Environmental and Social Risks: Defensive National Environmental Policy Act in the US Forest Service

Michael J. Mortimer, Marc J. Stern, Robert W. Malmsheimer, Dale J. Blahna, Lee K. Cerveny, and David N. Seesholtz

ABSTRACT

The National Environmental Policy Act (NEPA) and its accompanying regulations provide a spectrum of alternative analytical pathways for federal agencies proposing major actions that might significantly impact the human environment. Although guidance from the President's Council on Environmental Quality suggests the decision to develop an environmental impact statement (EIS), which requires the most rigorous level of analysis, should be based on the likelihood of significant environmental impacts, findings from an Internet survey with US Forest Service project leaders suggest that the decision may more commonly be based on process-related risks, including the threat of litigation, perceived defensibility in court, and the level of public and political interest in the agency's proposed action. An analysis of judicial decisions in NEPA-related litigation reveals that EISs do not appear to be more defensible than environmental assessments in the courts, suggesting that current decisionmaking about NEPA documentation may be misguided, leading to unnecessary project expenditures and delays.

Keywords: US Forest Service, National Environmental Policy Act, risk, environmental impact statement, environmental assessment, decisionmaking, litigation

Regulations from the President's Council on Environmental Quality (CEQ) [1] associated with the National Environmental Policy Act (NEPA) of 1969 [2] establish several levels of scrutiny whereby a federal agency must assess the environmental effects of its proposed actions. Choices include preparing an environmental impact statement (EIS), an environmental assessment (EA), or the use of an applicable categorical exclusion (CE). The most elaborate of these, the EIS, is triggered when the agency expects there to be "significant effects on the human environment" resulting from whatever action the agency is proposing (42 USC Section 4332). An EA is intended to "briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact" or to "aid an agency's compliance with the [National Environmental Policy] Act when no environmental impact statement is necessary" (40 CFR 1508.9). In other words, an EA should be produced when it is unclear or unlikely that significant environmental impacts will occur. A CE refers to a "category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (Sec. 1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement is required" (40 CFR 1508.4). If a proposed action falls into a preexisting category, a CE can be used; otherwise, a choice must be made about whether to produce an EA or an EIS.

Received July 21, 2009; accepted February 15, 2010.

Michael J. Mortimer (mortimer@vt.edu) is director of Natural Resource Graduate Programs, National Capital Region, Virginia Tech, Northern Virginia Center, Room 411, 7054 Haycock Road, Falls Church, VA 22043. Marc J. Stern (mjstern@vt.edu) is assistant professor, Department of Forest Resources and Environmental Conservation, Virginia Tech, 304E Cheatham Hall (0324), Blacksburg, VA 24061. Robert W. Malmsheimer (rwmalmsh@esf.edu) is associate professor, Department of Forest and Natural Resources Management, SUNY College of Environmental Science and Forestry, 305 Bray Hall, One Forestry Drive, Syracuse, NY 13210. Dale J. Blahna (dblahna@fs.fed.us) is research social scientist and team leader, and Lee K. Cerveny (lcerveny@fs.fed.us) is research social scientist, US Forest Service, Pacific Northwest Research Station, 400 N. 34th St., Suite 201, Seattle, WA 98103. David N. Seesholtz (dseesholtz@fs.fed.us) is initiative lead, NEPA for the 21st Century, US Forest Service, Pacific Northwest Research Station, 1249 S. Vinnell Way, Suite 200, Boise, ID 83709. *The authors acknowledge the financial support for this research provided by the US Forest Service Pacific Research Station–Focused Science Delivery Program, the assistance of Dr. Andrew Predmore and James Freeman in its preparation, and the statistical support of Ying Liu and Brandon Evans. This article does not reflect the opinion or a position taken by the US Forest Service or the US government.*

The decision about which document to produce is not immaterial, especially to the US Forest Service. The US Forest Service routinely produces more EISs than any other federal agency (with more than ¼ of all federal agency EISs completed in the period from 2001 to 2007), and, on average, completes more annually than all of the other major federal land management agencies (the Bureau of Land Management, the National Park Service, the Fish and Wildlife Service, and the Army Corps of Engineers) combined (US Environmental Protection Agency 2009). EIS development typically entails a more rigorous and costly process than does EA development (US Forest Service 2002, Stern and Mortimer 2009). The number of staff on US Forest Service interdisciplinary (ID) teams tasked with EIS production can be nearly double that of teams tasked with EA preparation (Stern et al. 2009).

