Environmental Impact Assessment Review 29 (2009) 220–228

Contents lists available at ScienceDirect

Environmental Impact Assessment Review

journal homepage: www.elsevier.com/locate/eiar

Visions of success and achievement in recreation-related USDA Forest Service NEPA processes

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ARTICLE INFO

Article history:
Received 8 September 2008
Received in revised form 28 October 2008
Accepted 31 October 2008
Available online 24 December 2008

Keywords:
National Environmental Policy Act
Natural resource management
Forest Service
Recreation
Travel management
Teams
Success

ABSTRACT

The National Environmental Policy Act (NEPA) is incorporated into the planning and decision-making culture of all natural resource agencies in the U.S. Yet, we know little about how the attitudes and internal interactions of interdisciplinary (ID) teams engaged in NEPA processes influence process outcomes. We conducted a web-based survey of 106 ID team leaders involved with environmental analyses (EA) or environmental impact statements (EIS) for projects dealing with recreation and travel management on national forests. We explore how they define success in these processes and identify factors most powerfully associated with perceptions of positive outcomes. The survey revealed a tremendous diversity in definitions of success. Strong correlations between the perceived importance of particular indicators of success and their achievement suggest that pre-conceived notions may often help to shape process outcomes. Regression analyses revealed the following factors as the best predictors of ID team leaders' perception of an "excellent outcome": achievement of the agency mission, whether compromise had taken place between the interested parties, team satisfaction and harmony, timely process completion, and project implementation. Yet, respondents consistently ranked compromise with interested parties and team member satisfaction among the least important measures of successful NEPA processes. Results suggest that clarifying appropriate measures of success in NEPA processes across the agency could make ID team performance more consistent. The research also suggests that greater attention to ID team interactions, both internally and between teams and interested publics, could result in better outcomes.

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1. Introduction

The National Environmental Policy Act (NEPA), which became law in 1970, underpins the planning processes of most USDA Forest Service land management actions. NEPA dictates the general sequence of environmental analyses and their disclosure to the public preceding most natural resource management decisions. NEPA also provides a basis for external stakeholders to contest agency actions on procedural grounds, the most common bases for legal action against the Forest Service (Keele et al., 2006). As such, the characteristics of processes associated with NEPA, or "NEPA processes," can be a key determinant of the outcomes of planning and implementation of land management actions. This paper examines 106 NEPA processes carried out by the Forest Service on recreation-related projects since 2004. In particular, it explores the beliefs of interdisciplinary (ID) team leaders about NEPA processes and the influence of various factors upon process outcomes. In doing so, it addresses the following research questions:

1. How do Forest Service ID team leaders on recreation-related projects define success in their NEPA processes?
2. How do ID team leaders' perceptions of appropriate measures of success relate to their achievement?
3. What factors appear to lead to the most positive perceived outcomes in these processes?

The analysis focuses on Forest Service recreation projects for several reasons. In 2003, then Forest Service Chief, Dale Bosworth, called "unmanaged recreation" one of the four great threats to forest management in the U.S. (Bosworth, 2003), signaling a renewed focus on recreation management within the agency. The Forest Service's new strategic plan lists "sustain and enhance outdoor recreation opportunities" as one of eight Forest Service goals for 2007–2012 (USDA Forest Service, 2007). And, in 2005, a Forest Service Travel Management Rule (36 CFR Parts, 212, 251, 261, and 295) was passed that required all 160 national forests to designate a system of roads and trails, primarily to manage impacts and conflicts arising from off road vehicle use and to improve motorized and non-motorized recreation opportunities. This

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doi:10.1016/j.eiar.2008.10.003

rule has sparked a surge in NEPA activities related to recreation management in the Forest Service.

Recreation has long been a traditional use of the National Forest System. As one of the primary ways that most people interact with federal forest lands, recreation managers often find themselves in complex situations where they must balance the need for resource protection with often competing interests of multiple publics (Blahna, 2007). Recreation-related NEPA processes typically involve diverse stakeholders, fragile resources, and a wide variety of disciplines within ID teams. Our focus on NEPA processes associated with recreation management provides a common framework for comparison between cases, includes projects that typify many of the complexities of other types of projects involving multiple stakeholders, and addresses the renewed focus of the Forest Service on recreation-related problems.

2. NEPA processes in the Forest Service

While the written purpose of NEPA includes language about preventing or eliminating damage to the environment (Sec. 2 [42 USC § 4321]), NEPA does not enforce or prohibit any specific actions on the landscape. Rather, it is designed to educate decision-makers, other relevant agencies, and the general public about the environmental consequences of government actions through a set of general process requirements (Dreyfus and Ingram, 1976; Caldwell, 1998).

Required procedures associated with NEPA focus primarily upon the mandated development of a detailed statement on associated environmental impacts to accompany any "recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment" (Sec. 102 [42 USC § 4332]). This document is required to analyze the short and long-term environmental impacts and trade-offs of the proposed action along with potential alternatives for meeting project goals. The Act further mandates that the statement be developed in consultation with other relevant agencies and made available to the public (Sec. 102 [42 USC § 4332]). The Forest Service forms interdisciplinary (ID) teams to develop these statements. These teams are most commonly made up of disciplinary specialists and environmental coordinators who work within the National Forests. These ID teams typically work in consultation with a line officer who receives the final document and makes the official decision on actions to be taken.

The literature points to a number of impacts NEPA has had upon the Forest Service. Through the requirement of interdisciplinary analysis, agency staffs have become less homogeneous, particularly in terms of disciplinary training (Ackerman, 1990; Culhane, 1990). Although the scope and techniques employed for public involvement vary considerably, NEPA has generally worked to enhance the transparency of agency analyses and decision-making (Ackerman, 1990; Espeland, 1994; Black, 2004). Analyses of environmental impacts are made available for public scrutiny through NEPA processes, and a wider range of alternatives is commonly considered in the analysis process than may otherwise take place (Ackerman, 1990: Canter and Clark, 1997; Espeland, 1994).

