2012), *available at* http://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_181836/lang--en/index.htm [herinafter GREEN JOBS INITIATIVE]. *See also Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective*, UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS (2012) *available at* http://www.uncsd2012.org/rio20/index.php?page=view&type=400&nr=12&menu=45; *Towards A Green Economy: Pathways to Sustainable Development and Poverty Eradication*, UNITED NATIONS ENVIRONMENT PROGRAMME (2011), *available at* http://www.unep.org/greeneconomy/greeneconomyreport/tabid/29846/default.aspx (last visited July 2012); UNITED NATIONS ENVIRONMENT PROGRAMME, GREEN JOBS: TOWARDS DECENT WORK IN A SUSTAINABLE, LOW-CARBON WORLD, (2008), *available at*: http://www.unep.org/labour_environment/features/greenjobs-report.asp.

[31] *See* GREEN JOBS INITIATIVE, *supra* note 30, at 78.

[32] *Id.* at vii-xii (Executive Summary), 75-89 (Energy chapter). *See also Poverty Reduction: Can Renewable Energy Make a Real Contribution?*, GLOBAL NETWORK ON ENERGY FOR SUSTAINABLE DEVELOPMENT (2006), *available at* www.gnesd.org/downloadables/povertyreductionspm.pdf (assessing prospects for renewable energy to reduce poverty in specific contexts around the world).

[33] IPCC RENEWABLE ENERGY REPORT, *supra* note 18.

doubling the share of renewable energy in the global energy mix; (3) doubling the global rate of improvement in energy efficiency."[34] Renewables can support a higher standard of living in rural areas through on-site and community-based energy generation where there may be no access to an electrical grid for years to come.[35] To date, renewable energy investment is directed to developed countries nearly two-to-one over developing countries that have lacked energy access.[36] Although energy poverty can be addressed with fossil fuels, the core environmental justice goal of reducing total and uneven exposure to environmental harms can be served where renewable energy can be used.

For all these reasons, renewable energy is a key component of sustainability: It can contribute to environmental goals, both global and local, and also to the economic and social aspirations of sustainable development.

II. ENVIRONMENTAL JUSTICE ISSUES FOR RENEWABLE ENERGY

The basic compatibility between a transition toward greater reliance on renewable energy and environmental justice does not preclude conflicts at the project level, nor does it absolve policymakers of the need for sensitivity to the potential implications of policy design features promoting renewable resources. At expected rates of growth, however, there is still time to integrate environmental justice and renewable energy policy before most of this infrastructure is built. Short of technological or political changes that alter the current trajectory, projections show renewables increasing from the current 10 percent to 16 percent of electric power in the U.S. over the next 20 years.[37] This section addresses environmental justice in connection with three key aspects of the renewable energy transition in the U.S.: (1) locating renewable energy projects; (2) defining "renewable energy" in law; and (3) access and inclusion in green economy benefits.

A. Community Context for Renewable Energy Siting

Scaling up renewable energy will involve a long series of site-by-site decisions about where to locate renewable generation. Siting options for

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[34] *Sustainable Energy for All: Action Agenda*, UNITED NATIONS, 5 (Apr. 2012), http://www.sustainableenergyforall.org/images/content/SEFA-ActionAgenda.pdf .
[35] See GREEN JOBS INITIATIVE, *supra* note 30, at 75. *See also* Richard L. Ottinger and Rebecca Williams, *Renewable Energy Sources for Development*, 32 ENVTL. L. 331 (2002) (on potential for renewables to address lack of access to energy services).
[36] McCrone, et al, *supra* note 20, at 11 (stating that developing economies made up 35% of total investment in renewable energy in 2011, compared to 65% for developed economies).
[37] U.S. ENERGY INFORMATION AGENCY, DOE/EIA -0383ER(2012), US ENERGY OUTLOOK 2012 EARLY RELEASE OVERVIEW 2, http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2012).pdf (projecting to 2035).

renewable energy are constrained by resource availability and intensity, which limit where utility-scale facilities can be economically viable, and by existing transmission capacity.[38] Often transmission lines do not reach areas where resources are strongest, which can complicate development planning.

It is also not uncommon for neighbors to oppose renewable energy projects, even small-scale distributed generation.[39] In this respect, it is important to distinguish between Not in My Backyard ("NIMBY") and environmental justice objections to a project, as the two can overlap, but are nonetheless distinct. NIMBY is a term, which, though often reductive of legitimate grievances, broadly includes any basis for opposition, including concerns regarding aesthetics or property values. Environmental justice raises distributive, racial, and socio-economic factors that NIMBY responses typically do not.

I'll focus here on how environmental justice can be implicated in connection with the renewable resources that have the most ubiquitous potential for new development – wind, solar, and biomass.[40]

1. Wind and Solar

Wind and solar power are quintessential renewable resources – they are available all around the world in varying degrees of intensity and can be harnessed to produce emissions-free electricity. Siting large-scale wind and solar projects is nonetheless often controversial. Wind turbines in particular, more than most other renewables, evoke radically different aesthetic perceptions.[41] While some view wind farms as symbols of hope for the future, others find them offensive – Donald Trump, for example, threatened to sue

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[38] *See* Alexandra B. Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, __ VANDERBILT L. REV. __ (2012); (on barriers to renewable energy in current statutory and regulatory frameworks for transmission siting); Ashley C. Brown & Jim Rossi, *Siting Transmission Lines in a Changed Milieu: Evolving Notions of the "Public Interest" in Balancing State and Regional Considerations*, 81 COLO. L. REV. 705 (2010) (on barriers in utility regulation to effective interstate transmission siting).

[39] *See* Troy Rule, *Renewable Energy and the Neighbors,* 2010 UTAH L. REV. 1223 (2010) (discussing opposition to distributed renewables).

[40] Hydropower currently produces most of the renewable energy generated in the United States, but it is not expected that new utility-scale hydroelectric facilities will be developed on US rivers absent an existing dam. *See* U.S. Energy Info. Admin., Hydropower and Other Electricity Generation 1990-2011 [graph], at: http://www.eia.gov/energy_in_brief/images/charts/hydro_&_other_generation-1990-2011-large.jpg (last visited Aug. 2012). Nonetheless, recent estimates demonstrate that there is genuine growth potential for hydropower on existing dams. *See* U.S. DEPARTMENT OF ENERGY, AN ASSESSMENT OF ENERGY POTENTIAL AT NON-POWERED DAMS IN THE UNITED STATES (April 2012), *available at* http://www1.eere.energy.gov/water/pdfs/npd_report.pdf.

[41] *See, e.g.*, Avi Brisman, *The Aesthetics of Wind Energy Systems*, 13 N.Y.U. ENVTL. L.J. 1 (2005); Dorothy W. Bisbee, *NEPA Review of Offshore Wind Farms: Ensuring Emission Reduction Benefits Outweigh Visual Impacts*, 31 B.C. ENVTL. AFF. L. REV. 349 (2004).

the country of Scotland for approving offshore wind in view of his golf course, declaring that wind farms will be Scotland's "ruination."[42] Supporters of wind power nonetheless often object on aesthetic grounds to locating turbines in special viewsheds. The state of Kansas, for example, although it supports wind energy, prohibits wind development in the Flint Hills tallgrass prairie.[43]

Similar aesthetic concerns arise in the solar siting context as well.[44] In addition to aesthetic objections, environmental groups have sued to stop wind and solar development based on concerns for endangered species.[45] Neighbors have sued to prevent wind farms on nuisance and related theories.[46] But these bases for opposition are rooted in objections *other than* environmental justice concerns. Instead of raising environmental justice objections, well-sited wind and solar projects are more likely to be seen as an environmental justice asset – there is minimal local burden of environmental harm.

There have been some instances, however, of utility-scale wind projects affecting areas that are culturally significant to indigenous communities. These wind projects have raised questions about fair dealing and the degree

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[42] *Renewable Energy: Trump threatens to sue Scotland over wind farm plans*, CNN (Apr. 27, 2012), http://articles.cnn.com/2012-04-27/golf/sport_golf_golf-trump-scotland-wind_1_wind-farm-renewable-energy-scottish-parliament?_s=PM:GOLF.

[43] The state of Kansas supports wind energy via a renewable energy standard, requiring 20 percent of electricity sold in the state to be generated from renewable resources by the year 2020. *But see* Zimmerman v. Board of County Commissioners of Wabaunsee Country, 218 P.3d 400 (Kan. 2009) [hereinafter *Zimmerman I*] and 264 P.3d 989 (Kan. 2011) [hereinafter *Zimmerman II*](upholding county land use authority to ban commercial wind farms within county boundaries).

[44] *See, e.g.*, Robert Hersh, *Amherst, Massachusetts: Impediments to Solar Installations on Closed Landfills* CENTER FOR PUBLIC ENVIRONMENTAL OVERSIGHT (2011) www.cpeo.org/pubs/AmherstSolar.pdf (describing neighbors' opposition to a solar array proposed for a closed landfill, not on environmental justice grounds). *See also* John Copeland Nagle, *See the Mojave!* 89 OR. L. REV. 1357 (2011) (exploring the concept of scenic value and visual impacts objections to renewable energy projects in the Mojave desert); Robert Glennon, *Solar Energy's Cloudy Future*, 1 ARIZ. J. OF ENVTL. L. & POL'Y 91, 116-23 (2010) (addressing environmental and political objections to sites selected for large-scale solar installations).

[45] *See, e.g.*, Animal Welfare Inst. v. Beech Ridge Energy LLC, 675 F. Supp. 2d 540 (D. Md. 2009) (in which environmental groups sued wind developers under Endangered Species Act citizen suit provision on the basis of impact of wind farm on endangered bats); Center for Biological Diversity, Inc. v. FPL Group, Inc., 166 Cal. App. 4th 1349 (Cal. 1st Dist. App. 2008) (in which environmental groups sued based on harm to raptors on public trust theory). For analysis of endangered species and related conflicts with renewable energy development, see, e.g., Alexandra B. Klass, *Energy and Animals: A History of Conflict*, 3 SAN DIEGO J. OF CLIMATE & ENERGY L. 159 (2012).