There is a prevailing perception that EISs are more defensible in court because they require a more thorough level of analysis of a broader scope of potential impacts (Stern and Mortimer 2009). This may further increase the number of EISs produced by the US Forest Service. Between 2001 and 2007, the US Forest Service was sued 342 times under the NEPA, representing 38% of all NEPA lawsuits filed against all federal agencies in that time period (US CEQ 2009). The NEPA was invoked in 68.4% of all US Forest Service land-management cases from 1989 to 2002 (Keele et al. 2006), and the number of NEPA-based lawsuits against the US Forest Service continues to increase (Broussard and Whitaker 2009). The time required to prepare US Forest Service EISs increased significantly between 1998 and 2006 (deWitt and deWitt 2008). Nearly $365 million was spent in performing nearly 6,000 actions required by the NEPA in 2006 in the US Forest Service alone (Management Analysis, Inc., 2007). If the preparation of an EIS is indeed both a time-consuming and costly undertaking for the agency, it is important to understand what is triggering the perceived need for that level of analysis.

The decision to proceed with an EIS hinges on the anticipated presence of significant environmental impacts (40 CFR 1501.4 and 1502.3; 42 USC 4332[c]). It is this statutory (NEPA, Section 102) and regulatory (40 CFR 1501) emphasis on environmental impacts that sets the stage for this research. Based on these legal criteria, we should expect that anticipated project impacts to the physical environment and to the natural resources the agencies manage would be the primary factors in whether agencies decide to prepare an EIS.

The CEQ (40 CFR 1508.14) and the US Forest Service NEPA training materials (US Forest Service 2007a) are unambiguous in explaining that social or economic factors alone do not necessitate the preparation of an EIS [3]. Although agency personnel have been trained that the degree of controversy related to a project can affect the finding of significance, it is controversy over the environmental impacts of the proposal, not controversy over the proposal itself that are considered relevant (US Forest Service 2007a). Tabb (1997, p. 192) notes that "substantial uncertainty remains ... in determining the quality or quantity of opposition to a major federal action that would be sufficiently substantial to affect agency duties under NEPA." This lingering uncertainty in discerning between objective (or substantive) and subjective (or normative) project objections may be setting the stage for the manner in which the decision to proceed with an EIS is being perceived.

The explanation may lie in the nature of the risks the US Forest Service faces. The NEPA has, in a very specific way, exerted new pressures on federal agencies—particularly with the use of litigation to empower the public in influencing the outcome of agency decisions. Friesema and Culhane (1976) note that the development of an EIS is fundamentally adversarial, and not a scientific, rational decisionmaking exercise. Within this adversarial context, the US Forest Service faces two types of risks that agency personnel must manage—resource risk and process risk (MacGregor and Seesholtz 2008). Resource risk—risk to all the national forest-related resources and services that the agency is accountable for—is at the core of the NEPA's procedural requirements. The NEPA provides the process whereby the agency can systematically assess the ecological risks that its proposed projects pose to the environment, choose alternatives that may mitigate for those risks, and disclose that reasoning process to its publics. Process risk is more internally realized by agency personnel. This form of risk threatens the completion of the agency's projects, the ability to meet its deadlines and outputs, and the future availability of budgets and staffing. Process risk is produced primarily by public opposition and objections. Compounding this form of risk is "uncertainty about uncertainty" (Einhorn and Hogarth 1986, p. 227) throughout the US Forest Service NEPA process, including

- Uncertainty about the social acceptability of ecological impacts.
- Uncertainty about whether litigation will follow a particular decision.
- Uncertainty about the outcome of judicial review.
- Uncertainty whether an EIS is more legally robust than an EA.

The choice between a less intensive form of analysis—or EA—and an EIS may not only reflect the legal requirements to choose the more thorough NEPA review under certain environmental circumstances; it may also represent a means whereby risks perceived by US Forest Service personnel can be mitigated, or at least managed. This article presents the results of several related empirical studies describing how federal land-management agency personnel—specifically those within the US Forest Service—make choices between completing an EA or an EIS based on their perceptions of how NEPA documentation might act as a risk management tool. It also evaluates these choices by assessing judicial outcomes associated with US Forest Service NEPA processes.

