

ADAPTING ENERGY AND ENVIRONMENTAL POLICY FOR CLIMATE CHANGE

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INTRODUCTION

The United States has never really had a comprehensive energy policy. Instead, we have had several interests that have jockeyed for position in determining how we procure and use energy. These interests include energy security, cheap energy, and non-environmentally harmful energy. These interests are not always consistent; in fact, they are often inconsistent. Trying to increase fossil fuel production in the United States may reduce dependency on foreign oil, but it is also likely to have significant environmental impacts and raise the price of fossil fuel. Added to this is the United States's historic natural resources policy of transferring publicly owned resources (such as energy supplies) to the private sector, which in turn has an incentive to make a profit from these transfers.¹ The

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1. While leasing of federal energy resources are also subject to environmental reviews or may be prevented by other uses, a series of natural resources acts, like the Minerals Management Act, 30 U.S.C. §§ 601–604 (2006), the Hardrock Mining Act, 30 U.S.C. §§ 21–54 (2006), and the National Forest Management Act of 1976, 16 U.S.C. §§ 1600–1614 (2006), envision the use of federal lands, at least partially for energy and other resource production.

upshot is that energy and environmental policy often seem at odds and difficult to reconcile.

Now we must also face the 800-pound gorilla of climate change, which is distinctly different from other environmental interests and also presages a wholesale alteration of our current energy infrastructure. While most environmental laws are concerned with preserving environmental amenities and tend to work in complementary fashion (i.e., not mining coal will enhance clean water, clean air, and natural species protection), preventing climate change by deploying non-greenhouse gas emitting energy sources can itself cause other environmental harms. Additionally, climate change impacts themselves, through operation of existing environmental or natural resource laws, may prohibit otherwise desirable or useful energy and resource extraction and utilization, which is not itself the trigger of the environmental legal restriction.

Therefore, we need to have a conversation about the new environmental, energy, and economic tradeoffs brought to us by climate change. What choices will we make as we move forward with climate change mitigation policy in this country? How will we address the operation of laws never intended to deal with climate change harms? In this essay, I will point out the ways in which climate change mitigation policies may have negative environmental consequences, and how climate change impacts may also negatively affect other interests with no commensurate gain. I will then discuss possible ways that this issue can be addressed.

I. ENERGY AND ENVIRONMENTAL LAWS

The extraction and utilization of the dominant forms of energy (i.e., fossil fuels, nuclear, and hydropower) can be some of the most environmentally harmful activities on earth; and yet energy supplies are also needed to support our economy and levels of human development. While we as a country have never fully reconciled these warring interests, we do have environmental laws that can operate to avoid environmental harms associated with extracting and using various forms of energy. The Clean Air Act controls the emission of criteria air pollutants and hazardous air pollutants, both of which are primarily associated with the combustion of fossil fuels to produce energy.² The Clean Water Act operates in

2. See 42 U.S.C. §§ 7408–7412 (2006) (controlling stationary source emissions in these categories); see also CRAIG JOHNSTON, BILL FUNK & VICTOR B. FLATT, LEGAL PROTECTION OF THE

numerous fields related to energy extraction and consumption, including: the control of heat pollution from power plants; water quality controls that can be impacted by air emissions from fossil fuel combustion; and controls from wastewater associated with the extraction of energy sources.³ The Resource Conservation and Recovery Act (RCRA) also has impacts on energy production, since the waste products from energy extraction and combustion may be classified as hazardous waste under the statute.⁴

In addition to the traditional pollution control laws, resource protection laws, such as the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), wetlands protection in the Clean Water Act, and the National Environmental Policy Act (NEPA) have impacts on the extraction and use of energy in this country. The ESA, for example, works on both federal and private actions to prevent activities that will harm members of listed species.⁵ While endangered species are not particularly associated with energy extraction locations, the sheer bulk of the energy extraction industry assures that these activities may be limited or prohibited for purposes of protecting endangered or threatened species, or marine mammals in the case of some offshore energy extraction activities. Hydropower is also significant in its effect on listed fish species and other parts of the ecosystem.⁶