[46] *See, e.g.*, Rankin v. FPL Energy, LLC, 266 S.W.3d 506 (Tex. App. 2008) (in which several individuals and a corporation sought and were denied injunctive relief against wind farm construction based on nuisance of visual impact); Burch v. NedPower Mount Storm, LLC, 647 S.E.2d 879 (W. Va. 2007) (in which homeowners brought nuisance claims involving wind farm near their property). Abridged versions of *Beech Ridge*, and *Rankin* are available in DUVIVIER, *supra* note 11, at 92-122.

to which environmental justice compels historic and cultural preservation.[45] When visual impact, rather than resource destruction, is at issue, it can be difficult in some cases to distinguish cultural value from other aesthetic objections.[46] These questions arose in the context of the offshore wind farm in Cape Cod, which, though famously opposed by wealthy property owners, also prompted claims by the Aquinnah Wampanoag tribe that the wind turbines would mar the horizon and its unique cultural significance to the tribe.[47] Similar issues have arisen in Hawaii, as indigenous Kanaka Maoli communities oppose an interisland wind project due to perceived impacts on subsistence and cultural practices.[48]

The Department of Energy and the Department of Interior's Bureau of Land Management have addressed these issues in assessing environmental impacts under the National Environmental Policy Act for multi-state solar energy development on federal lands.[49] The agencies have recognized potential environmental justice issues when solar facilities are located on sites that border cultural artifacts and landscapes.[50] As Derek Fincham has observed, the "idea of heritage" is becoming increasingly important in the environmental context.[51] By his definition, heritage is "the physical and

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[45] *See, e.g.*, Shalanda H. Baker, *Unmasking Project Finance: Risk Mitigation, Risk Inducement, and an Invitation to Development Disaster?*, 6 TEX. J. OF OIL, GAS, AND ENERGY LAW 273 (2011) (detailing perceived mistreatment of indigenous people in Mexico in connection with land acquisition for and development of a commercial wind farm).

[46] *See* Rule, *supra* note 39, at 1274-75 (arguing that distributed generation does not offend environmental justice where reasonable safety-based regulations are in place). *See also* U.S. DEPARTMENT OF THE INTERIOR & DEPARTMENT OF AGRICULTURE, NEW ENERGY FRONTIER: BALANCING ENERGY DEVELOPMENT ON FEDERAL LANDS 123 -27 (May 2011) (Appendix 6 - Principles of the BLM's Visual Resource Management); *See* Derek Fincham, *The Distinctiveness of Property and Heritage*, 115 PENN. ST. L. REV. 641 (2011) (working to define contours of heritage law relative to property theories, and specifically discussing tribal claims to cultural heritage).

[47]Gale Courey Toensing, *Aquinnah Wampanoag Sues Feds Over Cape Wind*, INDIAN COUNTRY (Jul. 14, 2011) http://indiancountrytodaymedianetwork.com/2011/07/14/aquinnah-wampanoag-sues-feds-over-cape-wind-42712. *But see* Iva Ziza, *Siting Renewable Energy Facilities and Adversarial Legalism: Lessons from Cape Cod*, 42 NEW ENG. L. REV. 591 (2008) (arguing that Cape Wind project advances environmental justice).

[48] *See,* Elena Bryant, Comment: *Innovation or Degradation?: An Analysis of Hawaii's cultural Impact Assessment Process as a Vehicle of Environmental Justice of KaNaka Maoli,* 13 ASIAN-PAC L. & POL. J. 230 (2011).

[49] U.S. DEPARTMENT OF ENERGY & DEPARTMENT OF THE INTERIOR, SOLAR ENERGY DEVELOPMENT PROGRAMMATIC EIS INFORMATION CENTER, available at http://solareis.anl.gov (last visited June 2012).

[50] *Solar Energy Development Environmental Considerations*, U.S. DEPARTMENT OF ENERGY & U.S. DEPARTMENT OF THE INTERIOR http://solareis.anl.gov/guide/environment/index.cfm (last visited June 2012) (recognizing that "[c]ultural and paleontological artifacts and cultural landscapes may be disturbed by solar facilities" and that although "solar energy development could provide new employment opportunities…an influx of workers could disrupt public services. These impacts may be disproportionately experienced by minority or low-income populations, thus resulting in environmental justice issues.").

[51] *See* Fincham, *supra* note 48, at 642.

intangible elements associated with a group of individuals which are created and passed from generation to generation."[52] The federal district court reinforced the generic legitimacy of such claims in *Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Dep't of Interior*, granting a preliminary injunction against a solar power plant on federal land that the Quechan alleged would destroy cultural resources of importance to the tribe within the 6,000-plus acre project area.[53] The Quechan Tribe has filed another lawsuit in connection with a 10,000 acre wind farm slated for federal lands as well, arguing it will destroy "culturally and visually significant lands and resources."[54] These historic preservation and cultural heritage claims resonate with environmental justice to the extent they allege a particular site will benefit electricity consumers broadly at the expense of tribal members.

Apart from site objections, emissions-free electricity from wind and solar energy serves environmental justice goals at the policy level and, in most cases, at the community level as well, offering local environmental justice benefits, not environmental harm.

2. Biomass

Biomass refers in most contexts to agricultural or timber harvest waste that is burned to generate electricity, producing air emissions and waste ash, not unlike fossil fuel. This form of renewable energy thus poses health risks that wind and solar do not – a significant distinction between resources that fall together under the umbrella-term "renewable."[55]

The rationale for burning renewable biomass for electricity is based on a claim of "carbon neutrality" – if the crop or timber waste matter is allowed to decay or is burned in the open field, the same carbon would emit into the

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[52] *Id. See also* Valentina S. Vadi, *When Cultures Collide: Foreign Direct Investment, Natural Resources, and Indigenous Heritage in International Investment Law,* 42 COLUM. HUM. RTS. L. REV. 797, 807 (2011) (discussing concept of indigenous cultural heritage).

[53] *See* Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Dep't of Interior, 755 F. Supp. 2d 1104 (S.D. Cal. 2010). *See also La Cuna De Aztlan Sacred Sites Protection Circle Advisory Committee v. U.S. Dept. of Interior,* No. CV 11-00395, 2011 WL 5545473 (C.D. Cal. Oct. 24, 2011).

[54] Complaint for Declaratory and Injunctive Relief, Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Dep't of Interior, Case 3:12-cv-01167-WQH-MDD (S.D. Cal., filed May 14, 2012). *See also Lawsuit Seeks to Halt Nev. Energy Project* GREENWIRE (Jan. 27, 2011) (environmental groups and tribes challenged BLM's approval of the a wind project near a cave that houses more than a million Mexican free-tailed bats, and near the site of an 1863 Indian massacre. The tribes have dismissed their claims against the BLM.).

[55] *See, e.g.,* ENVIRONMENTAL INTEGRITY PROJECT, WASTE-TO-ENERGY: DIRTYING MARYLAND'S AIR BY SEEKING A QUICK FIX ON RENEWABLE ENERGY? (Oct. 2011) *available at* http://www.environmentalintegrity.org/documents/FINALWTEINCINERATORREPORT-101111.pdf (providing overview of incinerator emissions of mercury, lead, nitrogen oxides, carbon monoxide, and greenhouse gases from waste-to-energy facilities).

atmosphere without the benefit of generating electricity.[56] The validity of this proposition has now been shown, at best, to rely on many constraining factors – whether woody biomass is harvested consistent with sustainable forest management, for example – as well as to require many years before climate benefits may be realized.[57] Yet even accepting the legitimacy of carbon-neutral claims for biomass, community impact and environmental justice are plainly relevant for this renewable resource, even with sustainable harvest methods intact. Local air quality will still be degraded by air pollutants emitted from a single local site, as opposed to what would otherwise, following the theory, have been released slowly over time, over a much larger area. The health risks associated with using biomass for electricity present quite traditional environmental justice risks, entirely different from those wind and solar projects may raise.

It should come as no surprise that a number of proposed biomass-fired power plants have spurred environmental justice controversies in the Southeast, where biomass is often touted to be the most promising renewable resource.[58] In Tallahassee, Florida, for example, a 42-MW biomass gasification plant was proposed for a site in close proximity to residences and schools in a mostly minority, lower-income neighborhood.[59] It quickly became highly controversial – many residents were angry about the site selection and felt excluded from communications between Florida State University, which owned the parcel, and Leon County. Residents, as well as the County Commissioner representing the affected area, filed a notice of intent to sue

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[56] *Learning About Renewable Energy: Biomass Energy Basics*, NATIONAL RENEWABLE ENERGY LABORATORY http://www.nrel.gov/learning/re_biomass.html/ (last visited June 2012) [hereinafter *Biomass Energy Basics*] (explaining that biomass "releases carbon dioxide that is largely balanced by the carbon dioxide captured in its own growth (depending how much energy was used to grow, harvest, and process the fuel.).

[57] *See Biomass Supply and Carbon Accounting for Southeast Forests*, SOUTHERN ENVIRONMENTAL LAW CENTER
http://www.southernenvironment.org/cases/biomass_energy_in_the_south (last visited June 2012)
(looking specifically at woody biomass in seven southeastern states and finding increased carbon output before carbon reduction benefits from sustainably harvested biomass). Manomet Ctr. for Conservation Sciences, Biomass sustainability and Carbon Policy Study (June 2010), *available at:*
http://www.manomet.org/sites/manomet.org/files/Manomet_Biomass_Report_Full_LoRez.pdf (last visited Aug. 2012).

[58] *See, e.g.,* JOYCE MCLAREN, SOUTHEAST REGIONAL CLEAN ENERGY POLICY ANALYSIS 50-57 (2011), *available at*
http://www.nrel.gov/applying_technologies/state_local_activities/policies_southeast.html.

[59] *See* FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION,NSR/PSD CONSTRUCTION PERMITS - BIOMASS GAS AND ELECTRIC (BG&E) TALLAHASSEE RENEWABLE ENERGY CENTER, PERMIT APPLICATION WITHDRAWN,
http://www.dep.state.fl.us/air/emission/bioenergy/tallahassee.htm (last visited June 2012). (Providing links to official documents, including legal actions). The author lived in Tallahassee at the time of this controversy).

the Florida Department of Environmental Protection ("DEP") based in part on "racial discrimination" after the Department issued air permits to the developers.[60] The pressure of the controversy ultimately prompted the plant's developer to withdraw its application for the Tallahassee site and pursue a site to the west in Port St. Joe, Florida – that site raised environmental justice objections as well.[61] In a letter to Governor Rick Scott and the Florida DEP, the National Association for the Advancement of Colored People ("NAACP") cited concerns over "significant negative environmental and health impacts on the predominantly African American Millview community" based on hazardous air pollutants and fumes associated with "over 40 trucks a day to transport the biomass."[62] The letter specifically requested the DEP to "evaluate and determine if this facility has a discriminatory effect" citing Title VI of the Civil Rights Act of 1964.[63]

A similar controversy erupted in Valdosta, Georgia, when a biomass plant was also proposed for an area with environmental justice concerns. A letter from the Valdosta Lowndes County Branch of the NAACP alerted President Obama and members of Congress it had "passed a resolution that the siting of the Valdosta, Georgia, biomass incinerator is a clear-cut example of environmental racism."[64] Biomass plants have been opposed on

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[60] Letter from David A. Ludder, Attorney, to Michael W. Sole, Secretary, Fla. Dep't of Envtl. Prot. (Dec. 3, 2008) (informing Secretary if intent to sue on behalf of area residents), *available at* http://www.dep.state.fl.us/air/emission/bioenergy/tallahassee/Ludder%20EO-45337.pdf (last visited June 2012).

