THESIS

NEPA IMPLEMENTATION AND TRUST: LINKING STAKEHOLDER TRUST TO SUBSTANTIVE EFFECTIVENESS IN U.S. FOREST SERVICE FUELS REDUCTION PROJECTS

Submitted by

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ABSTRACT

NEPA IMPLEMENTATION AND TRUST: LINKING STAKEHOLDER TRUST TO SUBSTANTIVE EFFECTIVENESS IN FOREST SERVICE FUELS REDUCTION PROJECTS

Trust matters; but, rather than take it as a given, this study presents an empirical snapshot of *how* trust matters, *what types* of trust matter, and how those trust types interact within and on National Environmental Policy Act (NEPA) substantive effectiveness. I define substantive effectiveness as the degree to which the policy meets its established aims of considering environmental effects and including the public in the process. Using documents and public comments from two U.S. Forest Service (USFS) Fuels Reduction projects in the Boulder Ranger District in Colorado, I assessed stakeholder trust judgements by coding trust types and frequencies. I then used process tracing to examine how stakeholder trust types interact with one another and relate to substantive effectiveness. I found that interpersonal trust, interpersonal distrust, and institutional distrust play prominent but varied roles within the NEPA process. First, interpersonal trust mediates the effect of institutional distrust on the substantive effectiveness of the NEPA process. Second, higher levels of institutional and interpersonal distrust result in more substantive changes in the NEPA environmental assessment process. Through improved understanding of the roles and functions of stakeholder trust types on the NEPA process, we add nuanced understanding to established expectations of how trust and distrust operate within natural resource planning and management.

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CHAPTER 1 – INTRODUCTION

The National Environmental Policy Act (NEPA) requires federal agencies to consider the environmental impacts of proposed actions and to include and inform the public in the process. A NEPA environmental impact assessment (EIA) process can be assessed for its transactive, procedural, substantive, and normative effectiveness (Sadler, 1996; Chanchitpricha & Bond, 2013). Substantive effectiveness is defined as the extent to which a policy meets its established purposes, and for this reason it is a pertinent aspect of effectiveness to explore. Is NEPA improving the decision-making process through its requirements to consider the environmental effects of federal actions and to include the public in the process? Importantly, factors contributing to all components of NEPA effectiveness are underexplored in the literature (Emerson & Baldwin, 2019), and while previous research has established the role of stakeholder trust as a necessity and distrust a barrier to effective natural resource management (Davenport et al., 2007; Song et al., 2019; Raymond, 2006; Lachapelle et al., 2003), few studies explore the relationship between trust and the effectiveness of specific procedural statutes like NEPA. Moreover, interactions between different forms of trust and distrust within the environmental permitting process are understudied (Stern, 2014).

From this foundation, this paper seeks to improve our understanding of how different types of stakeholder trust interact within a planning process and inform NEPA substantive effectiveness. I examine two U.S. Forest Service (USFS) fuels reduction NEPA projects that occurred in the same location over a multi-year period and use archival research and content analysis as methods of measurement to trace the process of how stakeholder trust judgements interact within the NEPA process and inform NEPA substantive effectiveness. Exploring the

influence of trust types on NEPA effectiveness within the USFS addresses the gap in the literature on factors influencing NEPA effectiveness (Emerson & Baldwin, 2019). Further, I build on the extant literature of trust theory and the trust environment within public policy and the public administration of public lands. Finally, this study lends practical insight into the federal government's implementation of NEPA and to the literature on NEPA effectiveness from a substantive viewpoint, an effectiveness component often disregarded for more visible procedural and transactive components oft cited in the ongoing debate on NEPA modernization (Luther, 2007). Insights regarding the influence of stakeholder trust in NEPA's implementation may improve its efficacy and create better outcomes in NEPA projects beyond the scope of this project.

The paper will proceed with an overview of the NEPA statute and a primer on NEPA effectiveness before moving on to existing theories for why variation exists in NEPA effectiveness (chapter two). Chapter three presents the concept of trust theory as a factor in NEPA effectiveness, identifies trust types relevant to this study, and concludes with three propositions for how stakeholder trust types behave within the NEPA process. Chapter four outlines the research methodology including the general study design, population and sample, data collection, and analysis techniques. Chapter five presents the results of the data analysis and describes the process tracing employed to explore possible causal mechanisms. Finally, chapter discusses the results and implications for future research and NEPA implementation.