Methods

This article is an amalgam of three related research efforts, each with its own methodological approach. The first was a qualitative pilot study relying on primary environmental document analysis and subsequent in-depth personal interviews with 25 respondents in the US Forest Service ($n = 8$), the National Park Service ($n = 6$), the Bureau of Land Management ($n = 9$); and the US Army Corps of Engineers ($n = 2$) in the winter of 2006–2007. The pilot interviewees included the chief NEPA compliance officers of each agency as well as decisionmakers, ID team leaders, and NEPA coordinators associated with nine specific NEPA projects whose records of decision were all issued between 2003 and 2007. The interviews were developed following a detailed literature review and archival analysis of project-specific documents. The sample of projects was selected to include traditional active management or resource extraction and development projects, recreation-related projects, and restoration/fire management projects. One focus of the interviews

was to ascertain what factors were perceived to influence decisions to prepare an EIS rather than an EA. Interviews were transcribed and qualitatively analyzed, with an emphasis on discovering themes among interviewees that could inform the design of the second study (Stern and Mortimer 2009).

On Mar. 20, 2008 an invitation to participate in an online survey was sent to all identifiable ID team leaders of recreation-related NEPA processes within the US Forest Service involving the issuance of an EA or EIS between December 2005 and March 2008. We selected national forest recreation-related processes for a variety of reasons. Unmanaged recreational use was identified by former Chief of the US Forest Service Dale Bosworth as one of the four primary threats facing the national forests (Bosworth 2003), and the US Forest Service has emphasized outdoor recreation as one of its strategic goals for 2007–2012 (US Forest Service 2007b). Furthermore, the agency's travel management administrative rule of 2005 required all 155 national forests to designate motorized recreation routes likely entailing NEPA documentation at some level. Recreation-related NEPA processes typically involve diverse and competing stakeholders, fragile resources, and a wide variety of required analyses. As such, these projects typify the complexities of many other types of projects involving multiple stakeholders and are squarely within the dominant paradigm of multiple uses of the national forests.

Our initial sample of US Forest Service employees for the survey was drawn using keyword searches in the Planning, Appeals, and Litigation System (PALS) database managed by the US Forest Service. The PALS database includes a list of current and completed projects undergoing environmental analysis through the NEPA process. We queried the database using the following keywords: travel management, motorized, OHV (off-highway vehicle), ATV (all-terrain vehicle), and access. For the search term, "access," only projects classified as "roads management" or "recreation management" projects in the database were considered for inclusion in the sample. We eliminated overlapping entries and further restricted the sample to include only those explicitly involving recreation. The database search resulted in 46 projects (10 completed) leading to the development of an EIS and 121 projects (73 completed) leading to the development of an EA. Projects ranged spatially from specific sites or trail networks to travel management plans for entire districts, national forests, or multiple forests within a region. We were able to find current contact information for the ID team leaders on 142 projects: 103 EAs (62 completed) and 39 EISs (8 completed). We conducted the online survey in 2008, and all respondents were asked to choose the most important reasons for selecting the level of NEPA documentation for their particular projects (Stern et al. 2009)

The third study analyzed all federal court cases filed from Jan. 1, 1989 to Dec. 31, 2006, in which the US Forest Service was a defendant in a lawsuit challenging a "land-management" decision. Land-management cases "included all cases in which the plaintiff: 1) argued that a Forest Service decision affecting the use, classification, or allocation of a resource violated the law, and 2) sought a court order directing the Forest Service to change its management decision" (Keele et al. 2006, p. 197). We expanded a database compiled by Keele et al. (2006) (which included land-management cases filed from 1989 to 2002) to contain cases filed up until Dec. 31, 2006, and completed by Dec. 31, 2008. We used Keele et al.'s (2006) three-step crosschecking method to locate cases, obtain case documents, and read and code case documents to determine case characteristics (including type of management activity) and the case outcome. For this research, we limited our analysis to cases where the plaintiff(s) alleged the US Forest Service violated the NEPA and the case ended between Jan. 1, 1998 and Dec. 31, 2008. We chose this 10-year period to facilitate comparisons with the other two research efforts. We coded cases' final outcomes into seven mutually exclusive categories. Because we wanted to focus on cases where judges decided on the validity of the plaintiff's NEPA claim (rather than cases that were settled or withdrawn or judicially dismissed for other reasons), we limited our analysis to cases with two outcomes: US Forest Service loss or US Forest Service win.