Because many energy sources are located on federal land or require federal approval for extraction or utilization, laws that control the activities of federal agencies may also have a significant effect on energy supplies. Energy extraction operations often have large environmental impacts in general, triggering NEPA, ESA, or wetlands analysis for federal permitting. The federal laws themselves that allow the government to lease or sell energy resources to the private sector have also been amended in some cases to require consideration of general environmental values.⁷ In addition to interaction with federal laws, energy usage and extraction also has an

ENVIRONMENT 287–90 (2d ed. 2007) (introducing the Clean Air Act’s jurisdiction and regulatory provisions).

3. See 33 U.S.C. §§ 1312–1315 (2006) (describing water quality standards); § 1313(g) (describing heat standards); *id.* § 1362(6) (“The term ‘pollutant’ means . . . heat.”).

4. See 42 U.S.C. § 6982(n) (2006) (concerning administrative findings about the adverse health effects of fossil fuel combustion); see also *id.* § 6924(x) (concerning mining and other special wastes); *id.* § 6966(a)(3)(B) (defining “recovered mineral component” as including coal combustion fly ash).

5. 16 U.S.C. § 1538 (2006).

6. Jane G. Steadman, *Protecting Water Quality and Salmon in the Columbia Basin: The Case for State Certification of Federal Dams*, 38 ENVTL. L. 1331, 1332 (2008).

7. See, e.g., Materials Act of 1947, 30 U.S.C. §§ 601–604 (2006) (containing rules governing the disposal of materials on public lands); Mineral Leasing Act, 30 U.S.C. §§ 181–196 (2006) (containing rules governing the leasing and permitting of public lands).

impact on water quantity (generally a state law concern), since many forms of usage and extraction techniques require large amounts of freshwater.⁸

Though we have never had the discussion as a country about the balancing of interests between energy and the environment, the operation of many of our environmental and natural resource laws have struck this balance in some way, even if it is without explicit consideration. Because the Clean Air Act, Clean Water Act, and RCRA are predicated on not causing any significant harm to human health or the environment, they roughly operate to prohibit energy extraction and utilization that might cause those harms.⁹ The ESA prohibits harm of an endangered species or members thereof, drawing the line at preventing energy extraction, production, or utilization activities that would cause that result.¹⁰ Much of the balancing is still unclear, of course. Mountaintop removal mining of coal has significant impacts on river and stream valleys, but the U.S. Army Corps of Engineers has used a nationwide wetlands permit to allow the waste generated from the mining to be deposited in stream beds, prompting criticism that this violates the Clean Water Act's protections.¹¹

Nevertheless, because of clarity about bottom-line environmental values, we have struck some balance between some environmental values and energy needs. Additional environmental values not explicitly protected by our environmental laws, such as protection of natural vistas or wilderness, remain in contention and are played out in the withdrawing or releasing of federal lands for resource extraction.¹² Climate change, however, is a whole new ballgame.

8. See, e.g., Del. Basin River Comm'n, Natural Gas Drilling in the Delaware River Basin, <http://www.state.nj.us/drbc/naturalgas.htm> (last updated Jan. 20, 2010) (“[N]ew extraction methods [for natural gas] require large amounts of fresh water.”).

9. See 42 U.S.C. § 7409(b) (2006) (stating that national air quality standards should be based on public health considerations); 33 U.S.C. § 1254a (2006) (ordering the Administrator to conduct research on the harmful effects on human health and welfare caused by pollutants in the water); 42 U.S.C. § 6901(b) (2006) (summarizing congressional findings regarding the environment and health).

10. See Julie Fuschino, *Mountaintop Mining and the Clean Water Act: The Fight Over Nationwide Permit 21*, 34 B.C. ENVTL. AFF. L. REV. 179 (2007) (“[T]he Corps may only grant general permits authorizing mountaintop coal mining when no more than ‘minimal adverse environmental effects’ result from the activity.”).