[61] FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, EMISSIONS SOURCES: NSR/PSD CONSTRUCTION PERMITS - NORTHWEST FLORIDA RENEWABLE ENERGY CENTER, LLC, *available at* http://www.dep.state.fl.us/air/emission/bioenergy/northwest_renewable.htm (last visited June 2012).
(providing links to official documents).

[62] Letter from Dorcas R. Gilmore, Asst. General Counsel, to Hon. Rick Scott, Governor, and Hon. Herschel T. Vinyard, Jr., Secretary, Fla. Dep't of Envtl. Prot. (May 19, 2011) *available at* http://www.dep.state.fl.us/air/emission/bioenergy/northwest_renewable/Gilmore%20EO-54711.pdf.

[63] *Id.* (citing 42 U.S.C. § 2000(d)(2006) and quoting: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.") *See also* Letter from David A. Ludder to Hon. Rick Scott, Governor and Hon. Herschel T. Vinyard, Jr., Secretary, Fla. Dep't of Envtl. Prot. (May 10, 2011) (providing notice of intent to sue in connection with permits for Northwest Florida Renewable Energy Center on the basis of racial discrimination), *available at* http://www.dep.state.fl.us/air/emission/bioenergy/northwest_renewable/ludder_letter.pdf (last visited June 2012).

[64] Letter from Valdosta Lowndes County Branch, NAACP to Members of U.S. House of Representatives, Members of the U.S. Senate, and President Barack Obama (Sep. 23, 2010), *available at* http://www.energyjustice.net/files/biomass/2010-09-23_NAACP-Valdosta-to-Congress.pdf.

environmental justice grounds in other states as well, including Texas, Massachusetts, and Oregon.[65]

These examples demonstrate that consistency between renewable energy goals and environmental justice is not necessarily preserved at the project level. Environmental justice considerations can be relevant to wind and solar siting, though impacts may be cultural rather than health-based, and they are certainly relevant to siting for biomass plants. The examples also underscore that generalizations regarding environmental attributes of renewable energy risk obscuring differences that are highly relevant to environmental justice. As the following section explores, however, this kind of resource-by-resource differentiation is typically absent in categorical promotion of "renewable energy."

B. Defining "Renewable Energy" in Law

In the U.S., it is common for renewable energy laws to promote renewable resources categorically –wind and solar are virtually always included, but definitions can nonetheless vary widely across statutory and regulatory contexts. Consider one of the key drivers for renewable energy development in the U.S.: renewable portfolio standards ("RPS"), now enacted in the majority of states.[66] These standards mandate or encourage utilities to supply a certain percentage of electricity from renewable resources by a set date. Qualifying fuel sources vary one RPS to the next.

The greatest variation among definitions of qualifying fuels is in how states define "biomass," which all RPSs currently include as a qualifying resource.[67] Depending on state definitions, "biomass" may include sustainable harvest requirements, or not; dedicated crops or only crop wastes; wood waste products or wood generally, allowing harvest of non-waste timber – a source

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[65] *See generally*, *Biomass*, ENVIRONMENTAL JUSTICE OREGON, http://oregontoxics.org/ej2/research/biomass (last visited June 2012) (opposition to biomass plant in Eugene, Oregon on environmental justice and other grounds); *Biomass* MOBILIZATION FOR CLIMATE JUSTICE (May 15, 2011), http://www.actforclimatejustice.org/tag/biomass/ [hereinafter *Biomass Accountability Project*](opposition to plant in Springfield, MA on environmental justice grounds). *See* BIOMASS ACCOUNTABILITY PROJECT, BIOMASS ELECTRICITY: CLEAN ENERGY SUBSIDIES FOR A DIRTY INDUSTRY 13-14 (2011); Environmental Justice Oregon (opposition to biomass plant in Eugene, OR on environmental justice and other grounds), *at* http://oregontoxics.org/ej2/research/biomass (last visited June 2012); Mobilization for Climate Justice (opposition to plant in Springfield, MA on environmental justice grounds), *at:* http://www.actforclimatejustice.org/tag/biomass/ (last visited June 2012).

[66] *See*, DATABASE OF STATE INCENTIVES FOR RENEWABLES AND EFFICIENCY, www.dsireusa.org (last visited June 2012), (providing state summary maps of RPS and other incentives) [hereinafter DSIRE]; U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2011 WITH PROJECTIONS TO 2035 77 (Apr. 2011), *available at* http://205.254.135.7/forecasts/aeo/pdf/0383(2011).pdf (last visited June 2012).

[67] *See* DSIRE, *supra* note 68.

of environmental controversy about how bioenergy development will affect old growth forests; landfill methane gas; organic human or animal waste; municipal solid waste ("MSW"), which can be burned in "waste to energy facilities," or trash incinerators that produce electricity – and this list is not exhaustive.[68] Such definitions are also pertinent in states without an RPS, as non-RPS states often promote renewable energy through other statutory or regulatory means, and renewable energy developers across the states may qualify for a range of federal incentives, regardless of the presence of a state RPS where the project is located.[69] The following sampling of state "biomass" definitions provides a sense of the variability in scope and detail:

From Maine's RPS:

[Biomass includes] wood or wood waste,
landfill gas
or anaerobic digestion of agricultural products, by-products or wastes…[70]

From Hawaii's RPS:

Biomass, including
biomass crops,
agricultural and animal residues and wastes,
and municipal solid waste and other solid waste.[71]

From Delaware's RPS:

"Biomass" means organic matter that is available on a renewable or recurring basis, including
timber,
aquatic plants,
dedicated energy crops,
agricultural food and feed crop residues,

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[68] *See Id*. (providing links for each state to pertinent RPS language); *See also* Christine Elizabeth Zeller-Powell, *Defining Biomass as a Source of Renewable Energy: The Life Cycle Carbon Emissions of Biomass Energy and a Survey and Analysis of Biomass Definitions in States' Renewable Portfolio Standards, Federal Law, and Proposed Legislation* 26 J. ENVTL. L. & LITIG. 367 (2011) (with a focus on the question of where and how whole trees are eligible biomass material).

[69] A detailed accounting of federal incentives for renewable energy is outside the scope of this paper and would risk being out of date very quickly, as support for renewables at the federal level tends to ebb and flow. For a useful overview of federal incentives generally, see DSIRE, *supra* note 68 (Federal Incentives/Policies for Renewable Energy and Efficiency).

[70] ME REV. STAT. tit. 35-A §3210(2)(B3)(f) (1997).

[71] HAW. REV. STAT. § 269-91(7) (including landfill gas separately).

forestry and timber residues,
and lumber/pulp residues.[72]

From Florida law (a non-RPS state):

Biomass means a power source that is comprised of, but not limited to,
combustible residues or gases from forest products manufacturing,
waste, byproducts, or products from agricultural and orchard crops,
waste or coproducts from livestock and poultry operations,
waste or byproducts from food processing,
urban wood waste,
municipal solid waste,
municipal liquid waste treatment operations,
and landfill gas.[73]

From Michigan's RPS:

"Biomass" means any organic matter that is not derived from fossil fuels, that can be converted to usable fuel for the production of energy, and that replenishes over a human, not a geological, time frame, including, but not limited to, all of the following:
(i) Agricultural crops and crop wastes.
(ii) Short-rotation energy crops.
(iii) Herbaceous plants.
(iv) Trees and wood, but only if derived from sustainably managed forests or procurement systems….
(v) Paper and pulp products.
(vi) Precommercial wood thinning waste, brush, or yard waste.
(vii) Wood wastes and residues from the processing of wood products or paper.
(viii) Animal wastes.
(ix) Wastewater sludge or sewage.
(x) Aquatic plants.
(xi) Food production and processing waste.
(xii) Organic by-products from the production of biofuels.[74]

[72] DEL. ADMIN. CODE § 7-100-106 (2006).
[73] FLA. STAT. § 366.91(2)(a) (2012).
[74] MICH. COMP. LAWS §460.1003(f) (2008).

This sampling is sufficient to convey the degree of variability across the rest of the states – some lists are precise and limited, others explicitly non-exhaustive; some adhere to traditional forms of crop and timber biomass, others are more expansive to include other forms of waste produced in residential, commercial, and industrial settings.

At the federal level, biomass definitions in use across multiple statutory contexts are notable for their lack of uniformity, some varying between application to federal and non-federal land.[75] The range of qualifying resources can expand broader still. For example, the proposed "Clean Energy Standard Act of 2012" would enact a federal "clean" versus renewable energy standard, reflecting a key difference: along with traditional renewable resources, "clean energy" is defined expansively includes natural gas and nuclear energy.[76] Whether this or any other federal renewable or clean energy standard will be adopted at the federal level, of course, remains to be seen – over 25 proposals for a federal standard have been unsuccessful to date.[77] With such wide-ranging definitions at play, however, the result is that for any categorical "renewable" or "clean" energy incentive, it becomes necessary to track back to precisely what *counts* in a given context before it is possible to know what may be promoted by the incentive.

And this ties back to the environmental justice context of siting. There are significant differences between living in the vicinity of a solar or wind farm and, for example, a plant that generates electricity by burning poultry waste or trash, even if all of them are "renewable energy" facilities under applicable law. The prevalence of categorical policy instruments precludes any assumption that the implementation of renewable or clean energy development policies will be consistent with environmental justice. Indeed, a coalition of environmental justice and other environmental groups wrote members of Congress last year asking for biomass and waste to be excluded from subsidies for "clean" or "renewable" energy, arguing that "[b]iomass combustion—or any form of incineration—is not clean energy and will drive up already soaring health care costs for Americans, particularly low income residents and communities of color (environmental justice communities) that often live in close proximity to biomass power facilities."[78]

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[75] *See* Zeller-Powell, *supra* note 70, at 423-28 (describing range of federal definitions of biomass).

[76] Clean Energy Standard Act of 2012, S. 2146 112th Congress (2012), *available at* http://thomas.loc.gov/cgi-bin/query/F?c112:1:./temp/~c112ccaDTx:e1141:.