CHAPTER 2 – NEPA SUBSTANTIVE EFFECTIVENESS

This chapter lays out the rationale for asking questions about NEPA substantive effectiveness. I begin with a brief history of the act's emergence as the preeminent U.S. environmental law, then outline a framework of environmental impact assessment effectiveness from which substantive effectiveness stems. The chapter provides an explanation for and working definition of substantive NEPA effectiveness before concluding with a literature review on possible explanations for variation in substantive NEPA effectiveness in the context of public land management.

The National Environmental Policy Act

In a report for National Bureau of Standards, Llewellyn and Preiser (1973) write that the emergence of the National Environmental Policy Act was marked by the proliferation of the U.S. environmental movement, the occurrence of highly visible ecological disasters, and "the traditional maneuvering and in-fighting so characteristic of the American political system" (p. i, [preface]). Catastrophic oil spills portrayed on color TV and books like Rachel Carson's *Silent Spring* directed Americans' attention to the impact of human industry on the natural world and rallied support for improved human-environment relations. Politicians cashed in on their constituents' newfound passion for environmental quality issues, considered a relatively "safe" political issue at the times, and produced a flurry of anti-pollution and environmental quality bills in the period between 1968 and 1970 (Llewellyn and Presier, 1973). One such attempt to address the issue of environmental quality was the White Paper on the Environment published by the House Subcommittee on Science, Research and Development in 1968. The report called for a systems approach to addressing the pollution problem, and for the first time put forth a call for a

national policy on the environment. The bill that would become the National Environmental Policy Act was introduced in the Senate in February of 1969 and called for the Department of the Interior to conduct environmental research and to form a council on the environment. By the time the bill passed in the Senate in July later that year, it had undergone several modifications. In the period of committee hearings that would eventually produce NEPA, one proposal, Senate Bill 1075, introduced by Henry "Scoop" Jackson, called for the innovative addition of an action-forcing component that would require implementation of the act and curb agency recalcitrance in the face of an environmental policy (Yost, 1998). Senator Jackson was said to be fully aware of the magnitude of placing the environmental impact statement requirement into the bill:

> *"The basic principle of the policy is that we must strive in all that we do, to achieve a standard of excellence in man's relationship to his physical surroundings. If there are to be departures from this standard of excellence, they should be exceptions to the rule and the policy. And as exceptions they will have to be justified in light of the public scrutiny required by section 102"* (Jackson, quoted in Yost, 1998).

The final debate over NEPA was perfunctory; Representative William Nash was the lone voice of dissent but offered this prophetic warning, "The impact of S.B. 1075, if it becomes law, I am convinced, would be so wide sweeping as to involve every branch of the Government, every committee of the Congress, every agency, and every program of the Nation" (Liroff, p. 30, quoted in Kershner, 2011). The NEPA bill passed in both the house and senate in late December of 1969 without any obstructions and was signed into law by President Nixon in January of 1970.

The final text of NEPA is a relatively concise document. Section 101 articulates the "national policy" and acknowledges the interconnection of society and ecology. This section contains strong directives to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; assure for all Americans safe, healthful, productive, and

aesthetically and culturally pleasing surroundings; attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;" and "…achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities" (Sec. 101, 42 USC § 4331).

Housed in section 102, the action-forcing component of NEPA details how federal agencies should draft environmental impact statements (EISs or EIAs – environmental impact assessments) as the method to incorporate environmental impacts into federal decision-making. EISs are to include the use of science, long term and short-term impacts of the proposed action, and the inclusion of alternatives to the preferred action, among other requirements (42 USC § 4332). This procedural component of NEPA is only triggered when a proposed federal action has significant impact on the human environment. For projects that are routine, such as improving existing parking lots, bathrooms, etc., agencies may use categorical exclusions that exempt such projects from the NEPA process. When it is uncertain if a project will have significant impact, an environmental assessment (EA) may be utilized to determine whether a full EIS is required.