11. See generally 33 U.S.C. § 1344 (2006) (describing the permit process for dredged or fill material).

12. See, e.g., *Utah Ass’n of Counties v. Clinton*, 255 F.3d 1246 (10th Cir. 2001) (involving a dispute over federal land for a proposed underground coal mine).

II. CLIMATE CHANGE AND ENERGY

One link between energy and climate change that is obvious is the link between the release of greenhouse gases from fossil fuel combustion and the energy we receive from such combustion. The question about the competition between these values has been driving the discussion about climate change since its identification as a problem. How much emissions reduction from fossil fuel combustion is necessary to avoid the worst harms from climate change? Should we allow more environmental harm in order to continue gathering the benefits of fossil-fuel created energy? While the answers to these questions have not been determined and may differ between nations or regions, the attention paid to it and the general agreement about a target of a two degree Celsius limit in temperature rise indicate that this trade-off has at least been considered and debated.¹³

The debate over climate change has already affected the energy production mix, with concurrent effects on other environmental values. On the plus side, the use of natural gas, which is a far more environmentally friendly fuel, has increased at the expense of coal for electricity production in the last few years, since natural gas produces far fewer greenhouse gases per unit of energy emitted.¹⁴

In many other cases, however, the unilateral good of moving from fossil fuel combustion is not as clear. For instance, there has been an increasing interest in deployment of more nuclear power because it produces no greenhouse gases, but the other environmental and human health harms from nuclear energy (such as the harms from spent nuclear waste) have not changed. Similarly, the push for eliminating large-scale hydropower and its accompanying environmental harms has waned as the value of hydropower as a “carbon free” fuel source has grown.¹⁵ Wind energy may harm birds,¹⁶ solar thermal plants use massive amounts of

13. Michael Vandenbergh, Brooke Ackerly & Fred Forster, *Micro Offsets and Macro Transformation: An Inconvenient View of Climate Change Justice*, 33 HARV. ENVTL. L. REV. 303, 315 (2009).

14. See, e.g., Env'tl. Prot. Agency, How Does Electricity Affect the Environment? (Dec. 28, 2007), <http://www.epa.gov/RDEE/energy-and-you/affect/natural-gas.html> (comparing average emissions rates of coal and natural gas).

15. See generally Adell Amos, *Freshwater Conservation in the Context of Energy and Climate Policy: Assessing Progress and Identifying Challenges in Oregon and the Western United States*, 12 U. DENV. WATER L. REV. 1, 122 (2008) (discussing hydropower as a “green” energy solution).

16. Victoria Sutton & Nicole Tomich, *Harnessing Wind Is Not (By Nature) Environmentally Friendly*, 22 PACE ENVTL. L. REV. 91, 115 (2005).

water,¹⁷ and photovoltaic cells cause conventional pollution in production,¹⁸ yet climate change has spurred massive interest and development of these as major sources of power.

Moreover, we have not fully considered the change in balance of energy usage and environmental values caused by climate change. For instance, the listing of the polar bear as a threatened species has slowed the exploration of offshore oil and gas fields in Alaska's Bering and Chukchi Seas while doing nothing to actually help the recovery of the polar bear. While extracting fewer fossil fuels may mean slightly lower emissions overall, the impacts of ceasing all energy exploration and extraction in Alaska will not help the polar bear. The prior balance between the environment and energy that was clear from the ESA and the MMPA has been altered. We are no longer sacrificing energy benefits for saving a species; we are sacrificing them without saving a species.

It is true that there are other important environmental and cultural values at issue in the Alaska debate, but these are not supposed to be the basis of the operation of the ESA. Instead, they should be considered in a broader policy debate. There will be similar situations in the future as increasing climate change harms trigger environmental and resource protection statutes without actually ameliorating the harm that the climate change is causing.

This result means that we have to have a new conversation about the balance between protecting ourselves and the world through climate change mitigation policies and the environmental harms this may cause, and about the effect of climate change on existing laws that trigger results without the intended benefit.