[77] Lincoln Davies, *Power Forward: The Argument for a National RPS*, 42 CONN. L. REV. 1339, 1341 (2010).

[78] Letter from Appalachian Ohio Sierra Club et al., to Joint Select Committee on Deficit Reduction (U.S. Congress) (Nov. 14, 2011), *available at* www.energyjustice.net/files/biomass/2011supercmte.pdf; *See also Biomass Accountability Project*, *supra* note 67 (arguing that clean energy subsidies for electricity generation from biomass is not appropriate on environmental justice and other grounds).

C. Renewable Energy and Green Economy Access

Environmental justice critiques have become relevant not only to the distribution of environmental harms, but also environmental benefits, including access to greener economic development, of which renewable energy is a part.

The term "development" signifies differently in the U.S. than it does in much of the rest of the world. As John Dernbach has noted, sustainable development and its integration of environmental protection, social well-being, and economic development are as important in the U.S. as elsewhere, but the U.S. is "not only a developed country; it is the most dominant of the developed countries."[79] The U.S. has a long history of promoting domestic economic development through law and policy at all levels of government, though often in ways harmful to the environment, such as with fossil fuel subsidies.[80] The primary challenge, then, is less focused as it is elsewhere on launching economic development programs, but on reorienting such policies to accord with sustainability principles. Dernbach identifies seven US trends in law for making economic development more sustainable, noting first, and most relevant to this discussion, the trend of "laws requiring an increase in a more sustainable activity," such as the use of renewable energy and energy efficiency.[81]

In early recognition of this trend, environmental justice advocates advanced the premise that jobs associated with renewable energy are important benefits to which people of color and low-income communities need access. A coalition of environmental justice and energy affordability organizations in 2000 recognized that "low income families disproportionately spend more of their income on basic energy services" and that "rising energy demand and the restructuring of the electric industry is unleashing more fossil fuel power plants and extending the operating hours of existing nuclear and fossil fuel plants in low-income and minority communities…."[82] For these and other reasons, the coalition asserted by resolution, in relevant part, that "[f]ederal and state legislators, utility and environmental regulators, and energy producers must shift our present energy supply from fossil fuels and nuclear toward cleaner energy sources such as solar, wind, and fuel cells

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[79] John C. Dernbach, *Creating the Law of Environmentally Sustainable Economic Development,* 28 PACE. ENVTL. L. REV. 614, 624 (2011).
[80] *Id.* at 623-26.
[81] *Id.* at 629-32. *See also* Dorceta E. Taylor, *Green Jobs and the Potential to Diversity the Environmental Workforce,* 31 UTAH ENVTL. L. REV. 47, 54-67 (2011)(on green economic development in the US and social inclusion prospects).
[82] Resolution on Sustainable Energy and Low-Income and Minority Communities, RENEWABLE ENERGY POLICY PROJECT www.repp.org/repp_pubs/articles/ej/resolution.html (last visited June 2012).

in all affected communities as appropriate and in ways that create living-wage jobs and build community wealth." [83]

This focus for environmental justice on green economic inclusion complements the traditional reactive response to siting of toxic facilities with advocacy for policy change and efforts "to (re)build their communities into ones that are both socially just and ecologically sustainable."[84] In the context of climate change, and renewable energy and other policies crafted in response, these efforts to secure environmental justice benefits are grounded by two recognitions. First, that people with the lowest incomes and people of color in particular are responsible per capita for far lower greenhouse gases than other white and wealthier segments of the society – in the US as well as abroad.[85] Second, that the same groups are disproportionately vulnerable to the climate change impacts, from heat deaths to food insecurity.[86] These recognitions are seen as supporting the conclusion that "in a new green economy, these marginalized communities deserve the resources and first opportunities to share in new 'green' wealth." [87] The 2012 State of Environmental Justice in America Conference (SEJAC) reinforced the importance of access to green economy opportunities with the theme "Building the Clean Energy Economy with Equity – Revisited!" and an explicit emphasis on renewable energy.[88]

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[83] *Id.*

[84] Sheila R. Foster and Brian Glick, *Integrative Lawyering: Navigating the Political Economy of Urban Redevelopment,* 95 CALIF. L. REV. 1999, 2003 (2007). *See also* Clifford Rechtschaffen, *Strategies for Implementing the Environmental Justice Vision,* 1 GOLDEN GATE U. ENVTL. L.J. 328-30 (2007) (emphasizing importance of focus on creating environmental justice benefits); Luke Cole, *Empowerment as the Key to Environmental Protection: The Need for Environmental Poverty Law*, 19 ECOLOGY L. Q. 619 (1992) (early recognition of the need to link protection with empowerment of environmental justice communities).

[85] ENVTL. JUSTICE AND CLIMATE CHANGE INITIATIVE, *supra* note 5, at 6-7 (calculating from World Resources Institute, Climate Analysis Indicators Tool); David Naguib Pellow, *Climate Disruption in the Global South and in African American Communities: Key Issues, Frameworks, and Possibilities for Climate Justice*, JOINT CENTER FOR POLITICAL AND ECONOMIC STUDIES, 2 (Feb. 2012), *available at:* http://www.jointcenter.org/research/climate-disruption-in-the-global-south-and-in-african-american-communities-key-issues-frame (last visited June 2012).

[86] HOERNER & ROBINSON, *supra* note 7, at 8-17; PELLOW, *supra* note 87, at 8-12.

[87] GALLEGOS ET AL., ENVIRONMENTAL JUSTICE AND THE GREEN ECONOMY: A VISION STATEMENT AND CASE STUDIES FOR JUST AND SUSTAINABLE SOLUTIONS, 7 (2010), *available at* http://urbanhabitat.org/node/5310. *See also* Elizabeth Ann Kronk, *Alternative Energy Development in Indian Country: Lighting the Way for the Seventh Generation*, 46 IDAHO L. REV. 449, 452 (2010) ("Native communities now deserve the opportunity to participate in the development of alternative energy projects to help offset the harmful effects of climate change.").

[88] EJ CONFERENCE, INC., OFFICIAL CONFERENCE BOOKLET - 6TH ANNUAL STATE OF ENVIRONMENTAL JUSTICE IN AMERICA CONFERENCE (Apr. 2012), *available at* http://www.ejconference.net/2012conferenceinfo/offconferencebooklet.html (last visited June 2012).

Recent accounts of environmental justice in the aftermaths of disaster suggest the potential for green economy inclusion is far from realized. Following the BP *Deepwater Horizon* oil spill in the Gulf of Mexico, the National Association for the Advancement of Colored People (NAACP), investigated and reported on environmental justice failures in the governmental responses, including access and inclusion to economic opportunities.[89] The report closes with a call to "advance clean energy alternatives that provide safe jobs for communities while significantly lessening negative impacts on environment and community."[90] In a related NAACP report, Beverly Wright of the Deep South Center for Environmental Justice laments the Gulf region's continued focus on oil drilling, arguing it is time "to start looking at things like the green economy, solar panels, new jobs. We don't see enough attention to dealing with renewable energy that creates jobs and boosts the economy."[91] The same lack of access parallels were documented following Hurricane Katrina, when the NAACP reported businesses owned by people of color being "locked-out of access" to employment opportunities and contracts for cleanup.[92] In *Race, Place, and Environmental Justice After Katrina*, Beverly Wright and Robert Bullard characterize the dual position for environmental justice advocates, at once "fighting *against* the opening of landfills and other disamenities in their communities and fighting *for* a fair share of the new green economy and green jobs…." Accordingly, they assert, rebuilding efforts must be "fair, just, equitable, inclusive, and carried out in a nondiscriminatory way," using "the best green and sustainable technology."[93] They close by providing a roadmap for rebuilding New Orleans with sustainable development, including "sustainable New Orleans enterprise zones" structured by "mixed use, pedestrian access, energy efficiency, and renewable energy systems that can help residents weather extended power outages…."[94]

For large-scale renewable development, these access issues are especially pronounced for tribal nations in the U.S., many of which hold land with renewable resources sufficient to support utility-scale generation. Like other environmental justice communities, tribes anticipate uniquely harmful

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[89] NAACP, BP OIL DRILLING DISASTER – NAACP INVESTIGATION 8 (2010), *available at* naacp.3cdn.net/b827a4ea75a4bbbd5c_jfm6bee32.pdf (last visited June 2012) [hereinafter NAACP INVESTIGATION OF BP]. *See also* Osofsky, *supra* note 6, Section V (evaluating environmental justice issues in terms of access to economic opportunities for clean-up and other employment connected with the BP *Deepwater Horizon* oil spill response).
[90] NAACP INVESTIGATION OF BP, *supra* note 91, at 8.
[91] NAACP, "MY NAME IS 6508799": STATE OF THE GULF, ONE YEAR AFTER THE OIL DRILLING DISASTER 20 (Apr. 2011), *available at* http://www.naacp.org/pages/my-name-is-6508799-an-naacp-special-investigation.
[92] NAACP INVESTIGATION OF BP, *supra* note 91, at 7.
[93] ROBERT D. BULLARD & BEVERLY WRIGHT, RACE, PLACE, AND ENVIRONMENTAL JUSTICE AFTER HURRICANE KATRINA: STRUGGLES TO RECLAIM, REBUILD AND REVITALIZE NEW ORLEANS AND THE GULF COAST 272-73 (2009).
[94] *Id.* at 272.

impacts on their societies from climate change.[95] However, environmental justice also implicates tribes' sovereignty and self-governance, or as Rebecca Tsosie explains, "the ability of the tribal government to choose the appropriate type of economic development for the reservation, as well as determine the appropriate balance between securing the economic benefit of resources and protecting the integrity of the reservation environment and health of tribal members."[96]

Tribal advocates recognize renewable energy and energy efficiency as offering the prospect of economic development that is consistent with tribal values of intergenerational equity and environmental stewardship.[97] The Inter-Tribal Council on Utility Policy reports over 4,500 MW of wind and solar energy projects on tribal land, which could bring desperately needed sustainable economic development to impoverished tribal communities.[98] In a policy paper directed to the Obama Administration in the first year of the presidential term, a coalition of tribal advocates cited renewable energy development as a way to reverse the trend of environmental injustice by transforming tribal and other rural economies.[99] To date, the potential for renewable energy development on tribal lands has not been realized due to a range of barriers, in law, policy, finance, and infrastructure.[100]

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[95] Kronk, *supra* note 89, at 455-58.