- US Forest Service loss. We coded a case as a US Forest Service "loss" if the US Forest Service lost the final outcome of the case and the judge(s) decided the US Forest Service violated the NEPA.
- US Forest Service win. We coded a case as a US Forest Service "win" if the US Forest Service won the final outcome of the case and the judge(s) decided the US Forest Service did not violate the NEPA.

Results

The reasons for preparing an EIS expressed during our pilot interviews were in many cases not clearly related to the environmental focus of the NEPA and its implementing regulations. The interviewees presented several themes for preferring an EIS over an EA that went beyond the considerations outlined in the CEQ regulations: [4]

- The threat of litigation and the ability to withstand legal challenges:

> Our solicitors push us to, they would much prefer us to do an EIS because it's easier to defend in court.
>
> The decision with sometimes doing an EIS is whether it's going to litigation or not ...

- The desire or ability to incur or demonstrate significant environmental impacts on the landscape with an EIS:

> If you really want me to have an EIS, then I'm going to go for the gusto and have some significant impacts.
>
> We had no idea what the outcome was going to be, but with an EIS you can have a significant effect. And we wanted to have a significant effect on the landscape.

- The level of public controversy:

> If you have more than a 30% suspicion that if you try to go the EA route someone is going to stop you or threaten to sue you, you're better to ... put your Notice of Intent out, circulate a draft EIS.

Because we found that agency personnel were concerned with several factors unrelated to the environmental purposes of NEPA—e.g., the threat of litigation against the project as an EIS trigger was mentioned across all four agencies (Stern and Mortimer 2009)—we prepared specific questions as part of the subsequent survey to better understand the range of factors that might be influencing the decisions to undertake an EIS.

One-hundred six ID team leaders of recreation-related NEPA processes completed the online survey, representing a 75% response rate. All nine regions within the national forest system were represented in the sample (Table 1). Participants were asked to rate the degree of importance on a 1–7 scale with two anchors (1 = not important; 7 = very important) of a number of potential reasons for selecting the level of NEPA documentation related to their projects (Table 2). They were also asked to rank the three most important reasons in making that choice (Table 3). Nearly three-quarters (72%) of the EIS respondents

Table 1. Survey response description.

Characteristic	EIS $n = 39$	EA $n = 67$
Project status		
Completed	7	45
In progress	28	20
On hold	1	2
Cancelled	3	0
ID teams		
Average number of members	15.2	8.7
Range of number of members	5–35	3–18
US Forest Service regions[a]		
Region 1	4	11
Region 2	7	7
Region 3	2	5
Region 4	9	16
Region 5	10	3
Region 6	2	9
Region 8	2	6
Region 9	2	6
Region 10	1	4

[a] There is no region 7.

Table 2. Mean degree of importance in selecting level of documentation.

Reason	EIS	EA	Combined
Degree of public interest (or controversy)	6.23[a]	4.80	5.33
Degree of public use of project area	5.39	5.12	5.22
Likely environmental impacts	4.82	5.01	4.94
Likelihood of litigation or appeals	6.11[a]	4.02	4.78
Likely geographic/spatial extent of the project	5.18	4.43	4.71
Desire for stakeholder input	5.29[b]	4.35	4.69
Likely socioeconomic impacts	4.89	4.29	4.51
Degree of political attention	5.34[a]	3.77	4.35
Past experience with a similar project established precedence	3.92	3.98	3.96
Decision came down from superiors	4.34	3.51	3.82
Likely cultural impacts	3.97	3.49	3.67
Likely cost of the project	3.63[b]	2.62	2.99

[a] Significant difference between EIS and EA projects ($P < 0.001$).
[b] Significant difference between EIS and EA projects ($P < 0.01$).

Table 3. Most important reasons cited for level of documentation.