These shifts have come with associated costs of long delays in decision-making, as analyses are performed and reports are produced, and of high-priced responses to litigation of agency processes. While the public may comment and participate in various ways throughout NEPA processes, the act does not empower individuals to *directly* influence agency decisions. Decision-making authority remains with the agency. NEPA merely empowers stakeholders to challenge decisions on procedural grounds. The additional transparency requirements of NEPA have subjected public agencies to greater public scrutiny and have presented additional managerial challenges including, but not limited to, determining the appropriate scope of analyses, identifying a reasonable range of alternatives, staffing ID teams with adequate expertise, effective public involvement, coping with litigation, and training agency personnel in how to comply with the Act (Bear, 2003; Canter and Clark, 1997; Culhane, 1990; Laband et al., 2006; Malmsheimer et al., 2004; Poisner, 1996; Twelker, 1990). These challenges are particularly acute in the Forest Service, where litigation and appeals have been on the rise in the last decade (Malmsheimer et al., 2004).

In today's Forest Service, the National Environmental Policy Act infiltrates nearly every action taken by the USDA Forest Service to manage the landscape. A recent report revealed that nearly 8,000 Forest Service employees were engaged and nearly $365 million spent in carrying out nearly 6000 processes required by NEPA in 2006 alone (Management Analysis, Inc., 2007). Moreover, NEPA was the basis of nearly 70% (over 400 cases) of all legal cases brought against the Forest Service between 1989 and 2002 (Keele et al., 2006).

3. The discretion of the ID team leader

While NEPA lays out a general framework for planning and environmental analysis, its guidelines, in tandem with Forest Service planning guidance, allow for a wide degree of discretion at all levels within the agency. While this discretion enables planning teams to adapt to local contexts, it also presents some particular challenges with regard to process planning and goal definition and achievement.

Since Herbert Kaufman's classic *The Forest Ranger* (Kaufman, 1960), the Forest Service has moved from an organization whose employees were focused upon specific task accomplishments measured in terms of economics and efficiency to one whose employees operate in a far more complex world laced with new demands such as responsiveness and representativeness (Tipple and Wellman, 1991). As such, planners and ID team leaders can no longer rely upon their superiors or a clearly defined mission or critical task to inform them of the appropriate course of action in any given situation. Rather, planning teams must navigate through competing interests and information from multiple sources to perform their tasks based upon an interpretation, or interpretations, of how they might be meet the mission of the agency. Alternatively, other motives can supplant the overall mission of the agency.

Most of the planning work that takes place in the Forest Service does so at the level of the ID team, which is tasked with complying with a number of critical, but sometimes ambiguous laws and agency rules and initiatives. The ambiguous mandates of the Forest Service often leave these teams to define their own goals and objectives, usually in communication with the line officer charged with making a final decision on a given planning initiative. This discretion suggests that the outcomes of these processes, social, economic, managerial, political, organizational, and environmental, may be powerfully driven by the particular dispositions, values, attitudes, situations, and beliefs of ID team members. In other words, their incremental decisions at each step along the way largely shape process outcomes (Lindblom, 1959, Lipsky, 1980).

4. Background and theoretical grounding

This research is grounded in a pilot study that compared NEPA processes across four federal land management agencies, the Forest Service, the National Park Service, the Bureau of Land Management, and the U.S. Army Corps of Engineers (Stern and Mortimer, in press). The pilot study confirmed a tremendous diversity in the ways in which NEPA processes are carried out both within and across agencies. Through in-depth qualitative interviewing, the pilot study identified and refined a number of key themes selected for further exploration in this study, each described in further detail below.

4.1. Success in NEPA processes

Understanding ID team leader conceptualizations of success within NEPA processes could be critical to understanding process outcomes, including goal achievement, project implementation, stakeholder satisfaction, or other potential measures of success. The ambiguities of NEPA and associated Forest Service guidance documents leave tremendous discretion to individual agency personnel regarding how success might be

defined in NEPA processes. According to the Act itself, one might interpret success to be achieving the Act's explicitly stated purpose — that is, preventing or eliminating damage to the environment. Alternatively, one could focus upon the procedural requirements of the Act or Forest Service guidance and envision full disclosure of environmental impact analyses to be the appropriate metric of success. Each of these sentiments was uncovered in the pilot study along with a host of others. Some of the most commonly noted indicators of success included avoiding litigation, moving the proposed project to implementation, satisfying public concerns, educating decision-makers, improving the quality of final decisions, and mitigating conflict. Some respondents felt that NEPA processes are (or should be) entirely separate from the decision-making process. Others felt process outputs should be used to inform decision-making. Still others felt that NEPA processes *are* the decision-making process (Stern and Mortimer, in press). Thus, the beliefs of the ID team leaders could have tremendous implications for how decisions are made within the Forest Service.

In the pilot study, many team leaders were unable to articulate a clear purpose for many of their actions other than avoiding litigation. As such, ID team behaviors may be driven by procedural compliance to a strong degree, rather than beliefs about appropriate outcomes. Merton (1968) has described this means/ends confusion within bureaucracies as ritualism. Wilson (1989) discusses this phenomenon as well. As bureaucratic procedures amass, they can often shift the focus of employees away from their critical tasks or mission. In agencies where mission is unclear or ambiguous, this may be especially common. Moreover, in situations in which more accountability and transparency has been demanded by the public, the means for providing such accountability and transparency can become so onerous as to overwhelm agency staff and in effect become ends in themselves.