[96] Tsosie, *supra* note 7, at 211. *See also* Angelique A. Eaglewoman (Wamdi A. WasteWin), *Tribal Nations Economics: Rebuilding Commercial Prosperity in Spite of U.S. Trade Restraints – Recommendations for Economic Revitalization in Indian Country,* 44 TULSA L. REV. 383, 405-06 (2008)(describing historical aspects of tribal self-determination in management of natural resources).

[97] *See* HONOR THE EARTH ET AL. ENERGY JUSTICE IN NATIVE AMERICA: A POLICY PAPER FOR CONSIDERATION BY THE OBAMA ADMINISTRATION AND THE 111TH CONGRESS (2009), *available at* www.ienearth.org/docs/EJ_in_NA_Policy_Paper_locked.pdf; Angelique A. Eaglewoman (Wamdi A. WasteWin), *Tribal Nations and Tribalist Economics: The Historical and Contemporary Impacts of Intergenerational Material Poverty and Cultural Wealth Within the United States,* 49 WASHBURN L.J. 836-38 (2010) (describing economic model for ending entrenched tribal poverty consistent with tribal values); Tsosie, *supra* note 7, at 252 ("At the level of tribal policy, sustainability…has a distinctive normative character."). *Cf.* Victoria Sutton, *Wind is Wisdom*, 1 ENVTL. & ENERGY L. & POL'Y 345, 354 (2007) (arguing that "[t]he fact that Native Americans have a special cultural and religious relationship with the Earth can lead to the erroneous conclusion that wind power either benefits all tribes, or the particular tribal nation where wind power is being developed.").

[98] Intertribal Council on Utility Policy, *Tribal Sun and Wind Could Help De-Carbonize the Federal Grid*, http://www.intertribalcoup.org/about-us-02.html (last visited June 2012).

[99] HONOR THE EARTH ET AL., *supra* note 99.

[100] *See* Elizabeth Ann Kronk, *Tribal Energy Resource Agreements: The Unintended "Great Mischief for Indian Energy Development" and the Resulting Need for Reform*, 29 PACE ENVTL. L. REV. 811 (2012); (assessing why tribal energy resources agreements under the Energy Policy Act of 2005 have not been effective at stimulating renewable energy development on tribal lands); Kronk, *Alternative Energy, supra* note 89, at 467-70 (describing barriers in lacking infrastructure, process barriers in lease and siting, and the lack of adequate financial incentives); Kathleen R. Unger, Comment, *Change is in the Wind: Self-Determination and Wind Power Through Tribal Energy Resources Agreements*, 43 LOY. L.A. L. REV. 329 (2009)

The calls for green economy access and inclusion, with an emphasis on renewable energy, affirm the basic compatibility between environmental justice and sustainable development, of which the renewable energy transition is an integral part. It also confirms the environmental justice potential in renewable energy growth, if projects and development policies are directed to achieve it.

III. PROMOTING ENVIRONMENTAL JUSTICE WITH RENEWABLE ENERGY

Renewable energy holds risks and promise for environmental justice that should be structurally incorporated in renewable energy policy and project development. This section highlights opportunities in the renewable energy transition for avoiding environmental justice harms and promoting environmental justice benefits, addressing each in several contexts: large-scale renewable energy projects, goals and policies promoting renewable energy, distributed generation, and the corollary of energy efficiency (summarized in Table below).

Renewable Energy for Environmental Justice in Sustainable Development

Renewable Energy Development Activities	**Avoiding Environmental Justice Harms**	**Promoting Environmental Justice Benefits**
Siting large-scale renewable energy projects	- Avoid new fossil energy power plants with large-scale renewable energy projects - Make environmental justice a central consideration in site selection via federal, state and local approvals - Preserve public participation and transparency in contract or negotiated land use regulation	- Affirmatively promote renewable energy where it will be an environmental justice asset - Support tribes in attracting large scale renewable projects on tribal land - Promote training for access to green jobs in renewable energy manufacturing, assembly, construction, and maintenance
Goals and policies promoting renewable energy	- Promote solar and wind over biomass - Differentiate among renewables in streamlined siting and expedited permitting measures	- Account for differences among renewables in categorical policies - Craft finance mechanisms to expand access to community-led large- and small-scale renewable

(describing and proposing changes to the tribal energy resource agreements under the Energy Policy Act of 2005).

		energy development
Distributed generation	- Cut into need for new fossil energy power plants or polluting renewables with non-polluting distributed generation like rooftop solar	- Ease energy costs in environmental justice communities with targeted distributed generation programs - Promote local ownership of small-scale renewables in environmental justice communities - Promote training for access to green jobs in rooftop solar installation and maintenance
Corollary: Energy efficiency	- Promote energy efficiency to avoid need for new generation with environmental justice implications	- Ease energy costs in environmental justice communities with targeted weatherization and other energy efficiency programs - Promote job training in for access to green jobs in retrofitting and other efficiency services

A. Environmental Justice in Siting and Permitting Large-Scale Renewable Energy Projects

The biomass controversies demonstrate that some renewable energy projects raise traditional environmental justice risks. Just as they can with other kinds of polluting facilities, these risks can be avoided through a more complete integration of environmental justice with the law structuring energy land use decisions and environmental permitting. This is perhaps the most basic strategy for avoiding environmental justice through law since the start of the movement, which has achieved real progress on both fronts. Many federal agencies were slow to respond to the 1994 Executive Order requiring them to consider environmental justice in federal programs and decision-making, but the Obama Administration has shown more commitment to the issue. By Memorandum of Agreement in 2011, federal agencies agreed to finalize their environmental justice strategies and implementation reports to be assembled together in a unified compendium.[101]

[101] Exec. Order No. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Fed. Reg. 7629 (Feb. 16, 1994). *See Compendium of Federal Agencies' Policies, Strategies, Work/Implementation Plans, Guidance on Environmental Justice*, U.S. EPA http://www.epa.gov/compliance/environmentaljustice/interagency/iwg-compendium.html

To mark the 20th anniversary of the Executive Order, the EPA released *Plan EJ 2014: Legal Tools*, which works through the major environmental statutes to identify specific statutory and regulatory sources of authority that may be used to advance environmental justice priorities.[102] The agency is also working to develop a Tribal and Indigenous Peoples Environmental Justice Policy.[103]

States, likewise, have integrated environmental justice into state administered programs to varying degrees. A 2010 survey shows that 41 states address environmental justice in some way via statutes, regulations, or other programs in place. However, according to the survey editor, only six states with formalized programs have statutes that reference environmental justice.[104] Environmental justice remains relevant in the land use and permitting context, even as new state and federal strategies are tested for their efficacy. To avoid recounting the already extensive literature on this general topic, I will provide only a sketch here of how these areas of law apply to renewable energy with implications for environmental justice.

The legal regimes that structure siting for renewable energy depend on the context. Coordinated federal agency approvals are required in siting on federal public land, often in mandatory consultation with relevant states and tribes.[105] The Department of the Interior, the lead agency for siting renewable and other energy activities on public federal land,[106] recently adopted a new *Environmental Justice Strategic Plan 2012-2017.*[107] This Plan

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(providing links to individual federal agency environmental justice offices, strategies, and reports)(last visited June 2012).

[102] US EPA, PLAN EJ 2014: LEGAL TOOLS (Dec. 2011) *available at:* www.epa.gov/environmentaljustice/plan-ej/.

[103] *Environmental Justice: Developing a Tribal and Indigenous Peoples Environmental Justice Policy,* U.S. EPA http://www.epa.gov/environmentaljustice/indigenous/index.html (providing information on goals and structure of policy development process).

[104] Steven Bonorris & Nicholas Targ, *Environmental Justice in the Laboratories of Democracy,* 25 NAT. RES. & ENVT. 44, 44 (2010) (referencing survey findings in Bonorris ed., *supra* note 6).

[105] *See generally* U.S. DEPARTMENT OF THE INTERIOR & DEPARTMENT OF AGRICULTURE, *supra* note 48 (detailing siting process for renewable and traditional energy projects on federal land and outlining relevant federal statutes at 105-06, Appendix 3). *See also* Robert L. Glicksman, *Solar Energy Development on the Federal Public Lands: Environmental Trade-Offs on the Road to a Lower Carbon Future*, 3 SAN DIEGO J. CLIMATE & ENERGY L. 107 (2011-12); Siobhan McIntyre & Timothy P. Duane, *Water, Work, Wildlife, and Wilderness: The Collaborative Federal Public Lands Planning Framework for Utility-Scale Solar Energy Development in the Desert Southwest,* 41 ENVTL. L. 1093 (2011).

[106] U.S. DEPARTMENT OF THE INTERIOR & DEPARTMENT OF AGRICULTURE, *supra* note 48, at 8-12 (summarizing the purview of U.S. Department of Interior and other federal agencies with significant responsibilities relative to energy development on federal public lands).

[107] U.S. DEPARTMENT OF THE INTERIOR, ENVIRONMENTAL JUSTICE STRATEGIC PLAN 2012-2017 http://www.doi.gov/pmb/oepc/upload/Final-DOI-EJ-SP-March-27-2012.pdf (last visited 2012). *See also* Michelle Kay Albert, Note: *Obligations and Opportunities to Protect Native American Sacred Sites Located on Public Land,* 40 COLUM. HUMAN RIGHTS L. REV. 479 (2009); Martin Nie, *The Use of Co-Management and Protected Land-Use Designations to*

articulates a new set of environmental justice priorities to guide operations in its ten bureaus for the first time since 1995. The Plan priorities include: making responsible officials aware of programs and policies they administer that may have environmental justice implications; identifying and addressing "environmental impacts that may result in disproportionately high and adverse health or environmental effects on minority, low-income, and tribal populations"; and ensuring they are "provided with the opportunity to engage in meaningful involvement in the Department's decision making processes."[108] Notably, although federal land policy emphasizes renewable energy development, including on tribal land through the Bureau of Indian Affairs,[109] access to renewable projects for tribes is not currently treated as an environmental justice issue within the federal framework.

On private land, site selection and land use approval may involve local or state governments. In roughly half the states, power plant siting decisions are made via the local land use process.[110] In the remainder, ultimate siting decisions for power plants rest with a state agency pursuant to statutes that typically coordinate siting with streamlined licensing and environmental permitting, and provide a time-limited framework for third-party challenges.[111] Local governments are generally provided an important, though not ultimately decisive, role in state siting regimes.[112]

Despite states' seemingly broad-based integration of environmental justice into state programs, the majority of power plant siting statutes still do not take environmental justice explicitly into account.[113] This stands in contrast with siting for landfill and hazardous waste facilities – more states have incorporated environmental justice in these siting policies, whether via mandatory case-by-case analysis or through anti-concentration laws.[114]

Protect Tribal Cultural Resources and Reserved Treaty Rights on Federal Lands, 48 NAT. RESOURCES J. 585 (2008) (addresses approaches for tribes to protect cultural resources on federal land).