Reason	EIS	EA	Combined
		(%)	
Degree of public interest (or controversy)	72	54	60
Likely environmental impacts	31	60	49
Likelihood of litigation or appeals	49	19	30
Degree of public use of project area	8	36	25
Likely socioeconomic impacts	21	21	21
Likely geographic/spatial extent of the project	21	19	20
Degree of political attention	31	7	16
Decision came down from superiors	18	13	15
Desire for stakeholder input	13	16	15
Past experience with a similar project established precedence	13	10	11
Likely cultural impacts	3	15	10
Likely cost of the project	5	3	4

Table 4. Factor loadings from exploratory factor analysis (principal components extraction with Varimax rotation) on reasons for selecting level of documentation.

Reasons for selecting an EIS or EA (5-point scale items)	Component (% of variance) External pressure (33.5%)	Impacts (18.2%)	Institutional norms (10.2%)
1. Degree of public interest (or controversy)	**0.892**	−0.003	0.071
2. Degree of political attention	**0.849**	−0.060	0.005
3. Likelihood of litigation or appeals	**0.817**	0.020	0.107
4. Desire for stakeholder input	**0.666**	0.081	0.415
5. Degree of public use of project area	**0.597**	0.215	0.235
6. Likely cost of the project	0.559	0.396	0.061
7. Likely environmental impacts	−0.183	**0.812**	0.146
8. Likely socioeconomic impacts	0.278	**0.711**	−0.249
9. Likely cultural impacts	−0.033	**0.833**	0.002
10. Likely geographic/spatial extent of the project	0.259	***0.557***	0.213
11. Past experience with a similar project established precedence	0.025	0.070	**0.887**
12. Decision came down from superiors	0.303	0.002	**0.556**

Values in bold reflect the three latent constrict groupings.

ranked *degree of public interest/controversy* among the three most important reasons for choosing to prepare an EIS, and nearly one-half (49%) listed the *likelihood of litigation and appeals* in the top three. Slightly less than one-third (31%) ranked *likely environmental impacts* as the most important reason for deciding the level of NEPA documentation. The mean degree of importance of *likely environmental impacts* was particularly low for respondents that completed EISs (8th out of 12), trailing various social concerns, including *degree of public interest/controversy, likelihood of litigation or appeals, public use of the project area, political attention, desire for stakeholder input*, and *likely socioeconomic impacts*.

We ran an exploratory factor analysis (principal components extraction with Varimax rotation) on the reasons for selecting an EA or EIS to determine whether certain reasons reflected an underlying latent explanation for ID team leaders' document decisions (Table 4). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.744, indicating an adequate distribution of values for conducting the factor analysis (George and Mallery 2003). The Bartlett Test of Sphericity, which tests a null hypothesis that an identity matrix is yielded in the analysis (George and Mallery 2003) also indicated the data set was appropriate for this analytical technique (chi-square statistic, 0.457; df = 66; $P = 0.000$). Three components explained 61.9% of the variance in the sample. We further tested the strength of the grouping of variables through reliability analyses using Cronbach's α. Three groupings of variables emerged reflecting three latent constructs: external pressure, impacts, and institutional norms. Items 1–5 in Table 4 were categorized as reflecting "external pressure" on the documentation decision ($\alpha = 0.852$). Item 6 (likely cost of the project) was not included in the category because of its cross-loading with the second component (impacts), indicating that it conceptually bridges two categories. Moreover, its removal had little impact on Cronbach's α for component 1 (0.02).

Table 5. Percentages of respondents selecting items categorized as external pressures, impacts, and institutional norms as one of their top three reasons for selecting their level of documentation.

Reasons	Percentage selecting reason in top three				
	At least one item from category	Single category ONLY	AND external pressures	AND impacts	AND external pressures AND impacts
External pressures	79.2%	28.3%	—	—	—
Impacts	66.0%	14.2%	48.1%	—	—
Institutional norms	25.5%	3.8%	18.9%	13.2%	9.4%

Items 7–10 in Table 4 were categorized as impacts ($\alpha = 0.731$). Despite the fact that CEQ regulations suggest that only the possible significant environmental impacts should trigger an EIS, likely socioeconomic and cultural impacts explained a similar proportion of the variance as likely environmental impacts. Items 11 and 12 were grouped together based on the exploratory factor analysis and on face validity, reflecting institutional norms. Although Cronbach's α is below 0.5 for the combination of the two terms, our intention was not to use the items to create a scale for further analysis, but rather to group the items for ease of interpretation. Based on the factor analysis and the theoretical construct the items clearly reflect, the grouping has considerable face validity.