4.2. Exploring the impacts of ID team leader beliefs on achievement

The pilot study revealed that the most consistent element within any given NEPA process was typically the ID team leader. ID team leaders are normally involved in all decisions made throughout NEPA processes (though to varying degrees). Our interviews suggested that they are typically the *only* person involved in all such decisions. Their pivotal role in the process not only makes them the most knowledgeable person about the process, but also possibly the most influential. ID team leaders are situated at the confluence between agency decision-makers and supervisors and various stakeholders to whom they must disclose their analyses and from whom they must accept and respond to input. Exploring the relationships between the perceptions of ID team leaders about what *should* happen vs. what *did* happen thus seems an appropriate line of inquiry.

4.3. Team member interactions

Pilot study interviews commonly revealed numerous forms of conflict and stress within ID team environments. The literature on conflict within teams suggests that interpersonal relationship conflict is detrimental to achieving positive team outcomes, while "task conflict" can have a positive influence. Task conflict, which has been defined as "a perception of disagreements among group members about the content of their decisions" (Simons and Peterson, 2000: 102), typically demonstrates a curvilinear relationship (similar to a normal curve) with the quality of outcomes in which very low levels and very high levels of task conflict are detrimental while moderate amounts generally lead to better outcomes (Simons and Peterson, 2000). It is hypothesized that these outcomes can be attributed both to greater cognitive understanding of the issues at hand (Putnam, 1994) and a greater sense of "voice" achieved by team members through additional debate brought about by the conflict (Amason, 1996). Two common forms of task conflict were identified in the pilot interviews: conflicts about how to get the work done and conflicts about the preferred alternative, or outcome, of the project. The interviews revealed that low team morale was both a cause and result of bad experiences with NEPA processes. These experiences were typically associated with negative reactions of the public, internal team conflicts, or perceptions of unreasonable workloads.

5. Methods

The pilot study preceding this effort involved in-depth interviews with 25 respondents in the USDA Forest Service ($n=8$), the National Park Service ($n=6$), the Bureau of Land Management ($n=9$); and the U.S. 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 ID team leaders and NEPA coordinators associated with nine specific NEPA processes. The interviews were developed following a detailed literature review and archival analysis of project documents. They focused upon how success in NEPA processes was conceptualized within each agency and employee perceptions of the primary strengths and weaknesses of their NEPA processes. Qualitative analyses of these interviews formed the basis for developing the survey upon which this paper focuses.

On March 20, 2008, an invitation was sent to all identifiable ID team leaders of recreation-related NEPA processes involving the production of an EA or EIS between December 2005 and March 2008 to participate in an internet survey about these processes. The initial sample was drawn using key word 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 key words: travel management, motorized, OHV, ATV, and access. For the search term, "access," only projects identified as "roads management" or "recreation management" projects in the database were considered for inclusion in the sample. We culled overlapping entries and further limited the sample to include only those explicitly involving recreation. Our search resulted in 46 processes (10 completed) leading to the development of an Environmental Impact Statement (EIS) and 121 processes (73 completed) leading to the development of an Environmental Assessment (EA) document. Search results revealed projects conducted at a range of spatial scales. Some projects involved specific sites or trail networks while others encompassed travel management 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).

The survey contained closed-ended questions with open-ended comment areas for most questions. After confirming the current status of the project and its level of documentation (EA vs. EIS), the survey solicited the number of times prior to this project respondents had served on other ID teams. All respondents were asked about the goals of their projects, the make-up of their ID teams, and their opinions about appropriate measures of success for Forest Service NEPA processes. For projects that had advanced to the analysis stage, repondents were asked about analytical techniques employed in the process. Respondents who had served as ID team leaders of completed projects were also asked to rate their projects' degree of achievement of each of the success measures and to assess additional factors associated with each of the themes discussed above. An additional dependent variable was used to assess ID team leaders' overall perceptions of the outcomes of completed projects. Respondents were asked the extent to which they agreed or disagreed with the following statement, "The process achieved an excellent outcome." All other measurements are described in more detail in the results section.

6. Results

6.1. Sample statistics

One-hundred and six ID team leaders completed the online survey, representing a 75% response rate. All regions within the national

Table 1
Sample statistics.

Sample statistics	EIS	EA
Number of respondents	39	67
Completed	7	45
In progress	28	20
On hold	1	2
Cancelled	3	0
Average number of members of ID teams	15.2	8.7
Range of number of ID team members	5 to 35	3 to 18

forest system were represented in the sample. Seventy-four of the 106 ID team leaders who responded to the survey reported having participated on NEPA-related ID teams at least ten times before. Only five respondents reported that this was their first such experience. Table 1 contains additional information about the types and status of the projects represented within the sample.

6.2. Project goals

Respondents rated closed-ended items in terms of their degree of importance in relation to the goals of their projects on a 1 (not important) to 7 (very important) scale (Table 2). Resource protection was a dominant theme across the projects. Only one project ranked both protecting cultural and natural resources below the middle-point on the scale. Other high ranking items were closely associated with increasing management efficiency or access designation (commonly related to the 2005 Travel Management Rule). In general, enhancing recreation opportunities ranked lower for most projects. Write-in responses shed further light on the nature of projects included within the sample. Additional goals included ecosystem restoration ($n=2$), reducing conflicts with adjacent landowners ($n=3$), facilities development ($n=1$), public safety ($n=2$), and maintenance (2).

6.3. Defining success

Respondents were asked to rate each item listed in Table 3 in terms of its appropriateness as a measure of success for Forest Service NEPA processes in general on a seven-point scale with three anchor points: 1 (not important), 4 (moderately important), and 7 (critical to measuring success). They were then asked to select up to three of these items as the most appropriate measures of success for these processes. The results suggest the high importance of full disclosure of analyses, project implementation in accord with the mission of the Forest Service, and procedural compliance. Most other items were reported to be at least moderately important; only litigation and appeals averaged a score below the middle value on the scale.