[108] *Id.* at 14.

[109] *See* TRIBAL ENERGY AND ENVT. CLEARINGHOUSE – OFFICE OF INDIAN ENERGY AND ECONOMIC DEVELOPMENT, http://teeic.anl.gov (last visited June 2012) (collecting general information, including pertinent statutes and regulations).

[110] In other work I have described in greater detail the existing siting frameworks for renewable energy development on private land. *See* Uma Outka, *The Renewable Energy Footprint*, 30 STANFORD ENVTL. L.J. 241, 254-59 (2011).

[111] MATTHEW BENDER, TREATISE ON ENVIRONMENTAL LAW § 11.04(11): Regulation Energy Generation and Transmission- State-by-State Analysis (2011) (it remains a good starting place, but is somewhat dated). In other work, I discuss a fairly typical state statute in detail, *see* Uma Outka, *Siting Renewable Energy: Land Use and Regulatory Context,* 37 ECOLOGY L. Q. 1041, 1060-64 (2010) (Florida Electrical Power Plant Siting Act).

[112] BENDER, *supra* note 113.

[113] *See* Bonorris, ed., *supra* note 6, at 32 (identifying only California's siting law as specifically addressing environmental justice as of 2010).

[114] Bonorris, ed., *supra* note 6, at 5 (Alabama); at 13 (Arkansas); at 27 (California); at 62-63 (Florida); at 67 (Georgia); at 104 (Maryland); at 119 (Mississippi); at 146 (New Mexico); at 155-56 (New York); at 159 (North Carolina); at 194 (Vermont).

There are a few promising models, however, with California, New York, and Connecticut standing out in this regard. California has incorporated environmental justice into state law and policy more than any other state.[115] The California Energy Commission must consider environmental justice in power plant siting, including for renewable energy, as part of its obligations under the California Environmental Quality Act.[116] In 2009, environmental justice advocates in Connecticut celebrated the state's first environmental justice law, which requires applicants for new or expanded power plant siting approval to first file a public participation plan with the relevant agency – Connecticut Department of Environmental Protection or Siting Council – as well as consult the host community regarding a "community environmental benefit agreement."[117] In another recent environmental justice victory, New York passed the Power New York Act of 2011, requiring the state's Department of Environmental Conservation to craft and apply environmental justice standards to power plant site applications, including renewable energy, of 25 MW or more.[118] These state approaches provide examples other states can follow to more effectively address environmental justice in renewable energy and other power plant siting.

Environmental justice may also be considered during environmental permitting as necessary for renewable energy projects. Biomass plants, for instance, will invariably require Clean Air Act permits, and *EJ Plan 2014* outlines a range of statutory authorities that support environmental justice analysis.[119] Indeed, one might argue if review occurs in the environmental

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[115] Bonorris, ed., *supra* note 6, at 16-39 (summarizing California's environmental justice protections). For links to specific California authority relevant to environmental justice, *See Environmental Justice: Legislation*, CAL. ENVIRONMENTAL PROTECTION AGENCY, www.calepa.ca.gov/EnvJustice/Legislation (last visited June 2012).

[116] *Environmental Justice and Public Participation at the Energy Commission,* CALIFORNIA ENERGY COMMISSION www.energy.ca.gov/pub_adviser/environmental_justice_faq.html (last visited June 2012).

[117] *An Act Concerning Environmental Justice Communities and the Storage of Asbestos-Containing Material*, 2008 Conn. Pub. Acts 94, *available at* http://www.cga.ct.gov/2008/ACT/PA/2008PA-00094-R00HB-05145-PA.htm (also styled HB 5145). *Connecticut's Environmental Justice Law*, CONNECTICUT COALITION FOR ENVIRONMENTAL JUSTICE http://www.environmental-justice.org/EJ%20Bill%20Passed.htm (last visited June 2012)(overview of Connecticut's environmental justice law by the Connecticut Coalition for Environmental Justice). For more on community benefit agreements, S*ee*, *e.g.*, Patricia E. Salkin & Amy Lavine, *Understanding Community Benefits Agreements: Equitable Development, Social Justice and Other Considerations for Developers, Municipalities and Community Organizations*, 26 UCLA J. ENVTL. L. & POL'Y 291 (2008).

[118] *Power New York Act of 2011*, A.R. 8510/S.R. 5844, 234th Sess. (N.Y. 2011), *available at* http://assembly.state.ny.us/leg/?default_fld=&bn=A08510&term=2011&Summary=Y&Actions=Y&Votes=Y&Memo=Y&Text=Y (last visited June 2012). For a summary of the new law by the New York City Environmental Justice Alliance, see *Accomplishments*, *available at* http://nyc-eja.org/?page_id=371 (last visited June 2012).

[119] *See* U.S. EPA, PLAN EJ 2014 *supra* note 104, at 4-22 (outlining Clean Air Act authority suitable for advancing environmental justice goals).

permitting process, then environmental justice concerns over categorical promotion of "renewable" or "clean" energy can be sufficiently addressed. Although environmental justice analysis in permitting is certainly important, it cannot substitute for consideration at the land use approval stage for a number of reasons.

First, in states without centralized siting regimes, land use approvals take place within the prospective host communities that will bear any harmful localized effects of a new facility. State or federal environmental permitting may take place at a great distance, making it much more difficult for community members to participate.

Second, land use applications are often approved on the condition that any necessary environmental permitting is obtained prior to construction. This logical ordering may discourage meaningful consideration of environmental justice objections in the permitting process. With the site selection already finalized, political pressure increases, not only from project developers, who will invariably have spent great sums of money securing the site up to that point, but also from economic development interests, such as Chambers of Commerce and other local groups, that may not hold environmental justice as a central concern.

Third, the burden on project opponents to hire an attorney and produce expert testimony in support of objections to a permit application or approval is often insurmountable for environmental justice advocates. At the local level, it is possible for community leaders to convey opposition to local officials through grassroots organizing, with the potential to redirect siting purely through community-based dialogue.

Finally, not all states do as well as others in consistently addressing environmental justice risks in permit reviews.[120] Most of the authorities identified in *EJ Plan 2014* as opportunities to address environmental justice *allow* for such analysis thanks to broad language relating to "public health and the environment" without explicitly requiring that analysis.[121] When states have assumed permitting authority, EPA's impact is limited, making the strength or weakness of environmental justice policies much more significant. For example, when a state is the permitting authority under the Clean Air Act's New Source Review ("NSR") and Prevention of Significant Deterioration ("PSD") programs for new stationary sources of air pollution, the EPA's role is limited to commenting on individual permits – in which it could address environmental justice concerns – and drafting the regulations

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[120] *See generally* Bonorris, ed., *supra* note 6 (survey results displaying significant variation in degree of environmental justice review). *See also* Alexandra Dapolito Dunn & Adam Weiss, *Environmental Justice in Permitting: State Innovations to Advance Accountability,* 81 MISS. L.J. 747, 765-66 (2012) (addressing state variations).

[121] *See, e.g.,* U.S. EPA, PLAN EJ 2014 *supra* note 104, at 5 (referencing language in CAA § 129(a)(3) providing that standards for new solid waste incinerators include "siting requirements that minimize, on a site specific basis, to the maximum extent practicable, potential risks to public health or the environment.").

establishing minimum program criteria for state implementation. Historically, by the agency's own admission, the EPA has not used its commenting role to emphasize environmental justice and current rules "do not explicitly discuss environmental justice considerations and thus do not directly require state permitting authorities to reflect these considerations in their permitting decisions."[122] As Alexandra Dunn has observed, environmental justice procedures in statutes and regulations are most effective for holding decision-makers accountable – especially "where the matters at issue are highly susceptible to subjective interpretation" – but very few states have these in place.[123]

These realities keep environmental justice in the land use approval process an essential and antecedent complement to environmental justice review in state and federal environmental permitting. The complement of permitting analysis is key, however, as both local regulatory contexts and community relations can vary significantly. Recent trends in land use regulation may also compound existing shortcomings. Daniel Selmi has traced a significant rise in contract-based land use regulation, which he argues weakens public participation and decision-making transparency – both essential for environmental justice.[124] Alejandro Camacho has also criticized trends in negotiated land use regulation for marginalizing community concerns.[125] Without safeguards in place, the use of contract-based land use regulation with categorical renewable energy policies may exacerbate environmental justice harms.

In contrast to polluting renewable energy plants, solar and wind on suitable sites can be job-creators and long-term assets for environmental justice communities. The most significant potential lies in increasing assistance to tribal nations seeking to develop wind and solar on resource-rich tribal lands, and there is reason to think federal agencies are responding. The second utility-scale project on tribal land has just received federal approval – a 350 MW solar energy project on the Moapa River Indian Reservation.[126] The Department of Energy formed an Indian Country Energy and Infrastructure Working Group in 2011, and just appointed three

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[122] *See, e.g., id.* at 11-12.

[123] Dunn & Weiss, *supra* note 122, at 750 (discussing environmental justice programs applicable to state permitting in Illinois, New York, and Connecticut).

[124] Daniel P. Selmi, *The Contract Transformation in Land Use Regulation,* 63 STAN. L. REV. 591, 636-43 (2011).

[125] Alejandro Esteban Camacho, *Mustering the Voices: A Collaborative Model for Fostering Equality, Community Involvement and Adaptive Planning in Land Use Decisions – Installment One*, 24 STAN. ENVTL. L.J. 3, 35-65 (2009) (detailing barriers to public participation and harmful effects on community in negotiated land use regulation).