Table 5 shows the breakdown of how often respondents selected items from each category as one of their top three reasons for selecting their level of documentation. External pressures were the most dominant reasons cited, followed by impacts. The most common combination of categories involved both external pressures and impacts as reasons for the level of documentation.

Finally, we analyzed the outcomes of NEPA cases to investigate the seemingly pervasive perception that an EIS better serves the US Forest Service once litigation begins. The data suggest that in projects closely related to the subject of this study—those involving recreation and roads management—EAs are no less successfully defended than EISs (Table 6). These results imply that claims of the relative defensibility of an EIS in court may be misplaced, or at least based on an incomplete picture of the US Forest Service litigation landscape. It also implies that choosing an EIS as a risk mitigation measure with this type of forest management project may also be ineffective.

Table 6. Number of US Forest Service NEPA land-management road and recreation-related cases initiated between 1989 and 2006 (and ending between 1998 and 2008) and final case outcomes, by type of NEPA claim.

Type of NEPA claim against the agency	US Forest Service wins	US Forest Service losses
Inadequate EIS	7 (64%)	4 (36%)
Inadequate EA/FONSI	7 (78%)	2 (22%)
Total	14 (70%)	6 (30%)

Note: The term "inadequate" used here implies an alleged defect within the document type, such as insufficient cumulative effects analysis. It does not include claims that an EA was the inappropriate level of analysis and that an EIS should have been conducted.
FONSI, finding of no significant impact.

Discussion

Our results suggest that external social pressures associated with process risk tend to dominate the decisions of US Forest Service personnel regarding whether to prepare an EA or an EIS on travel management–related projects. Instead, that decision appears to be more motivated by agency concerns over the public's perceptions and reactions to the proposed actions than by the discrete environmental effects of what the agency is considering on the ground. Less than one-third of EIS of respondents included "likely environmental impacts" in their top three reasons for selecting their level of analysis. This raises questions as to how the NEPA is being interpreted and implemented by the US Forest Service, and why external social pressures play such a dominant role in NEPA documentation.

The results differed in some regards among respondents on EA projects. Although still ranking external pressures quite highly, *likely environmental impacts* were listed as a relatively more important reason for these respondents than for those conducting an EIS. The observed differences among EIS and EA respondents appear to reflect differences in the documentation thought process. For the EIS group, the salient question may be, "Why must we prepare an EIS?" whereas for the EA group the pertinent question may instead be, "What must be considered to avoid the need to prepare an EIS?" In the former, all the external pressures the data depict play a dominant role in answering that question. In the latter, if the agency can confidently claim a finding of no significant impacts—particularly impacts to the physical environment—then the decision about which document to produce is made clearer.

As a starting point, we recognize that strategies to manage for resource risks and process risks differ. Resource risks associated with any particular project might be addressed through the exercise of professional natural resource management skill and discretion in the design of the project to mitigate any significant environmental impacts. Although there have been attempts to define resource or ecological risk management (O'Laughlin 2005), process risk management remains more elusive. If the social conflicts and risks routinely outweigh the ecological risks of a project (Borchers 2005), and if the social acceptability of decisions is closely intertwined with the analyses and decision processes the agency uses (Kakoyannis et al. 2001), it is not surprising that the US Forest Service chooses to complete an EIS in instances of high process risk—independent of expected environmental impacts. Herein, however, lies a paradox. Social impacts alone are not legally sufficient to trigger the preparation of an EIS, and the analytical quality of an EIS clearly is judged on its ability to accurately portray and mitigate environmental effects (Tzoumis 2007). However, in our studies the most commonly cited reasons for choosing to prepare an EIS revolve instead around social pressures.

One potential implication of this phenomenon may be a tendency for US Forest Service personnel to become increasingly procedurally rational—focusing on the quality of the NEPA process, rather than tending to be substantively rational—focusing on the quality of the NEPA outcome and decision (Borchers 2005). In such cases, the

Table 7. Number of US Forest Service NEPA land-management cases initiated between 1989 and 2006 (and ending between 1998 and 2008) and final case outcomes, by type of NEPA claim.