Discrepancies between the ranking of means and the frequency of selection in the top three items reveal that while certain sentiments, such as producing an easy-to-read final document, appeared generally important to most respondents, relatively few considered it amongst the most critical elements of success. Similarly, while most considered it important to make decision-making processes transparent to all stakeholders and to follow procedures correctly, only 18% selected either of these as one of the three most appropriate measures of success in Forest Service NEPA processes. Conversely, while its mean score ranked near the middle of all responses, one-quarter of the sample selected public

Table 2
Project goals.

Goal (1 to 7 scale)	Mean score	Standard deviation
Protect natural resources	6.01	1.14
Designate a system of roads and trails for specific purposes	5.62	1.64
Protect cultural resources	5.49	1.66
Balance multiple interests	5.34	1.44
Increase management efficiency	4.86	1.66
Reduce recreation conflict	4.75	1.89
Enhance opportunities for motorized recreation	4.18	1.84
Enhance opportunities for non-motorized recreation	4.12	1.70
Maximize recreation for as many users as possible	3.95	1.94
Close areas to motorized access	3.71	2.28
Limit the recreational use of some users	3.31	2.04
Improve opportunities for recreation fee collection	1.86	1.31

Table 3
ID team leaders' perceptions of the most appropriate measures of success in Forest Service NEPA processes and their achievement.

Potential measures of success in FS NEPA processes	Mean importance score[a]	% selecting item as one of top 3 most appropriate measures	Mean achievement score[a]	r[b]	p[c]
Full disclosure of impact analyses has taken place	6.21	30%	6.10	0.274	0.049
Well-documented rationale for decision is developed	6.15	32%	6.02	0.404	0.003
The project gets implemented	6.11	39%	6.00	0.002	0.990
The decision-making process is made transparent to all stakeholders	5.99	18%	5.94	0.586	<0.001
The final decision reflects the mission of the agency	5.91	33%	6.08	0.296	0.035
All procedures are followed correctly	5.87	18%	6.15	0.528	<0.001
The final decision minimizes adverse environmental impacts	5.75	39%	6.02	0.517	<0.001
The final document is easy to read and understand	5.64	8%	5.42	0.556	<0.001
The process employs the best available biophysical science.	5.61	12%	5.79	0.454	0.001
Public participants are satisfied with the PROCESS	5.46	25%	5.08	0.236	0.093
Other agencies are effectively engaged	5.18	1%	5.46	0.401	0.004
The process is completed in a timely manner	5.13	9%	4.88	0.231	0.106
The process employs the best available social science	5.08	2%	5.08	0.587	<0.001
The final decision minimizes adverse socioeconomic impacts	5.02	6%	5.06	0.405	0.003
All team members are satisfied with the process	4.68	2%	5.25	0.483	<0.001
Public participants are satisfied with the FINAL DECISION	4.53	8%	4.63	0.125	0.111
Compromise has taken place between the interested parties	4.47	3%	4.65	0.002	0.988
No litigation or appeals	3.91	5%	NA		

[a] Importance and achievement scores measured on a 1 to 7 scale (see text for details).
[b] r = Spearman Rank correlation coefficient.
[c] p = the probability of obtaining a correlation as strong or stronger than the one observed if no relationship actually existed. p-values of less than 0.05, indicating less than a 5% probability that the relationship was observed by pure chance, are generally considered statistically significant.

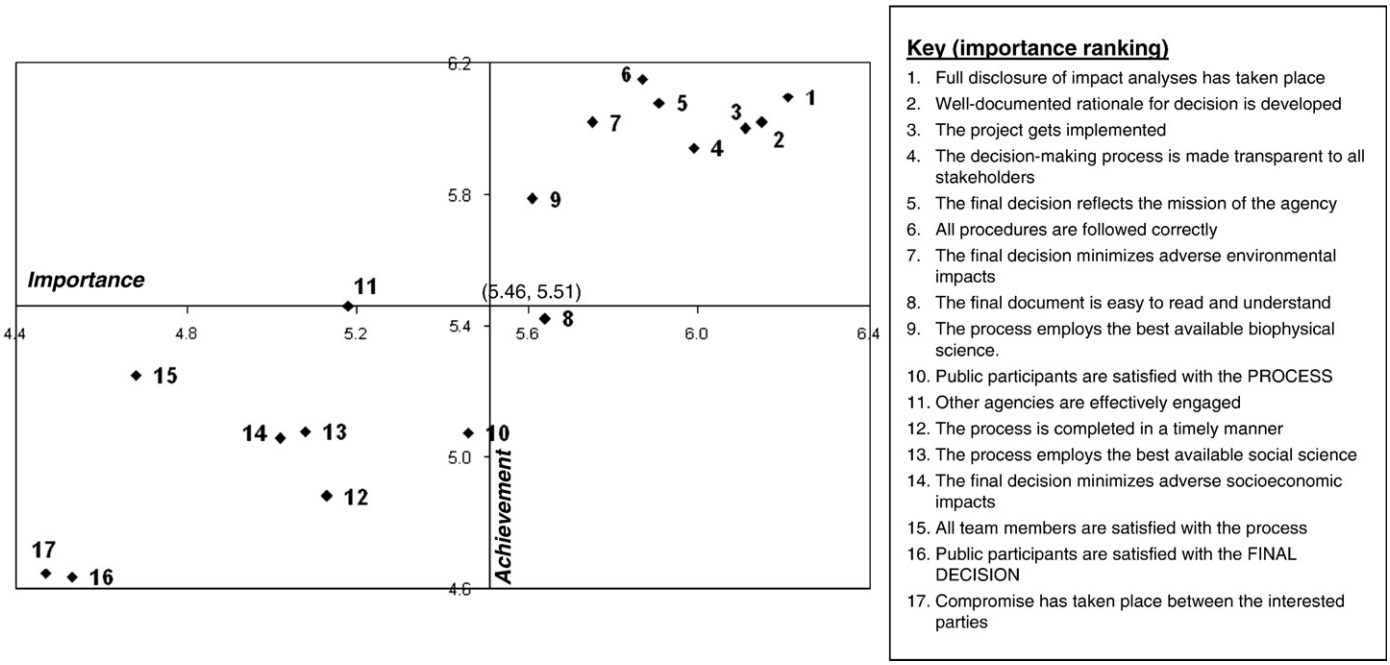

Fig. 1. Importance-achievement comparison on measures of success in Forest Service NEPA processes.

satisfaction with the process as one of the top three most appropriate indicators of success. This suggests that those who ranked the item highly felt particularly strongly about it. Minimizing environmental impacts followed a similar pattern. All of the items were placed in the top three by at least one respondent, reflecting a wide diversity of opinions about appropriate ways to measure successful processes.