[126] Jodi Gillette et al., *DOI News: Interior Department Helps Indian Country Go Green*, U.S. DEPARTMENT OF THE INTERIOR (June 22, 2012), http://www.doi.gov/news/doinews/Interior-Department-Helps-Indian-Country-Go-Green.cfm. There is a 50 megawatt wind farm on the Camp Reservation. *Id.* These represent 2 out of 31 utility-scale renewable energy projects approved by the Department on federal land since 2009. *Id.*

additional tribal members to the Group.[127] But tribal leaders have also called on the Obama Administration to provide incentives and assistance that will "increase the capacity of tribes, tribal colleges and tribal institutions to train the next generation of green job workers."[128] They have highlighted tax policy disadvantages for tribal projects which do not qualify for tax credits.[129] Other advocates argue for reforms to improve Tribal Energy Resource Agreements, created by the Energy Policy Act of 2005 to stimulate renewable development, but so far producing disappointing results.[130] Given the abundant resources on tribal land and the high rates of poverty in tribal communities, increased support for tribes should be seen as an urgent environmental justice issue for renewable energy policy. Indeed, there are not just moral but also legal arguments for this, based on the federal government's trust responsibility to tribes.[131]

A second area of potential is brownfields redevelopment for renewable energy. The EPA and National Renewable Energy Laboratory ("NREL") have demonstrated that renewable energy can be developed on many of the contaminated land parcels across the United States.[132] Every parcel they have identified is not necessarily in proximity to an environmental justice community; the EPA/NREL analysis does not address environmental justice contexts surrounding the sites. However, there are a number of environmental justice advocates working to attract renewable projects to brownfields. The Connecticut Coalition for Environmental Justice has been working to bring a solar facility to a former landfill, and a solar array in Brockton.[133] Massachusetts refreshed a site that was otherwise slated for use

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[127] *Id.*

[128] HONOR THE EARTH ET AL., *supra* note 99. *See also* Tsosie, *supra* note 7, at 244-45.

[129] HONOR THE EARTH ET AL., *supra* note 99.

[130] *See, e.g.,* Kronk, *supra* note 102. For general information about TERAs, *see About Tribal Energy Resource Agreements (TERAs)*, TRIBAL ENERGY AND ENVT. CLEARINGHOUSE – OFFICE OF INDIAN ENERGY AND ECONOMIC DEVELOPMENT http://teeic.anl.gov/abouttera/index.cfm (last visited 2012).

[131] *See, e.g.,* Kronk, *supra* note 102. *See About Tribal Energy Resource Agreements (TERAs)*, TRIBAL ENERGY AND ENVT. CLEARINGHOUSE – OFFICE OF INDIAN ENERGY AND ECONOMIC DEVELOPMENT http://teeic.anl.gov/abouttera/index.cfm (last visited 2012).

[132] *RE-Powering America Lands: Siting Renewable Energy on Potentially Contaminated Land and Mine Sites*, U.S. EPA, http://www.epa.gov/oswercpa/ (last visited June 2012) (providing mapping tools and other resources); *See also* Steven Ferrey, *Smart Brownfield Redevelopment for the 21st Century: Converting Brownfields Environmental Negatives into Energy Positives* 34 B.C. ENVTL. AFF. L. REV. 417 (2007) (discussing benefits of methane gas capture at landfills).

[133] Mark Mitchell & Norbert Kovacs, *Hartford Solar Landfill Project*, CONNECTICUT COALITION FOR ENVIRONMENTAL JUSTICE 3 (Mar. 2011), www.cpeo.org/pubs/HartfordSolar.pdf.; THE BETTER FUTURE PROJECT, THE STATE OF THE MOVEMENT: NEW ENGLAND'S TRANSITION BEYOND FOSSIL FUELS, 11 (Apr. 2012), http://www.betterfutureproject.org/wp-content/uploads/2012/04/The-State-of-the-Movement-Low-Res.pdf [hereinafter THE STATE OF THE MOVEMENT].

as a landfill.[134] Nonetheless, an energy project may not always be a community's best use of a site if an alternative will serve a more pressing local need. As the late activist Luke Cole emphasized, brownfields redevelopment has "pitfalls for the unwary" and must be "community based, community led, and community building" to serve environmental justice.[135] Consistent with that aim, state and local governments can utilize the EPA/NREL maps to work with local residents to evaluate these sites. Local governments can use their land use planning authority to steer potential projects to sites that will enhance environmental justice and find community support.

B. Resource Differentiation in Renewable Energy Policy

Promoting "renewable" or "clean" energy categorically at once has the seeming advantage of simplicity and the disadvantage of oversimplification. Environmental justice calls for clearer recognition of the fact that renewable resources are not environmentally equivalent, and for differentiation to account for this in law.

One means of differentiation, of course, would be to eliminate all fuels requiring combustion from RPS instruments. This is unlikely, however, due to the current ubiquity of biomass in one or more forms across the states, and the range of purposes that RPSs currently serve other than environmental benefits.[136] Moreover, wholesale exclusion of biomass in all forms would ignore the environmental benefits of utilizing sustainable biomass feedstocks for electricity where development is consistent with environmental justice.[137]

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[134] THE STATE OF THE MOVEMENT, *supra* note 135, at 11.

[135] Luke W. Cole, *Environmental Justice and Entrepreneurship: Pitfalls for the Unwary,* 31 W. NEW ENG. L. REV. 601, 609 (2009).

[136] *See, e.g.,* Lincoln Davies, *State Renewable Portfolio Standards: Is There a Race and is it to the Top?* 3 SAN DIEGO J. CLIMATE AND ENERGY L. 3, 20-24, (2012)(describing range of goals RPSs promote).

[137] *See Biomass Energy Basics*, *supra* note 58 (explaining that "biomass energy has the potential to greatly reduce greenhouse gas emissions" because although "burning biomass releases about the same amount of carbon dioxide as burning fossil fuels … fossil fuels release carbon dioxide captured by photosynthesis millions of years ago—an essentially 'new' greenhouse gas."); *Renewable Energy for America: Harvesting the Benefits of Homegrown, Renewable Energy*, NATURAL RESOURCES DEFENSE COUNCIL, http://www.nrdc.org/energy/renewables/biomass.asp (last visited 2012) (explaining potential and challenge of sustainable biomass).*See* Nat'l Renewable Energy Lab., *supra* note 56 (explaining that "biomass energy has the potential to greatly reduce greenhouse gas emissions" because although "burning biomass releases about the same amount of carbon dioxide as burning fossil fuels … fossil fuels release carbon dioxide captured by photosynthesis millions of years ago—an essentially 'new' greenhouse gas."); Nat. Res. Defense Council, "Renewable Energy for America: Biomass Energy and Cellulosic Ethanol" (explaining potential and challenge of sustainable biomass) *at:* http://www.nrdc.org/energy/renewables/biomass.asp (last visited 2012).

There are at least three approaches that can be used to increase differentiation within the existing and highly varied policy landscape. The first, which only answers environmental justice issues indirectly, is to build advantage for zero-emissions resources into RPS mandates. Currently 16 states do this via RPS design features, such as carve-outs or multipliers, which ensure development of solar, wind, or distributed generation.[138] These serve to elevate the value of these resources relative to other qualifying fuels based on their cleaner profiles, and ensure they do not go undeveloped. Another approach within RPS design is resource tiering, which can be used to require a certain extent of RPS obligations be met with one group of qualifying fuels versus another.[139]

A second approach is to utilize state and local companion approaches to RPSs (or stand-alone policies in non-RPS states) to depart rather than proceed from categorical definitions. These may be used much like the RPS features noted above to further promote the most desirable resources, via tax or other resource-specific incentives. [140] Differentiation is especially important in companion policies for streamlined siting and expedited permitting measures. As I have noted in prior work, a trend in the last few years toward expedited siting for renewables has not always paired the narrowed timetable with safeguards for participation and community compatibility.[141] The effect can be counterproductive in two directions, risking poorly sited projects on the one hand, or, on the other hand, defeating the purpose of expediting when controversy and litigation result in delays. This can be better avoided when expedited treatment is not triggered by categorical definitions, but made only available for zero-emissions renewables for which environmental justice concerns will be minimal. Contrast for example, Maine and South Dakota's wind-specific expedited permitting statutes to Hawaii's, which provides expedited permitting for renewable energy generally.[142] Likewise, federal expedited review should avoid

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[138] DSIRE, *supra* note 68 (referring to Map, RPS Policies with Solar/DG Provisions, June 2012).

[139] NANCY RADER & SCOTT HEMPLING, THE RENEWABLE PORTFOLIO STANDARD: A PRACTICAL GUIDE 37 (Feb. 2001), *available at* http://energy.gov/sites/prod/files/oeprod/DocumentsandMedia/narucrps.pdf. *Current RPS Data*, U.S. DEPARTMENT OF DEFENSE, http://www.dsireusa.org/rpsdata/index.cfm (last visited June 2012) (Details on individual state RPS features).

[140] *See* Davies, *supra* note 138, at 12 (summarizing alternative means of promoting energy resources besides the RPS model); RADER & HEMPLING, *supra* note 141 (on possible uses of RPS companion policies for particular resources generally). *See also 2011 Updates and Trends Interstate*, INTERSTATE RENEWABLE ENERGY COUNCIL 11-17 (Oct. 2011) (on trends in solar companion policies), http://irecusa.org/wp-content/uploads/2009/10/IREC-Annual-Trends-Report-Final-10-11-11_december-webR.pdf.

[141] Outka, *supra* note 112, at 269-83 (with a focus on cumulative land impacts of energy development).

[142] *See* ME. REV. STAT. ANN. tit. 34-A §§ 3451-3458 (2012); S.D. Codified Laws § 49-41B-25 (2012); FLA. STAT. 403.973 (2012); HAW. REV. STAT. §§ 201N-1 – 201N-14 (2012).

categorical triggers and tailor approval processes to account for local impacts of each resource.

A third approach to increase differentiation is to develop public and private financing mechanisms specifically for use in disadvantaged communities for zero-emissions renewable projects. A number of scholars have highlighted, in the international context, how structural features of private financing may preclude access to green economic development strategies or reduce investor accountability for environmental justice harms.[143] Domestically, renewable energy finance methods can be used to differentiate resources as well as expand economic inclusion. Maxine Burkett's proposal of a "domestic Community Development Mechanism ("dCDM")" is one example, providing a means to attract investment to environmental justice "development zones and stimulating technology transfers to communities that might not otherwise benefit."[144] A dCDM could support large-scale projects, including projects on tribal land, but could also reach more broadly to include reforestation projects, large-scale energy efficiency projects, or, as discussed below, rooftop or neighborhood scale distributed generation.[145] Alternatively, as Alexandra Dunn has explained, there is also potential to steer direct funding and existing incentive programs, as well as emerging state financing models, toward green infrastructure in low-income areas.[146] Likewise, other funding mechanisms such as climate bonds already developed at the international scale might be adapted domestically to financing large-scale renewable energy projects where it would serve local environmental justice goals.[147] More on support for differentiated resources is discussed below with a focus on distributed generation.

C. Environmental Justice through Distributed Generation

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[143] *See, e.g.,* Baker, *supra* note 47 (in renewable energy context); Kate Miles, *Investing in Adaptation: Mobilising Private Finance for Adaptation in Developing States*, 2 CARBON & CLIMATE L. REV. 190 (2011) (considering equity implications of global climate finance mechanisms, especially increased private sector financing); Valentina S. Vadi, *When Cultures Collide: Foreign Direct Investment, Natural Resources, and Indigenous Heritage in International Investment Law,* 42 COLUM. HUM. RTS. L. REV. 797 (2010-11).