Other environmental quality bills followed closely behind NEPA. The Clean Air Act was passed in 1970, the Clean Water Act in 1972, and the Endangered Species Act in 1973. However, NEPA is the only act that functions as an umbrella statute affecting all Federal actions. Given its broad reach, application of the NEPA statute produced controversy from the start.

At the time of the National Bureau of Standards Reports' writing in 1973, NEPA was already considered controversial due to its requirement for EISs. Environmentalists almost immediately leveraged the policy to halt or obstruct projects that they opposed. Due to the statutory ambiguity utilized in the writing of NEPA, particularly around how the Act was to be

implemented and enforced, a half century of debate and litigation ensued. The resulting case precedents established that agencies are obligated to comply with NEPA to "the fullest extent possible" (Sec. 102 [42 USC § 4332]), but that the substantive aims of NEPA found in Section 101 are "flexible"; NEPA is primarily a procedural statute, and agencies are compelled to take the environmental impacts of their actions into account and consider these issues in their decision-making, but are not required to adopt the most environmentally friendly alternative (*Calvert Cliffs' Coordinated Committee v. Atomic Energy Commission,* 1971; *Flint Ridge Development Co. v. Scenic Rivers Association of Oklahoma*, 1976, *Robertson v. Methow Valley Citizen's Council*, 1989).

Consequently, case law and over 50 years of agency implementation of NEPA have highlighted two main goals of the Act: (1) to require federal agencies to consider the environmental impacts of their actions, and (2) to include the public in the process. Despite NEPA's aspirations for ecological restoration and harmony between humans and nature, case law precedents *(Vermont Yankee Nuclear Power Corp v. Natural Resource Defense Council,* 1978; *Strycker's Bay Neighborhood Council v. Karlen,* 1980) established that federal agencies are not required to adopt the most environmentally friendly action or mitigate for environmental harms a project might impose *(Robertson v. Methow Valley Citizen's Council*, 1989). Agencies must only show that they followed the NEPA procedures of section 102 and at least considered the environmental impact of their proposed actions (42 USC 4332). By taking a hard look at the decision-making process and including the public to incorporate a more diverse range of alternatives, less ecologically disruptive alternatives to the proposed action may be incorporated into the final decision, and thus, theoretically, better environmental outcomes achieved.

NEPA Effectiveness Framework

With an understanding of NEPA's legislative history, action-forcing components, and judicial interpretation, I now turn to the literature on NEPA effectiveness. Sadler's (1996) three components of NEPA effectiveness, transactive, procedural, and substantive, are widely used in the literature to assess NEPA EIAs. The three components are often cited in best practice manuals for NEPA practitioners and used as a framework in conjunction with more specific project indicators, such as in Alberts et al.'s (2020) assessment of EIA in protected areas. A brief overview of each component follows:

1. *Transactive effectiveness* refers to the general efficiency of a NEPA process. From a transactive standpoint, an effective NEPA project is one that is completed within a reasonable timeframe, without delays from litigation or prolonged scoping resulting from conflict (Todd, 2001, Marsden, 1998, Sadler 1996). It is also cost-effective, though research in this area is lacking (Alberts et al. 2020).
2. *Procedural effectiveness* refers to the structure of a process and how well it adheres to the rules and policy required of it. Procedural effectiveness remains the focus of most NEPA research and publications for practitioners. It is also primarily how NEPA is litigated in the courts (Czarneski, 2006 and Garry, 2006).
3. *Substantive effectiveness* refers to how well an EIA meets its intended purposes and objectives (Sadler 1996). Because NEPA's purpose has been interpreted in the courts to improve decision making by including a robust analysis of environmental impacts and informing the public, a substantively effective NEPA process would include some amount of change between the original notice of action to the final decision reflecting input from the public (Czarnezki, 2006).

4. *Normative effectiveness* is the extent to which NEPA outcomes meet normative goals such as environmental or democratic standards (Baker and McLelland, 2003, Chanchitpricha & Bond, 2013).

Chanchitpricha & Bond (2013) compiled the four components into one holistic framework that embraced the multidimensionality of NEPA effectiveness and linked them to a logic model. The criteria are used to assess the effectiveness of EIA processes internationally (Chanchitpricha & Bond, 2013; Fischer et al., 2020; Pope et al., 2018; Baker & McLelland, 2003) but there have been no studies that incorporated their criteria within the US context at the time of this writing.