6.4. Perceptions of achievement

Respondents who had completed their NEPA processes ($N = 52$) were asked to rate their project's degree of achievement of the potential measures of success on a seven-point scale with three anchor points: 1 (did not achieve), 4 (partially achieved), 7 (achieved completely). These responses were compared to respondents' perceptions of the appropriateness of each of the measures using Spearman Rank correlation analysis (Table 3). None of the statements scored below the middle-point on the scale, reflecting that, for the most part, ID team leaders generally felt that they were able to achieve all of the proposed measures to some degree. The relationships between perceptions of appropriateness of each measure and its achievement suggest that teams especially appear to achieve what their ID team leaders feel is most important. Exceptions include items largely outside of the ID team's control, such as a project's implementation, appeals and litigation (see below under Section 6.5), public responses, and compromises between interested parties.

Fig. 1 provides a graphical display of the relationships between importance rankings and achievement of potential NEPA success measures. The *x*-axis depicts mean importance scores for each item while the *y*-axis depicts each item's average achievement scores. The intercept represents the overall average importance (5.46) and achievement scores (5.51) for all items combined. The figure further illustrates that most items ranking highest in importance also had high mean achievement scores. The appearance of the readability of the final document in the lower right hand quadrant, however, suggests that performance on this item is particularly low relative to its perceived importance by ID team leaders. The same might be said (to a lesser degree) for public participants' satisfaction with the process. Effective engagement with other agencies was generally considered of lesser importance to respondents, but this was something ID team leaders commonly felt had been more or less achieved.

All team leaders on completed projects were asked the extent to which they agreed or disagreed with the following statement, "The process led to an excellent outcome," on a five-point scale, ranging from strongly disagree to strongly agree. The mean response score was 3.90, with 4% disagreeing with the statement, 29% neutral, 40% agreeing, and 27% strongly agreeing. None strongly disagreed. Team leader opinions regarding additional process-related statements were solicited on the same five-point scale for completed projects. Table 4 shows the means and the results of Spearman Rank correlation analyses of each of these variables with team leaders' perceptions of excellent outcomes. Table 5 shows correlations between achievement-related statements and these perceptions.

Process-related factors with statistically significant relationships to ID team leaders' perceptions of excellent outcomes included whether the process increased conflict, whether the morale of team members was negatively affected by the process, whether team members disagreed about how to get the work done, and whether the final decision more or less matched the general consensus of the ID team. Perceptions of mistakes made in the process, whether the process helped to mitigate conflict, and whether team members disagreed about the preferred alternative did not show statistically significant correlations with perceptions of excellent outcomes.

These results suggest a distinct difference between the two measures of task conflict and their relationships to perceived outcomes. Fig. 2 further explores these differences, revealing a near linear negative relationship between process-based conflict (disagreement about how to get the work done) and the perceived outcome and a near u-shaped

Table 4
Correlations between ID team leaders' perceptions of excellent outcomes and process-related variables.

Process-related statement (1 to 5 scale)	Mean	*r*	*p*
The final decision more or less matched the general consensus of the ID team	3.88	0.278	0.046
The process helped to mitigate conflict	3.44	0.235	0.093
Mistakes were made in the process	3.31	−0.075	0.596
The process increased conflict	2.71	−0.281	0.043
Team members disagreed about the preferred alternative	2.40	−0.175	0.213
Team members disagreed about how to get the work done	2.27	−0.437	0.001
Morale of team members was negatively affected by the process	2.23	−0.448	0.001

Table 5
Correlations between ID team leaders' perceptions of excellent outcomes and achievement scores.

Achievement-related statement (1 to 7 scale)	Mean	*r*	*p*
All procedures were followed correctly	6.15	0.190	0.178
Full disclosure of impact analyses has taken place	6.10	0.168	0.233
The final decision reflects the mission of the agency	6.08	0.446	0.001
The final decision minimizes adverse environmental impacts	6.02	0.222	0.114
Well-documented rationale for decision was developed	6.02	0.444	0.001
The project has been implemented	6.00	0.419	0.002
The decision-making process was made transparent to all stakeholders	5.94	0.231	0.100
The process employed the best available biophysical science.	5.79	0.215	0.125
Other agencies were effectively engaged	5.46	0.343	0.013
The final document is easy to read and understand	5.42	0.218	0.121
All team members are satisfied with the process	5.25	0.516	<0.001
The process employed the best available social science.	5.08	0.259	0.064
Public participants are satisfied with the PROCESS	5.08	0.442	0.001
The final decision minimizes adverse socioeconomic impacts	5.06	0.267	0.055
The process was completed in a timely manner	4.88	0.284	0.043
Compromise has taken place between the interested parties	4.65	0.306	0.029
Public participants are satisfied with the FINAL DECISION	4.63	0.312	0.024

relationship between outcome-based task conflict (disagreements about the preferred alternative) and the perceived outcome. The u-shaped relationship conflicts with the findings of prior research, which suggests that moderate levels of task conflict should contribute to more positive outcomes (Simons and Peterson, 2000). Despite the small sample size, it appears that ID team leaders who felt ambivalent about whether there was internal team conflict about the preferred alternative reported less positive assessments of process outcomes. This could suggest that in processes in which ID team leaders were least attuned to team dynamics (no opinion or knowledge about whether disagreements existed regarding preferred outcomes), processes were less likely to succeed. Alternatively, it could suggest that when ID team members withhold their opinions about desired outcomes (or have no strong opinions), processes suffer as a result.