III. CLIMATE CHANGE MITIGATION AND OTHER ENVIRONMENTAL VALUES

American policy makers have already recognized that there are conflicts between climate change mitigation and other environmental values. Last year, as applications for the use of federal lands for solar, thermal, and photovoltaic sites skyrocketed, the Department of the Interior

17. Scott Streater, *Fast Tracked Solar Project Could Speed Mojave Desert's Demise*, N.Y. TIMES, Nov. 29, 2009, available at <http://www.nytimes.com/gwire/2009/11/12/12greenwire-fast-tracked-solar-project-could-speed-mojave-95100.html>.

18. Joel A. Gallob, *In Search of Beneficial Environmental Impacts, Superconductive Magnetic Energy Storage, The National Environmental Policy Act, and an Analysis of Environmental Benefits*, 14 HARV. ENVTL. L. REV. 411, 449 n.190 (1990).

(DOI) placed a moratorium on consideration until they could sort through some of these competing values.¹⁹ However, after howls of protest, the moratorium was quickly lifted.²⁰ Since that time, President Obama has instructed all federal agencies to consider what impacts climate change will have on their mission.²¹ The DOI, probably the most important agency in terms of federal land usage and the ESA, has explicitly recognized this linkage between climate change mitigation and environmental effects. In Secretarial Order 3289, Secretary Salazar stated explicitly:²² “Interior is now managing America’s public lands and oceans not just for balanced oil and natural gas, and coal development, but also—for the first time ever—to promote environmentally responsible renewable energy development.”²³

However, in contrast to instruction on direct climate change impacts on resources under the DOI’s umbrella, the Secretarial Order makes no attempt to specify exactly how the DOI is to balance the trade-offs between encouraging climate-friendly energy production on federal land and the environmental harm that it might cause.²⁴ This balance needs to be explored and defined for the interaction of our resource, energy, and pollution policies.

What then should we do? How do we formulate a policy to address the conflicts inherent in climate-friendly actions that could also cause environmental harm? In American law, we have often used the multiple-use paradigm in which the administrator is to consider the use of the land for multiple values and make a decision that gives effect to an optimal mix of these values. By definition this should be a case-by-case analysis, but it has become less so in practice. The U.S. Army Corps of Engineers, for instance, often follows prior procedure in determining which uses to favor.²⁵

Even if it could be applied properly, the multiple-use paradigm is still problematic. Courts are reluctant to second-guess agency decisions under these provisions, leaving perhaps too much discretion to agencies and effectively insulating policy choices from the public. Ironically, climate change has exposed the flaws in multiple-use management by reducing

19. Dan Frosch, *Citing Need for Assessments, U.S. Freezes Solar Energy Project*, N.Y. TIMES, June 27, 2008, available at <http://www.nytimes.com/2008/06/27/us/27solar.html>.

20. Dan Frosch, *U.S. Lifts Moratorium on New Solar Projects*, N.Y. TIMES, July 3, 2008, available at <http://www.nytimes.com/2008/07/03/us/03solar.html>.

21. Exec. Order No. 13,514, 74 Fed. Reg. 52,117 (Oct. 8, 2009).

22. Department of the Interior, Secretarial Order No. 3289 (Sept. 14, 2009), available at http://elips.doi.gov/elips/sec_orders/html_orders/3289.htm.

23. *Id.*

24. *Id.*

25. See, e.g., *In re Tri-State Water Rights Litig.*, 639 F. Supp. 2d 1308 (M.D. Fla. 2009) (involving a challenge to the Army Corps’ water allocations based on long-expired contracts).

water supply in several watersheds, which makes it more and more difficult to give effect to the listed statutory values.