Table 2-1: Components of NEPA effectiveness

EIA Effectiveness Type	Definition
Transactive	the extent to which the procedural principles deliver the substantive objectives at the least cost and in the minimum time possible (Todd, 2001, Marsden, 1998, Sadler 1996)
Procedural	to meet accepted principles and provisions (Todd, 2001, Marsden, 1998, Sadler 1996)
Substantive	achievement of established purposes and objectives (Todd, 2001, Marsden, 1998, Sadler 1996)
Normative	the extent to which the policy meets its ideal purpose. (Baker & McLelland, 2003)

The legal interpretation of NEPA as a purely procedural statute and pushback from industry permittees has prioritized procedural and transactive effectiveness often at the expense of substantive or normative goals (Cashmore et al., 2004; Karkkainen, 2004). Legal critics of NEPA lament the hollowing-out of the act by the courts procedural interpretation and argue that the result has been an expansion of agency discretion and an overall weakening of NEPA's

influence (Karkkainen, 2004). Over the last 30 years NEPA effectiveness has been called into question by interest groups and agencies alike, resulting in efforts to "modernize" the Act to increase efficiency (transactive effectiveness) despite investigative reports showing that NEPA is generally effective (CEQ 1997, Yost 2019, Trnka and Ellis 2014). Furthermore, in the ongoing debate on NEPA effectiveness taking place within the realm of CEQ regulation changes between the Trump and Biden administrations (CEQ 2020, 2021, 2022), NEPA effectiveness becomes highly relevant to discussions of NEPA modernization.

While we can assess NEPA effectiveness using the four components of effectiveness, which should we prioritize, and at what cost? This question is beyond the scope of this work, but I include it here to complicate our notions of an effective NEPA project and to acknowledge the limitations of this paper. In this research, I focus on substantive NEPA effectiveness because the intent of NEPA has been interpreted by the courts as achieving substantive effectiveness through a procedural mandate. NEPA's purpose is, therefore, to improve decision making by including a robust analysis of environmental impacts and including the public in that process. One way we can measure substantive NEPA effectiveness is by how much a project changes between the initial notice of action and the final decision (Czarnezki, 2006). But what factors influence substantive NEPA effectiveness? In other words, why does NEPA substantive effectiveness vary?

Explaining Variation in Substantive NEPA Effectiveness

There have been several 'state of the art 'publications on NEPA and EIA effectiveness in recent years (Emerson and Baldwin, 2019, Bond and Pope 2012, Morgan 2012). Emerson and Baldwin (2019) most recently surveyed the literature and concluded that there are two major

deficits: 1) There is a general lack of theory in studies on NEPA effectiveness, and 2) the factors contributing to NEPA effectiveness are underexplored.

Broadly speaking, agency discretion is a major factor that influences the effectiveness of a NEPA process. NEPA articulates that federal agencies should conduct detailed environmental analyses of any major federal actions to fulfill the statutes' purpose, but the implementation of the directive is not straightforward. In the first few decades after NEPA was signed into law, agencies struggled to interpret and integrate the statute into existing agency mandates and environmental laws. In response, CEQ issued a set of standardized, detailed regulations in 1978 (40 CFR 1500-1508) to help guide agencies through the NEPA process. Judicial review further consolidated understanding and interpretation of the statute and how it should be implemented, but agency deference as a standard of judicial review has persisted. Agency deference and discretion allow for 'wiggle room' within an agency's interpretation and implementation of NEPA. Discretion can apply to project categorization, or the determination of what type of environmental assessment a project requires (Categorical exemption, environmental assessment, or full environmental impact statement), but also to the methods and extent of public involvement applied to specific projects or steps in the process. An agency's ability to effectively implement NEPA depends on factors such as those identified by Zhang et al. (2012) in their comprehensive review of EIA effectiveness factors. These include communication and understanding, resources and capacities, timing, and organization, and will and attitude (Zhang et al. 2012). The findings highlight the pivotal role that the lead agency plays in implementing NEPA effectively.