Type of NEPA claim against the agency	US Forest Service wins	US Forest Service losses
Inadequate EIS	51 (55%)	42 (45%)
Inadequate EA/FONSI	62 (67%)	30 (33%)
Total	113 (61.1%)	72 (38.9%)

Note: The term "inadequate" used here implies an alleged defect within the document type, such as insufficient cumulative effects analysis. It does not include claims that an EA was the inappropriate level of analysis and that an EIS should have been conducted.
FONSI, finding of no significant impact.

forest can indeed become lost for the trees, and the underlying purpose of the NEPA—to generate more environmentally sound decisions—may be obscured. A second and more operational concern is a kind of excessive risk aversion (Maguire and Albright 2005) or preference for the EIS in "risky" sociopolitical situations. Any assessment of risk particular to litigation and the NEPA process is inherently subjective and uncertain. For example, our findings contradict the prevailing wisdom among agency respondents that an EIS is more legally robust than an EA and, therefore, preferred when litigation over a project is expected. Although we focused specifically on travel management projects, data suggest that at a broader scale the pattern of document defensibility is similar (Table 7). As such, each of these behaviors may be contributing to the well-accepted notion that the agency's resource management obligations have been compromised by excessive and unnecessary analysis (US Forest Service 2002) in efforts to strengthen certain areas of the NEPA document and the administrative record.

Conclusion

If what we are detecting among US Forest Service personnel is pervasive in other project types—an elevated focus on process risk—then it begs certain questions. What underlying factors might be driving the US Forest Service's procedural risk aversion? Is it merely the relatively high levels of public and interest group scrutiny and the ever present litigation the agency faces? Has the environmental impact process mandated by the NEPA become more of an informal social assessment than an analysis of the physical environment? There are clearly tradeoffs between making the most appropriate ecological risk assessment and basing the analytical approach on process risk assessment associated with external social pressures. On the one hand, process risk associated with the NEPA has generally worked to diversify the expertise on US Forest Service planning teams, expand the analyses undertaken, and enhance the transparency of decisionmaking (Ackerman 1990, Culhane 1990). The consideration of process risk early in project development is likely to shape the outcome of the proposal with high-risk projects, both from an environmental and a social acceptance perspective, being rejected or revisited to improve acceptance or environmental impacts (MacGregor and Seesholtz 2008). On the other hand, excessive analyses have delayed critical decisions and commonly produce unintelligible documents of little usefulness to any audience, which may often obfuscate rather than disclose or clarify agency decisionmaking processes (Sullivan et al. 1996, US Forest Service 2002, Stern and Mortimer 2009). Our study suggests that a more detailed understanding of how ecological risks and social risks influence agency environmental analyses could further illustrate the extent to which process risk aversion influences the achievement of the intents of the NEPA and agency objectives concerning land management.

Endnotes

[1] The 40 CFR 1500–1508.
[2] The 42 USC Sections 321-4347.
[3] "Human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of "effects" [Section 1508.8].) This means that economic or social effects are not intended by themselves to require preparation of an EIS. When an EIS is prepared and economic or social and natural or physical environmental effects are interrelated, then the EIS will discuss all these effects on the "human environment." 40 CFR 1508.14 – definition of "human environment."
[4] Although quotes here came from multiple agencies in this study (selected for succinctness and clarity) we deserve each of these same reasons within the Forest Service.

Literature Cited

ACKERMAN, S. 1990. Observations on the transformation of the Forest Service: The effects of the National Environmental Policy Act on U.S. Forest Service decisionmaking. *Environ. Law* 20:703–734.

BORCHERS, J.G. 2005. Accepting uncertainty, assessing risk: Decision quality in managing wildfire, forest resource values, and new technology. *For. Ecol. Manag.* 211:36–46.

BOSWORTH, D. 2003. *We need a new national debate.* Speech to the Izaak Walton League, 81st Annual Convention, Pierre, SD, July 17. Available online at www.fs.fed.us/; last accessed July 1, 2009.

BROUSSARD, S.R., AND B.D. WHITAKER. 2009. The Magna Charta of environmental legislation: A historical look at 30 years of NEPA-Forest Service litigation. *For. Policy Econ.* 11(2):134–140.