Another possibility is to rigorously apply existing environmental laws as conflicts arise. This is how we have historically managed energy and environmental conflicts. For example, a massive solar thermal plant could be permitted as long as it did not violate other environmental or resources laws, such as the ESA or water supply restrictions. This would at least protect the core environmental values discussed *supra*. But this too has problems. For one, not all environmental or social values that may be impacted by climate change mitigation measures can be protected through existing environmental and resource laws.²⁶ Should the DOI be swayed by the negative impacts from the water required for solar generation if a private developer can secure such water? And what about the effects of wind deployment on migrating birds? Currently, no law provides comprehensive protection for the protection of bird and bat species on federal lands or under federal jurisdiction, presumably because DOI actions associated with other energy sources besides wind could not have such a large impact.

We must also be aware that there could be a project that might be prohibited or made cost ineffective by an environmental law, and yet whose positive attributes in reducing climate change are so important that they should be allowed.

So, some new kind of template is due. I do not have any definitive solution, but I would like to offer some possible suggestions. One possibility is to try to quantify the relative benefits of climate change mitigation with any attendant environmental harm for particular projects or applications. Cost-benefit analysis is rightly criticized in environmental circles because of the difficulty in actually quantifying environmental benefits, but the field of ecosystem services has advanced in being able to assign values to many resources.²⁷ There have also been attempts to do an economic analysis of failing to halt climate change at various levels.²⁸ This could be used if one scaled the quantification of the values of the climate change mitigation activity. The marginal impact of one climate change

26. See Streater, *supra* note 17 (discussing how a proposed solar plant would negatively impact pristine public lands and the rare plants and animals that inhabit those lands).

27. See generally J.B. Ruhl & James Salzman, *The Law and Policy Beginnings of Ecosystem Services*, 22 J. LAND USE & ENVTL. L. 157 (2007) (tracing the development of the ecosystem services field).

28. See, e.g., Nicolas Stern, *Stern Review on the Economics of Climate Change*, http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm (last updated Oct. 10, 2008) (discussing the economic impact of climate change).

mitigation activity might be small indeed, but one could still calculate the percent of avoided emissions to determine percent of avoided harm. Such comparisons could also be simplified by rulemaking.

Similar trade-offs are becoming apparent in the emerging carbon markets. Offsets can be certified to replace emissions reductions as long as they produce actual additional reductions that are permanent and verifiable.²⁹ However, just as in the deployment of climate mitigating energy sources on federal lands, these sequestration opportunities can also have other effects, including negative environmental effects. Both leading comprehensive federal statutes (the American Clean Energy and Security Act of 2009 and the Boxer-Kerry proposal note that the negative environmental effects of offsets should be considered (the Boxer-Kerry proposal would also consider negative social effects)).³⁰ In a prior workshop, I have posited that these potential environmental degradations associated with offsets could be assigned rough categories to allow for comparison among them.³¹ This might be accomplished in the same manner for deployment of climate change mitigation measures on federal lands.

This system is obviously not ideal, but it at least starts to get at the issue of comparing the relative harms and benefits of climate change mitigation activities of the government with environmental harms that might result from such activities.

V. CLIMATE CHANGE TRIGGERING OF LAWS WITHOUT ADDITIONAL BENEFIT

We also have a problem with climate change triggering restrictions based on the operation of environmental laws without any benefit. In this case, the problem is that the triggered laws do little to protect the resource that they were designed to protect, while they do interfere with the

29. See, e.g., ENVTL. PROT. AGENCY, STATE BIOENERGY PRIMER: INFORMATION FOR STATES ON ISSUES, OPPORTUNITIES AND OPTIONS FOR ADVANCING BIOENERGY 30 (Sept. 15, 2009), *available at* <http://www.epa.gov/RDEE/documents/bioenergy.pdf> (describing the key accounting principles for use of bio-power for offsets).

30. See American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. §§ 731(c), 741 (2009), *available at* http://energycommerce.house.gov/index.php?option=com_content&view=article&id=1633&catid=155&Itemid=55 (mandating inclusion of issues pertaining to “any beneficial or adverse environmental . . . effects associated with an offset project type”).