The substantive effectiveness of NEPA projects will also vary by project type, responsible agency, and geographic location. For example, Fleishman et al. (2020) found that

there is substantial regional variation in the Forest Service's NEPA implementation and litigation, which they posit occurs due to differences in 'street-level' practices by individual bureaucrats (Fleishman et al., 2020). A separate survey of NEPA professionals identified the importance of executive leadership support for the NEPA process as most critical to the effective administration of the process (Lamb, 2014), lending support to the theory of leadership influence.

NEPA effectiveness cannot, however, be reduced entirely to the role of the individual. Lamb's (2014) survey also identified several other factors contributing to NEPA effectiveness, including NEPA staff's access to quality scientific information, funding for NEPA compliance and training, an agency culture in which NEPA and environmental staff can weigh in on decision-making, qualification of NEPA specialists, and whether there are updated agency NEPA procedures.

Of course, all these factors exist within an institutional context as well as the wider socio-political environment. For instance, it is well known that the 9th Circuit Court of Appeals takes a more critical look at cases brought to court under NEPA, leading to an agency culture within the Forest Service offices in that region to bolster their environmental assessments against the rigors of the court's hard look doctrine. Often this risk aversion to litigation has resulted in quantity over quality of analysis (Hansen and Wolff, 2011). Risk perception is a major influence on USFS personnel in the NEPA decision-making process (Stern et al. 2014). External relationship risk emerged as a dominant lens through which agency staff make decisions and weigh alternatives (Stern et al, 2014). By external relationship risk, Stern et al. (2014) is referring to public involvement, collaboration, and their outcomes; There is a strong fear amongst USFS staff of

appeals and litigation in the project planning process (Mortimer et al. 2011, Stern and Mortimer 2009, Predmore et al 2011).

While a risk lens perceives public involvement as a barrier to achieving agency goals through the NEPA process, other perspectives point to the necessity of public involvement for the overall success of a project. The USFS has shifted away from hierarchical, top-down forest management and planning over the last few decades and increasingly utilizes more collaborative and decentralized approaches to better meet the challenges of increasing ecological and societal complexity (McIntyre and Schultz, 2020; Schultz et al 2012). Stakeholder trust is discussed liberally in the natural resource management literature as a necessity for successful collaborative decision making, but it is rarely the focus of research as a hypothesized causal independent variable. More often, trust is discussed ex post facto as a key factor in why projects were not successful (Lien et al., 2021, Lachapelle et al., 2003), or as an assumed precondition or truism. Trust as either a barrier or precondition to successful collaboration is an overly simplistic understanding of the role of trust and requires further investigation. Why might trust be a pertinent variable to explore when asking questions about NEPA effectiveness?

CHAPTER 3 - TRUST THEORY

In this chapter I form a rationale for why we expect stakeholder trust to matter when we consider NEPA substantive effectiveness. I first briefly introduce trust theory literature before moving on to its relevance to natural resource planning and NEPA effectiveness. Next, I present six stakeholder trust types inductively identified as relevant to this study. Finally, the chapter concludes with two guiding propositions formed from the literature review and a description of the cases selected for the study.

Trust Theory

The role of trust has been explored in all manners of academic fields, from psychology and sociology (Lewis and Weigert 1985) to public management (Park, 2012; Hardin, 2002; Mayer et al., 1995; Schoorman et al., 2007), conflict resolution, leadership studies, game theory, and international political economy (Li and Wu 2010). In the past, trust was perceived as a "psychological event" that took place within an individual (Lewis and Weigert, 1985, p.967). With the expansion of the study of trust into more academic disciplines, the concept is now understood as a reality of social life and organization. Public management scholars extended a theory of trust to interorganizational relations and citizens' faith in the public sector (Ruscio, 1996). Political scientists and democratic theorists speak of the public trust in terms of elections, faith in government, and the consequences thereof (Hooghe & Stiers, 2016; Parkins, 2005). It has also been described as, "a deep assumption underwriting social order" (Lewis and Weigert 1985) and the lubrication that creates efficiency in society (Zaheer et al. 1998). In economics and business studies, trust has been shown to reduce transaction costs by reducing the costs of negotiation (Zaheer et al. 1998), reduce conflict between partners (Brockner and Siegel 1996),

and to improve organizational performance by increasing cooperation between firms (Das and Teng 1998; Rousseau et al. 1998).