CULHANE, P.J. 1990. NEPA's impacts on federal agencies: Anticipated and unanticipated. *Environ. Law* 20:681–702.

DEWITT, P., AND C.A. DEWITT. 2008. How long does it take to prepare an environmental impact statement? *Environ. Pract.* 10(4):164–174.

EINHORN, H.J., AND R.M. HOGARTH. 1986. Decision making under ambiguity. *J. Bus.* 59(4): S225–S250.

FRIESEMA, H.P., AND P.J. CULHANE. 1976. Social impacts, politics, and the environmental impact statement process. *Nat. Resour. J.* 16: 339–356.

GEORGE, D., AND P. MALLERY. 2003. *SPSS for Windows step by step: A simple guide a reference. 11.0 update.* Pearson Education, Inc., Boston, MA. 386 p.

KAKOYANNIS, C., B. SHINDLER, AND G. STANKEY. 2001. *Understanding the social acceptability of natural resource decisionmaking processes by using a knowledge base modeling approach.* US For. Serv. Gen. Tech. Rep. PNW-GTR-518. 40 p.

KEELE, D.M., R.W. MALMSHEIMER, R.W. FLOYD, AND J.E. PEREZ. 2006. Forest Service land management litigation 1989–2002. *J. For.* 104(4):196–202.

MACGREGOR, D.G., AND D.N. SEESHOLTZ. 2008. *Factors influencing Line Officers' Decisions about National Environmental Policy Act project and design and development.* US For. Serv. Gen. Tech. Rep. PNW-GTR-766. 27 p.

MANAGEMENT ANALYSIS, INC. 2007. *Feasibility study of activities related to National Environmental Policy Act (NEPA) compliance in the US Forest Service.* Management Analysis, Inc., Vienna, VA. 68 p.

MAGUIRE, L.A., AND E.A. ALBRIGHT. 2005. Can behavioral decision theory explain risk-averse fire management decisions? *For. Ecol. Manag.* 211:47–58.

O'LAUGHLIN, J. 2005. Policies for risk assessment in federal land and resource management decisions. *For. Ecol. Manag.* 211:15–27.

STERN, M.J., D.J. BLAHNA, L.K. CERVENY, AND M.J. MORTIMER. 2009. Visions of success and achievement in recreation-related USDA Forest Service NEPA processes. *Environ. Impact Assess. Rev.* 29:220–228.

STERN, M.J., AND M.J. MORTIMER. 2009. *Exploring National Environmental Policy Act processes across federal land management agencies.* US

For. Serv. Gen. Tech. Rep., PNW-GTR-799. 106 p.

SULLIVAN, W.C., F.E. KUO, AND M. PRABHU. 1996. Assessing the impact of environmental impact statements on citizens. *Environ. Impact Assess. Rev.* 16:171–182.

TABB, W.M. 1997. The role of controversy in NEPA: Reconciling public veto with public participation n environmental decisionmaking. *William Mary Environ. Law Policy Rev.* 21:175–231.

TZOUMIS, K. 2007. Comparing the quality of draft environmental impact statements by agencies in the United States since 1998–2004. *Environ. Impact Assess. Rev.* 27:26–40.

US COUNCIL ON ENVIRONMENTAL QUALITY (CEQ). 2009. NEPAnet. *NEPA litigation.* Available online at www.nepa.gov/nepa/nepanet.htm; last accessed July 15, 2009.

US ENVIRONMENTAL PROTECTION AGENCY. 2009. *Environmental Impact Statement database.* Available online at www.epa.gov/oecaerth/nepa/eisdata.html; last accessed July 15, 2009.

US FOREST SERVICE. 2002. *The process predicament: How statutory, regulatory, and administrative factors affect national forest management.* Available online at www.fs.fed.us/projects/documents/Process Predicament.pdf; last accessed July 1, 2009.

US FOREST SERVICE. 2007a. *USDA Forest Service strategic plan 2007–2012.* Washington, DC. Available online at www.fs.fed.us/publications/strategic/fs-sp-fy07-12.pdf; last accessed July 1, 2009.

US FOREST SERVICE. 2007b. *Forest plan implementation course 1900–01.* US Forest Service, Washington, DC.