31. Victor Flatt, Workshop on Adapting Legal Regimes in the Face of Climate Change (Oct. 18, 2008), *available at* <http://www.law.unc.edu/centers/clear/workshops/climatechange/overview/default.aspx>.

operation of other resource usage policies. For instance, the ESA (ineffective though it may be at times) works by prohibiting activities that may harm a species.³² This usually takes the form of avoiding some kind of habitat destruction, which may bring hope of a species (and indeed ecosystem) recovery.³³ There are many examples of this. The spotted owl's recovery was dependent on saving its old growth forest habitat, and the listing of the species as threatened will in theory allow that habitat to recover.³⁴ Sometimes we do not always know what activities are truly the most harmful to an endangered species (such as with the Pacific Northwest salmon runs), but we usually only seek to control those things that may be harmful.

This is not so with climate change impacts to species. With respect to the polar bear, the main problem is the loss of sea ice due to Arctic warming.³⁵ Other general activities, such as oil and gas exploration, may affect the species at the margins, but eliminating all of these other activities will not rescue the species from its peril of extinction. Only comprehensive climate change mitigation measures will help, but these must be conducted worldwide. While the DOI's determination of the negligible effect of oil and gas exploration and leasing activities on the polar bear has already been made, the procedural hurdles have probably mostly been unnecessary, and thus a waste of resources.³⁶

While ending oil and gas exploration and leasing activities in the Chukchi Sea in Alaska may have other independent values, these should be tackled head on in a comprehensive energy policy, not through the use of laws in situations for which they were not designed.

The ESA is not alone, of course. The National Forest Management Act requires management plans to preserve and assist in the viability of forests for designated uses.³⁷ But what if forests are being killed by temperatures or pathogens caused by climate change? It may be sensible to do everything we can to save the remainder of that forest, or it may make more

32. 16 U.S.C. § 1538 (2006).

33. *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 698 (1996).

34. *Id.*

35. Endangered and Threatened Wildlife and Plants; 12 Month Petition Finding and Proposed Rule to List the Polar Bear (*Ursus maritimus*) As Threatened Throughout Its Range, 72 Fed. Reg. 1064, 1072–74 (Jan. 9, 2007) (to be codified at 50 C.F.R. pt. 17), available at http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/Polarbear_proposed_rule.pdf.

36. *See* *Ctr. for Biological Diversity v. Kempthorne*, 588 F.3d 701, 709–12 (9th Cir. 2009) (rejecting a challenge to oil and gas regulations based on a prior determination by Fish and Wildlife Service of “no significant impact” on polar bears).

37. *The Land Council v. McNair*, 537 F.3d 981, 988 (9th Cir. 2008).

sense to do something else, like transplantation to different and newly altered climactic zones.

The point is that climate change is triggering actions under more and more laws without necessarily providing any concomitant benefit. This suggests the need to make attempts to balance funds and efforts spent on protecting our resources with the actual benefit that they will have in saving said resources. Obviously, we think of endangered species as having almost infinite value. The wording of the statute prohibits *any* harm to the species.³⁸ That prohibition, however, was understood in the context of the addition of many incremental harms. The polar bear as a species might be affected by various activities, and indeed some of those activities (such as hunting) might wipe them out, but what of activities that do not appreciably change the extinction timeline?

While making such a determination exactly may be almost impossible, it should be possible to make some reasoned judgments in rulemaking, where allowed. Even the ESA allows consideration of these incidental activities in a consideration of section ten plans and habitat recovery plans. But some statutory changes might be necessary as well.

CONCLUSION

The impacts from climate change and the need for more climate change mitigation will likely accelerate in the future. In this essay, I have posited that unless we undertake to examine how climate change mitigation actions and the operation of existing laws work in the face of climate alteration, there will be unintended consequences, many of which will be negative for our environment and energy mix. I offer no simple solutions, just suggested frameworks for consideration. Over time, we must continue to examine how we need to adapt all of our legal regimes in the face of climate change to protect all of the interests we hold important.

38. 16 U.S.C. § 1539 (2006).