Achievement factors with statistically significant relationships to ID team leaders' perceptions of outcomes included whether or not the final decision reflected the mission of the agency, whether a well-documented rationale for the decision had been developed, whether the project had been implemented, whether other agencies had been effectively engaged, whether all team members were satisfied with the process, whether public participants were satisfied with both the process and the final decision, whether the process had been completed in a timely manner, and whether compromise had taken place between the interested parties (Table 5). ID team leaders' prior experience on ID teams showed no statistically significant relationship with perceptions of excellent outcomes, nor did the number of ID team members.

To explore which combination of variables could best explain ID team leaders' perceptions of excellent outcomes in their NEPA processes, all process-related and achievement variables were entered as potential independent variables into forward conditional binary logistic regression, which was specifically designed for use with small samples to relieve sparse-data bias (Hosmer and Lemeshow, 1989).

Binary logistic regression is preferable to linear regression in this case due to the skewed nature of responses in the dependent variable, perceptions of an excellent outcome. Only two disagreed with the statement; fifteen were neutral, reflecting an ambiguous outcome; and thirty-five either agreed or strongly agreed. To conduct the logistic regression, we first transformed the dependent variable into a binary variable. Scores of 4 ($n=21$) and 5 ($n=14$), agree and strongly agree, were coded as a 1, indicating a perception of a positive outcome. Scores of 2 ($n=2$) and 3 ($n=15$), disagree and neutral, were coded as a 0, indicating perceptions of less positive outcomes. A small number of missing values in the data (1 missing value each for three separate variables) prompted us to test variables in multiple iterations, maximizing the sample size for each of the independent variables. Two predictive models emerged from this analysis (Table 6). In each model, perceptions of whether the final decision reflected the mission of the agency and whether compromise had taken place between the interested parties were highly predictive of perceptions of more positive outcomes. Two other factors were more or less interchangeable, explaining a similar portion of the variance in the dependent variable: perceptions that all team members were satisfied with the process and whether or not the project had been implemented.

Further analyses help to clarify the link between perceptions of team member satisfaction and project implementation. Principal components analysis (PCA), Spearman rank correlation, and reliability analyses reveal five items comprise an internally consistent measure relating to team member satisfaction: these included “all team members were satisfied with the process,” “the project has been implemented,” “the morale of team members was negatively affected by the process” (inverse), “team members disagreed about how to get the work done” (inverse), and “the process was completed in a timely manner.” While the sample size is

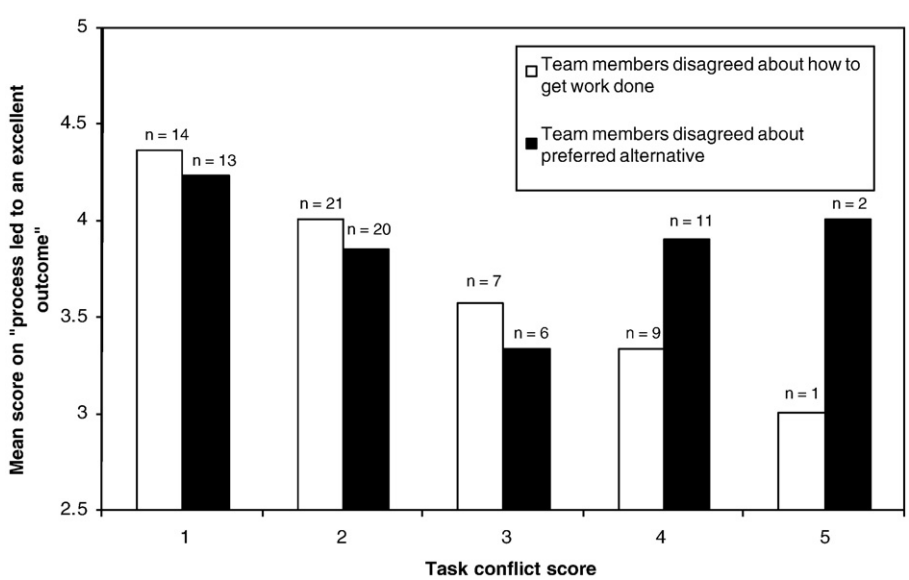

Fig. 2. Average outcome scores for different types of task conflict.

Table 6
Forward conditional binary logistic regression on ID team leaders' perceptions of "an excellent outcome".

Variables in the equation	Model 1 ($N=51$)		Model 2 ($N=50$)	
	Exp (β)	p	Exp (β)	p
The final decision reflects the mission of the agency	5.66	0.003	7.09	0.002
Compromise has taken place between the interested parties	2.24	0.014	2.64	.011
All team members were satisfied with the process	2.18	0.038	–	NS
The project was implemented	–	NS	3.96	0.010
Model characteristics				
Hosmer and Lemeshow Goodness-of-Fit Test Significance	0.926		0.380	
Nagelkerke R^2	0.609		0.682	
Correctly predicted outcomes	86.3%		88.0%	

somewhat small for strict interpretation of the PCA (varimax rotation), these five items dominated a single distinct component. Inter-item Spearman rank correlations were high (Table 7), and reliability analyses revealed an alpha of 0.822. This grouping of variables suggests that team member satisfaction is strongly related to both internal team processes and external factors that may hinder project implementation and timely process completion. An index composed of these five items, equally weighted, when entered as an independent variable in the conditional binary logistic regression predicts outcome perceptions with 89.8% accuracy in combination with the mission and compromise variables (Hosmer and Lemeshow Goodness-of-Fit Test significance = 0.480; Nagelkerke $R^2 = 0.655$). Indexes developed from other principal components, which reflected factors related to procedural compliance and disclosure, science application, and public satisfaction, did not enter the conditional regression as significant predictors.