Trust Theory and Public Land Management

Trust is a vital component of social organizations and cooperation and increasingly an object of research in the realm of natural resource management (Coleman & Stern, 2018; de Vries et al., 2019; Decker et al., 2015). Lack of trust between stakeholders and public land agencies is commonly identified as a barrier to effective implementation of management activities such as prescribed burning and fuels treatments (Davenport et al., 2007), and its presence cited as a key factor for positive collaborative outcomes (Lien et al., 2021; Emerson et al., 2012). While trust is discussed liberally as a necessity for successful collaborative decision making, it is rarely the focus of research as a hypothesized causal independent variable. More often it is discussed ex post facto as a key factor in why projects were not successful (Lien et al., 2021, Lachapelle et al., 2003), or as an assumed precondition or truism.

Multidimensional Trust

Trust typologies, such as those by Coleman and Stern (2015), Rapp (2020), and Ceglarz et al (2017), point to the multidimensionality of trust. Trust is more than a stand-alone concept – it comes in many forms and has multiple, interacting relationships. Coleman and Stern (2015) differentiate between four typologies of trust: dispositional, rational, affinitive, and procedural. Their model of trust types has been utilized to explore forest management collaboratives and built upon by other researchers to create a framework for understanding how different types of trust within collaborative governance arrangements impact management outcomes (Coleman & Stern, 2018, Rapp, 2020). Likewise, Ceglarz et al. (2017) utilized a similar trust typology to examine how stakeholder trust types behave in powerline development projects. Their trust

typology consisted of interpersonal trust, generalized/social trust, and institutional trust (Ceglarz et al, 2017).

Table 3-1 lists six trust types from the literature review that were relevant to the cases considered in this research. These were identified inductively through preliminary coding of public comments and review of EA documents and based upon the work of Coleman & Stern (2015), Ceglarz et al. (2017), and Rapp (2020).

Table 3-1: Trust typologies in natural resource management

Trust Type	**Definition**	**Rationale**	**Example comments**
Interpersonal Trust	the trustor believes the trustee will perform actions which benefit or do not harm the trustee, based on the emotions and associated judgments resulting from either cognitive or subconscious assessments of the qualities of the potential trustee	Coleman & Stern 2015; Rapp 2020, Ceglarz et al. 2017	"I trust the foresters". "I trust the people." “I trust those in charge." "I respect your work and its people"; Other mentions of positive interactions with specific individuals
Interpersonal Distrust	The trustor believes the trustee will perform an action that is harmful to the trustor, based upon emotions and associated judgements resulting from either cognitive or subconscious assessment of the qualities of the potential trustee.	Stern & Coleman 2015; Rapp 2020, Ceglarz et al. 2017	"I do not trust those in charge." Other explicit statements regarding a human subject of the trustor's distrust.
Procedural Trust	Trust in procedures or other systems that decrease vulnerability	Stern & Coleman 2015; Rapp 2020, Ceglarz et al. 2017	"I trust the process." “Understanding

	of the potential trustor, enabling action in the absence of other forms of trust. The trustor believes the systems and procedures that exist in the decision-making context will be just.		the impacts is important for the public and the decision maker" "Our input deserves consideration at the highest level and priority of the Forest Service"
Procedural Distrust	Believing the systems and/or procedures in place are rigged, unfair, or will result in harm or increased vulnerability of the trustor.	Stern & Coleman 2015; Rapp 2020, Ceglarz et al. 2017	"I do not trust the process." "The process is perceived by the public as a sham." "...cannot influence the actions of the USFS." "…this bureaucracy will do whatever it wants" "…create sense of powerlessness" "corrupting USFS" "The FS had made their plan and that's what they were going to do, whether the public liked it or not."
Institutional Trust	Trust in public institutions or government. The belief that the government is operating according to one's normative expectations of how government should function.	Miller, 1974; Ceglarz et al. 2017	Explicit statements of approval of the agency's/institute's work "The Forest Service does good work". "We hope that this will bring better health to our

			forest and appreciate you doing work in our area."
Institutional Distrust	Believing that the government or public institutions are operating in a way that is misaligned with normative expectations of the trustor.		Statements of distrust regarding the agency/industry. "The last time the forest service engaged in fuels reduction they really did a horrible job." "I don't trust the agency to make good decisions regarding the forests' health." etc…

Still, there is much we do not know about the ways in which trust types interact with one another, build upon each other, and act on specific processes, policy implementation, and other aspects of natural resource management. Most of the literature exploring dimensions of trust examines its effects on public participation (Smith et al., 2013), collaborative group dynamics (Davis et al., 2018) or on institutional resilience (Stern and Baird, 2015). No studies were found that examined the trust environment's influence on NEPA effectiveness specifically.