[144] Burkett, *supra* note 7, at 222.

[145] *Id.* at 223.

[146] Dunn, *supra* note 6, at 60-64. On emerging state models, see KEN BERLIN, ET AL., STATE CLEAN ENERGY FINANCE BANKS: NEW INVESTMENT FACILITIES FOR CLEAN ENERGY DEVELOPMENT (Sept. 2012), http://www.brookings.edu/~/media/research/files/papers/2012/9/12%20state%20energy%20investment%20muro/12%20state%20energy%20investment%20muro.pdf.

[147] *See generally* HSBC & CLIMATE BONDS INITIATIVE, BONDS AND CLIMATE CHANGE: THE STATE OF THE MARKET IN 2012 (May 2012), http://climatebonds.net/wp-content/uploads/2012/05/CB-HSBC_Final_30May12-A3.pdf.

Distributed generation has the potential to avoid environmental justice harms by incrementally reducing the demand for utility-scale fossil energy or polluting renewable energy plants. Locally, it can provide a means for energy cost savings and green economic development in environmental justice communities.

Distributed generation refers to de-centralized generation of electricity at the location where the power will be used, as with rooftop solar or small-scale wind.[148] As Troy Rule argues, there is a distinct compatibility between distributed generation, such as rooftop solar, and environmental justice, providing clean, on-site energy and reducing energy costs over time.[149] High upfront costs for rooftop solar have limited access for low-income households, despite their greater need for the long-term savings that solar energy systems can provide.[150]

With new financing models, incentives, and targeted initiatives, access to onsite renewable energy in low-income communities is slowly increasing in the United States and around the world. For instance, with support from the United States Department of Energy, the Northeast Denver Housing Center, NREL and other partners combined "an innovative low-income job training program, an energy conservation incentive program, and a program that integrates renewable energy systems into existing affordable housing developments."[151] Solar Mosaic is another innovative United States model, using a "crowd-funding" mechanism to install rooftop solar on buildings that house social and environmental justice organizations, providing clean energy while reducing these organizations' energy costs with a return to investors.[152] As of this writing, California Assembly Bill 1990 is under consideration that would install 375 megawatts of rooftop solar in disadvantaged California communities by 2020 and encourage hiring for those facilities from within the same communities.[153]

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[148] *Learning About Renewable Energy: Distributed Energy Basics*, NATIONAL RENEWABLE ENERGY LABORATORY, http://www.nrel.gov/learning/eds_distributed_energy.html (last visited June 2012).

[149] Rule, *supra* note 39, at 1275.

[150] *See, e.g.,* Jason R. Wiener & Christian Alexander, *On-site Renewable Energy and Public Finance: How and Why Municipal Bond Financing is the Key to Propagating Access to On-site Renewable Energy and Energy Efficiency,* 26 SANTA CLARA COMPUTER & HIGH TECH. L.J. 559 (2010).

[151] U.S. DEPARTMENT OF ENERGY, INTEGRATING PHOTOVOLTAIC SYSTEMS INTO LOW-INCOME HOUSING DEVELOPMENTS: A CASE STUDY ON THE CREATION OF A NEW RESIDENTIAL FINANCING MODEL AND LOW-INCOME RESIDENT JOB TRAINING PROGRAM 1 (Sep. 2011), *available at:* www.eere.energy.gov/solar/pdfs/51075.pdf.

[152] *See Solar Projects*, SOLAR MOSAIC, www.solarmosaic.com (last visited June 2012).

[153] Assemb. Bill 1990, (Cal. 2012) *available at:* http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_1951-2000/ab_1990_bill_20120525_amended_asm_v95.pdf. *See* Bernice Yeung, *Solar for All in the News*, CALIFORNIA ENVIRONMENTAL JUSTICE ALLIANCE (Apr. 19, 2012), http://caleja.org/2012/04/solar-for-all-in-the-news/ (discussion of the bill by California Environmental Justice Alliance).

International examples have potential for replication in the United States. For example, according to the UNEP, the non-profit Grameen Shakti's financing model is bringing solar power to millions in Bangladesh, who currently live in energy poverty, and providing job training in solar installation and maintenance.[154] Its aim is to install two million solar systems to Bangladeshi homes by the year 2014.[155] Another example is Germany-based Solar For All, which employs a combined finance and innovation strategy to answer energy poverty with solar power.[156]

Distributed generation can also refer to community-scale renewable energy projects that serve neighborhoods via a microgrid, which may or may not be connected to the large utility grid.[157] Public or private finance mechanisms to promote local ownership of community-scale projects can promote environmental justice further by increasing the local economic benefits of developing renewables.[158] Both forms of distributed generation are uniquely suited to urban areas, where many environmental justice communities are located and where large-scale renewable energy projects may not be feasible due to dense land use development.[159] Likewise, distributed generation can be used to serve disadvantaged rural communities, where transmission infrastructure, financing barriers, or lower demand may preclude large-scale renewable energy development.[160]

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[154] GREEN JOBS INITIATIVE, *supra* note 28, at 83.
[155] *Id.*
[156] *See Changing the Energy Landscape*, SOLAR FOR ALL, http://sfa-pv.org/the-initiative.html (last visited June 2012). *See also* JUST ENERGY www.just-energy.org (last visited June 2012) (focused on solar proliferation to disadvantaged communities in South Africa).
[157] Z. YE, ET AL., FACILITY MICROGRIDS, iii (May 2005), www.nrel.gov/docs/fy05osti/38019.pdf. *See also* Sophia Yan, *Microgrids Sought as Declarations of Electrical Independence*, BLOOMBERG (Apr. 30, 2012), http://www.bloomberg.com/news/2012-04-30/microgrids-sought-as-declarations-of-electrical-independence.html.
[158] *See* Stephen Lacey, *Why Local Ownership Of Renewable Energy Projects Matters In One Simple Chart*, CLIMATE PROGRESS (June 7, 2012), ttp://thinkprogress.org/climate/2012/06/07/495848/why-local-ownership-of-renewable-energy-projects-matters-in-one-simple-chart/?mobile=nc.
[159] *See* Jessica Rose, Nicole Prenoveau & Daniel S. Hafetz, *Community Economic Development Lawyers Assist Nonprofit Organizations in Creating Holistic Green Communities*, 44 CLEARINGHOUSE REV. 257, 262 (2010) (discussing urban initiatives for sustainable community building including "expanding local control of energy production and use in new and old buildings, reducing carbon emissions through alternative energy; and creating green jobs."); Kaswan, *supra* note 7, at 1153 (highlighting the importance of connecting "integrated environmental and economic opportunities" with inner cities).
[160] *See, e.g., Renewable Energy Powering U.S. Tribal Homes*, WORLDWATCH INSTITUTE, http://www.worldwatch.org/node/5047 (last visited Jun 2012)(Clean Energy Education Partnership, partnering with Trees, Water & People, is a project to bring clean energy to tribes on a household level, including solar heating, solar electric, and a wind turbine). *See also Tribal Renewable Energy*, TREES, WATER & PEOPLE, https://www.treeswaterpeople.org/programs/tribal_renewable_energy/tribal_renewable_energy.html (last visited June 2012)(Trees, Water & People partners with tribes around the country to bring renewable energy and green jobs training to native communities).

D. Corollary: Energy Efficiency and Environmental Justice

Any discussion of renewable energy is incomplete without linking it with the potential in energy efficiency, especially in the environmental justice context. Renewable energy and energy efficiency are paired goals in the United Nations' Sustainable Energy for All campaign – both meeting energy demand and doing more with the energy being generated. The two are likewise paired for producing desirable green jobs in environmental justice calls for green economy inclusion. Federal law increasingly promotes energy efficiency in disaggregated ways,[161] and although RPSs are more common across the states, about half the states have Energy Efficiency Resource Standards ("EERS") or goals.[162] Much like an RPS requiring an increasing percentage of electricity come from renewable resources, an EERS requires utilities to meet energy saving targets according to a set schedule.

Like renewables, efficiency is a non-polluting source of energy but with the significant added benefit of reducing the need for new energy facilities, along with the resources, land footprint, and permitting new facilities entail.[163] Not unlike onsite renewable energy, energy efficiency upgrades can be out of reach for many households, making access to efficiency advances important for environmental justice as well. The federal government and states are advancing this goal through weatherization assistance to low-income families.[164] Community lawyer Steven Fischbach argues this is one of a number of reasons "climate-change issues are relevant to poverty law advocates;" there is a pressing need to assist disadvantaged communities in taking advantage of the resources that are available to help ease their energy bills.[165] Moreover, retrofitting buildings for energy efficiency can also produce health benefits that, combined with the economic benefits, is motivating many community-based social justice organizations to "to build on the momentum of the green building movement and create large-scale communitywide initiatives."[166]

Pursuing renewable energy and energy efficiency policy in tandem will avoid environmental justice harms by reducing dependency on polluting fossil

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[161] John C. Dernbach & Marianne Tyrrell, *Federal Energy Efficiency and Conservation Laws*, *in* LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES (Michael Gerrard, ed. 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1684201.
[162] DSIRE, *supra* note 68 (see Map, Energy Efficiency Resource Standards, Apr. 2012).
[163] For discussions energy efficiency as a land use issue, TNC and my earlier work, Outka, *supra* note 112, at 297-98.
[164] *See* Hari M. Osofsky, *Diagonal Federalism and Climate Change Implications for the Obama Administration*, 62 ALA. L. REV. 237, 253-60 (2011)(discussing federal funding for weatherization and related energy efficiency programs under the Obama Administration).
[165] Steven Fishbach, *Why Climate-Change Issues Are Relevant to Poverty Law Advocates,* 44 CLEARINGHOUSE REV. 213 (2010).
[166] *See* Rose, Prenoveau & Hafetz, *supra* note 161, at 259.

energy, and promote environmental justice benefits by reducing electricity costs and increasing energy security for people living on low incomes.

CONCLUSION

Even as increasing renewable energy advances sustainable development goals, there is a risk of repeating past mistakes by overlooking environmental justice in the renewable energy transition. Environmental justice can inform this transition so that renewable energy development both reduces environmental injustice broadly and avoids it locally. At the same time, renewable energy can be a vehicle to affirmatively advance environmental justice through access and inclusion in green economic development. Policymakers and environmental justice advocates will have to chart a careful course that is both critical and solution-oriented. As a key component of sustainable development, renewable energy policy and project development should and can serve the environment, the economy, and social wellbeing consistent with environmental justice priorities.