6.5. Appeals

Thirteen of the forty-five ID team leaders of completed EA processes reported that their processes had been appealed. Six of these appeals were upheld. Two did not know whether appeals had taken place. Six of the seven EIS ID team leaders reported that their processes were appealed. Two of these appeals were upheld. The occurrence of an appeal showed no statistically significant relationship to its importance ranking as a measure of success for Forest Service NEPA processes or to any of the other achievement or other process-related variables. Rather, the occurrence of appeals seemed most closely linked to the subject matter and context of the individual projects. Appealed processes had significantly higher scores on a number of specific goal statements for the processes, including protecting natural and cultural resources, balancing multiple interests, reducing recreation conflict, and limiting the use of some recreation users (Table 8). None of the goal statements exhibited statistically significant correlations with ID team leaders' perceptions of excellent outcomes.

7. Discussion

The results reveal tremendous diversity in the viewpoints of ID team leaders regarding what Forest Service NEPA processes should accomplish and how success should be measured, despite the fact that we based the analyses on projects specifically related to recreation and travel management. It also shows that these beliefs appear to have real influences upon the achievement, or at least the perceived achievement, of particular objectives. Perhaps most strikingly, the analysis also suggests that ID team leaders' perceptions of success only partially align with the best predictors of perceived excellent outcomes. Each of these issues is discussed in greater detail below.

7.1. NEPA beliefs: defining success in Forest Service NEPA processes

In relation to the letter of the law, only some of the potential success measures included in the study are actually required by the National Environmental Policy Act. These include full disclosure of impact analyses and following all procedures correctly. While others are closely associated to these requirements, some of the highest ranked potential success measures fall outside the scope of NEPA. Other high-ranking items reflect concepts ranging from the achievement of the Forest Service mission to the injection of personal values of ID team leaders, particularly with regard to accountability to the public. Disclosure was also viewed differently by respondents, ranging from disclosing impact analyses to full transparency in the decision-making process. The item most closely associated with the written goal of NEPA (minimizing adverse environmental impacts) ranked seventh amongst potential success measures in terms of its mean score, although it was selected as one of the three most important items by the highest percentage of respondents.

The high rankings of procedural compliance and project implementation may be related to ID team leaders' responses to courts' attention to procedural details in litigation, the most common impediment to project implementation. Interviews conducted during the pilot study, in which we identified the success factors explored here, lend some credence to this proposition. For example, one ID team leader explained, "We're not writing EAs for the public, we're writing EAs for the 9th Circuit." Thus, it does appear in at least some cases that the procedures themselves may occupy the primary focus of ID teams.

The results reveal a wide diversity of beliefs regarding what NEPA processes are supposed to accomplish. This may be reflective of the ways in which team leaders learn about NEPA as well as the contexts in which they work. Although official NEPA trainings do take place, interviews conducted in our pilot study suggested that many Forest Service employees learn about NEPA primarily from other employees who have worked with it before and through on the job experience (Stern and Mortimer, in press). Thus, NEPA beliefs may be passed from generation to generation within the Forest Service, informed by the unique experiences of individuals working in different contexts and with potentially different values. The implications of this diversity are less clear, though the research suggests that these beliefs may largely dictate how NEPA processes unfold. Additional research into information flow within the Forest Service regarding NEPA processes could further elucidate the underlying reasons for variable beliefs about NEPA in the agency.

Table 7
Spearman Rank correlations ($p<0.001$) of items in team satisfaction index.

Survey items	Morale of team members was negatively affected by the process	Team members disagreed about how to get the work done	The process was completed in a timely manner	The project has been implemented
All team members were satisfied with the process	−0.661	−0.655	0.493	0.484
Morale of team members was negatively affected by the process	–	0.623	−0.465	−0.424
Team members disagreed about how to get the work done	–	–	−0.445	−0.410
The process was completed in a timely manner	–	–	–	0.403

Table 8
Comparison of means of goal statements with occurrence of an appeal (independent samples *t*-tests).

Goal statement (1 to 7 scale)	Appealed?	*N*	Mean	Mean diff.	*t*-statistic	Sig. (2-tailed)
Protect natural resources	Yes	19	6.47	0.76	2.77	0.008
	No	31	5.71			
Designate a system of roads and trails for specific purposes	Yes	19	5.68	0.39	0.61	0.484
	No	31	5.29			
Protect cultural resources	Yes	19	6.16	0.97	2.29	0.027
	No	31	5.19			
Balance multiple interests	Yes	19	5.95	1.21	3.35	0.002
	No	31	4.74			
Increase management efficiency	Yes	19	5.47	0.63	1.46	0.151
	No	31	4.84			
Reduce recreation conflict	Yes	19	5.58	1.52	2.92	0.005
	No	31	4.06			
Enhance opportunities for motorized recreation	Yes	19	4.16	0.35	0.56	0.579
	No	31	3.81			
Enhance opportunities for non-motorized recreation	Yes	19	4.58	0.52	0.93	0.359
	No	31	4.06			
Maximize recreation for as many users as possible	Yes	19	4.26	0.97	1.60	0.117
	No	31	3.29			
Close areas to motorized access	Yes	19	4.37	1.02	1.49	0.144
	No	31	3.35			
Limit the recreational use of some users	Yes	19	4.47	1.57	2.40	0.020
	No	29	2.90			
Improve opportunities for recreation fee collection	Yes	19	2.00	0.19	0.49	0.628
	No	31	1.81			

