

ADAPTATION PLANNING AND CLIMATE IMPACT ASSESSMENT: LESSONS FROM ENVIRONMENTAL LAW

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Given past and current emission levels, the planet is already committed to significant climate change. Strong mitigation efforts can head off even more serious changes but cannot prevent some serious impacts, particularly in vulnerable areas such as the arid western United States. Impacts on water supply are particularly worrisome, but a variety of other impacts are also forecast. Coping with these impacts will require retooling water systems, changing agricultural practices, reconsidering development patterns, conservation measures for endangered species, and other interventions into important societal practices.

Adaptation planning requires an assessment of how climate will impact human activities and how to respond to those changes. These assessments flip current practices in environmental law around: instead of asking how human activities impact the environment, we instead begin by asking how environmental change will impact humans. A climate impact assessment would contain three key components: (1) identification of possible climate alternations, (2) analysis of how these climate changes would impact human society or natural ecosystems, and (3) an analysis of alternative methods of addressing the impacts.

In designing institutional mechanisms to undertake these assessments and implement their results, we can learn a great deal from the shortcomings of current methods of environmental assessment. This paper will focus primarily on environmental impact statements (EISs) under the National Environmental Policy Act (NEPA), but will also consider the use of cost-benefit analysis (CBA) as required by presidential executive orders and the consultation process under section 7 of the Endangered Species Act. (sec.7). If the government proposes an action that has significant environmental impacts, major economic costs, or a potential effect on an endangered species, climate impacts might be considered through one of these mechanisms. But these mechanisms may not directly apply – perhaps because the government is ignoring the need for adaptation rather than proposing a new project that would trigger these forms of review. In any event, these existing assessment methods are all flawed.

The flaw in NEPA are illustrative. Although the NEPA EIS process has had its successes, time has also revealed significant weaknesses that should be addressed in designing the process for climate impact assessments. (Query whether CIA would be a good acronym?). First, the EIS process has been isolated from agency's primary decision processes. Supreme Court decisions have allowed agencies to use the EIS

as an end-of-process disclosure document rather than an integral part of the agency's decisionmaking.

Second, there are few learning mechanisms. Once an EIS is issued, the agency has no duty to follow up and confirm whether the statement's predictions were valid. The relatively sparse studies that are available are not reassuring on this score.

Third, the government has not taken advantage of modern information technology to make all of the EIS documents easily available and connected with geographic information systems. A huge amount of money is invested in generating data and analysis that then disappear from view.

Fourth – and perhaps most importantly – the treatment of uncertainty in impact statements is inadequate, a key issue for adaptation because of the relative crudeness of regional downscaling of climate models. New methodologies developed by economists and decision theorists may be helpful in identifying robust strategies for dealing with nonquantifiable uncertainties, but these methodologies are not in general use. These flaws are also shared by cost-benefit analysis and by section 7 consultations. This paper will provide some suggestions for how to address these issues in designing a system for climate impact assessment.

A more basic problem is that the existing environmental assessment mechanisms are triggered by agency *actions* – they do not require assessments of the status quo but only of proposed changes in the status quo. (ESA tries to deal with this outside of the section 7 consultation requirement through requirements governing critical habitat and recovery plans.) This may be appropriate in contexts where the status quo is presumptively desirable or at least appropriate, but it is definitely not acceptable when dealing with climate adaptation, where the whole point is that the status quo will become unsustainable due to climate change. Yet, it is difficult to craft a general mandate that would require agencies to identify the key areas under their jurisdiction where assessment of adaptation needs is a priority. The paper considers a series of potential responses to this problem of policing agency failure to assess adaptation needs:

- 1) A petition process akin to that used under the ESA for listing species, where citizens could petition the agency to list a “critical adaptation need.”
- 2) Investigative reports by independent bodies such as the Government Accountability Office or the National Academy of Science.
- 3) A system of prizes for citizens who successfully identify high priority needs for climate impact assessment. The prize would be awarded by an independent entity but would be funded out of the agency's operating budget, providing a small “stick” in addition to publicity impacts.
- 4) Adoption of legal rules making agencies liable for negligent failure to engage in climate adaptation. California law in effect provides a mechanism for this in the context of flood control.

- 5) The use of risk markets (akin to the presidential prediction markets) trading long-term risk contracts for key climate impacts such as water supply impairments or flood frequency, with the parameters being set at levels that would indicate a failure of current systems.

Climate impact analysis faces special challenges if it is to become an effective action-forcing technique, because of the long-term nature of climate change, the difficulty of separating current climate effects from statistical noise, and the limitations of climate modeling. Yet, if our society is to thrive in the next century, we need to implement climate impact analysis on a large scale and take seriously the results of the analysis. Developing effective methods of identifying relevant impacts and appropriate responses will not be done overnight, but it needs to be done soon.