7.2. Linking beliefs to perceptions of achievement

Correlations between the perceived importance of particular items in measuring success and their achievement suggest that if ID team leaders feel something within their control is important, they tend to achieve it, or at least they think they do. While the idea of the self-fulfilling prophecy (Merton, 1968) provides one potential explanation for this finding, the analysis could not rule out that ID team leaders may have been retrospectively selecting those items that they actually did achieve. Regardless of the chicken-or-the-egg issue identified in this potential conundrum, the results suggest that the individual beliefs of ID team leaders may be of particular significance in NEPA processes. Whether ID team leaders feel the selected success measures to truly be the most important issues or whether they simply feel them to be the easiest to accomplish, it is reasonable to believe that they would focus upon these issues in future NEPA processes. Past behaviors have been found to be excellent predictors of future behaviors, especially in settings where high degrees of uncertainty or ambiguity are the norm (Ajzen, 2002). These findings come with some meaningful implications for training within the Forest Service. If a clear consensus could be reached on the most important aspects of the NEPA process, trainings focusing upon these "definitions of success" could influence greater achievement.

The findings also highlight the significance of "street-level" discretion within the agency, as individuals might not only use different processes to achieve NEPA-related goals, but might also define those goals quite differently from others in the agency. Thus, while this discretion may be invaluable for adapting techniques for particular contexts, the very nature of NEPA processes, including their goals and certainly their outcomes, may differ based on the individual beliefs of ID team leaders tasked with their management and completion.

7.3. Achieving excellent outcomes

While the study is limited by using ID team leader perceptions as proxies for what actually happened in processes and by a relatively small sample size, the results reveal some meaningful patterns with regard to how excellent outcomes might best be achieved in recreation-related NEPA processes. Conditional binary logistic regression analyses on perceptions of excellent outcomes revealed four items accounting for the majority of variance observed in these perceptions: achievement of the mission of the agency, compromise between interested parties, team member satisfaction, and project implementation. Thus, while team leaders reported the most appropriate measures of success to be largely associated with disclosure and implementation, managing stakeholders and internal team-related factors also seemed paramount. While only 3% and 2% selected these items as among the most important measures of success, respectively, it appears clear that more than just disclosure is taking place in processes leading to the best perceived outcomes.

Communicating and interacting in a positive way with the public is an ongoing challenge in these processes. Some of the poorest achieved measures included producing an easy-to-read document, minimizing socioeconomic impacts, satisfying the public, and facilitating compromise between interested parties. While nothing more than disclosure is required by NEPA, the analysis revealed that successful processes often involved compromise. The findings do not suggest that the Forest Service should necessarily strive for compromise in their NEPA processes, particularly in cases where they might have to sacrifice something of the agency mission. However, as others suggest (Force and Forester, 2002; Innes and Booher, 2004; Stern, 2008), it appears that additional attention to stakeholders beyond mere disclosure might be warranted.

Items revealing something of the quality of internal team processes also appeared predictive of the quality of process outcomes. The presence of team member satisfaction in the regression equation on outcomes suggests that positive, or at least benign, experiences for team members likely contribute to more successful processes. Findings regarding task conflict further reveal the nature of these relationships. Conflict between team members about how to get the work done was significantly correlated with perceptions of less-desired outcomes. This suggests the importance of an effective team leader, appropriate selection of team members, and team cohesion. Disagreements about the preferred outcome of processes amongst team members had less consistent impacts upon outcomes. In cases in which team leaders had neutral opinions about whether these disagreements existed, outcomes were less positive on average. Two potential lessons emerge from these findings. The first may be that disengaged team leaders who are unaware of the values or preferences of their team members are less effective. The second is that revealing biases internally within the ID team might actually be a good thing for process outcomes. Such openness could create an environment in which tasks become more clearly defined through debate. Additional debates might also enhance the quality of analyses as team members feel the need to more clearly defend their propositions.

7.4. Appeals and litigation

Few respondents felt that appeals and litigation made appropriate indicators of success in NEPA processes. Appeals were not significantly related to any other process-related variables. Rather, appeals tended to take place on projects that were probably more contentious from their outset — those involving protecting natural and cultural resources through recreation-related interventions, balancing multiple interests, reducing recreation conflicts, and limiting the use of some recreational users. While our sample is limited to recreation-related projects, the findings parallel those of Keele et al. (2006), who found that lawsuits against the Forest Service were highly dependent upon the specific subject matter, or purpose and need, of the NEPA process. Laband et al. (2006) also found the nature of the specific proposed actions on fuels reduction projects highly predictive of appeals.

7.5. Limitations of the study and future research

Some limitations of the study lead us to feel the need to caveat the findings presented herein, positing them first and foremost as grounded hypotheses to be further tested in future research. These limitations include using the perceptions of the team leader as a proxy for what actually happened in each process and the small sample size used for statistical analyses, particularly in regression on perceived outcomes. It is important for readers to recognize that the findings presented here primarily reflect Forest Service NEPA processes as seen through the eyes of ID team leaders on recreation-related projects. Our pilot interviews suggest that these may be the most critical Forest Service actors in determining the pathways through which these processes progress. However, they are certainly not the only ones. Additional research that includes the viewpoints of other team members, decision-makers, and other stakeholders, as well as direct observation and archival analysis, on a larger sample of projects could test the theories resulting from this effort. Two of the authors are undertaking such a study over the next two years.

The diversity of responses also suggests that blunt instruments such as surveys are not the ideal way to understand the nuances of these processes. While we feel we have identified some meaningful trends, the current study stops short of being able to fully address the underlying reasons for the observed patterns. Case study research is underway to move toward a deeper understanding of these trends.

Acknowledgements

The authors would like to acknowledge James Freeman for logistical support throughout the study and the Pacific Northwest Research Station of the USDA Forest Service for funding the project.

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