Based on the trust literature in other fields, we might assume that all trust is good trust and that projects with more trusting stakeholders will result in better decision-making processes. However, trust is not monolithic. Research by Smith et al (2013) and Parkins (2005) point to a multifaceted understanding of stakeholder trust and how it influences management outcomes. Exploring how stakeholder trust judgements influence individual's participation in natural resource planning, Smith et al (2013) found that stakeholders who held positive trust judgements

towards others, and who believed that the agency held similar values to themselves, were less likely to become involved in planning activities. Conversely, Ceglarz et al (2017) highlight the powerful influence of interpersonal trust on the stakeholder engagement process during grid extension projects in Norway. The authors found that more than other trust types, interpersonal trust between a project manager and stakeholder can compensate for institutional or generalized distrust within the stakeholder engagement processes they studied (Ceglarz, 2017).

Less public involvement because of higher levels of stakeholder trust might influence the substantive effectiveness of a NEPA process because it is primarily through public input that new or previously under-considered alternatives and issues are considered. In this way, higher levels of stakeholder trust of the agency or individual administrators might negatively impact the substantive effectiveness of the NEPA process by limiting the alternatives and issues considered. Accordingly, based on existing literature, we might expect that: *Proposition 1: Where interpersonal trust is higher relative to procedural and institutional trust, NEPA substantive effectiveness will be lower.*

If higher levels of stakeholder/agency interpersonal trust reduce the likelihood that stakeholders will engage in planning processes and thus influence the substantive effectiveness of the NEPA process, does the opposite hold true? Parkins (2005) proposes that certain forms of stakeholder distrust might serve a functional purpose in natural resource management decision-making. The functional relationship distrust and democracy provides opportunity for stakeholders to allocate their time and energy into planning processes where they believe that neither the administrators nor the agency has their best interests at heart (Warren, 1999; Parkins 2005). Simply put, when stakeholders do not trust the experts or the institutions, they are more likely to want to scrutinize and influence decision-making outcomes. Thus, the expectation is

that: *Proposition 2: Where institutional and interpersonal distrust is high, there will be more substantive changes to the NEPA process.*

In this thesis, I evaluate how these propositions function and interact, providing greater evidence of the role multiple dimensions of trust can play in environmental permitting.

Case Selection

This study takes a case study approach, defined by Seawright and Gerring (2008) as "the intensive analysis of a single unit or a small number of units, where the researcher's goal is to understand a larger class of similar units" (pg. 296). In case studies as well as in random sampling, the objective is to obtain a representative sample of the greater population with useful variation in the concepts of interest (Seawright and Gerring, 2008). However, even when not statistically generalizable, the case study method provides conceptual and theoretical understandings of phenomenon at a level of detail not accessible through large-n analysis (Yin, 2016).

The US Forest Service is responsible for the largest share of NEPA projects in the United States and thus represent a large population of NEPA projects (Broussard & Whitaker, 2009, Fleishman et al. 2020). Fuel reduction projects are often contentious in the West due to the increased risk of wildfire and the public contestation of removing trees from the landscape for any purpose. They are also highly relevant cases to study considering the heightened risk of wildfire in the Mountain West due to increasing aridity and development into the wildland-urban interface (WUI). I scale down further to the Arapahoe-Roosevelt National Forest, Boulder District, to examine two specific NEPA projects: the Forsythe Fuels Reduction Project and Forsythe II. These two, project level EAs are within the footprint of the Front Range Collaborative Forest Landscape Restoration Program (CFLRP), a program created and funded by

the Omnibus Public land Management Act of 2009 that requires collaboration between stakeholders throughout the entire life of a project (Bergemann et al., 2019). Because the two projects are affiliated with CFLRP and partnering group the Front Range Roundtable, there is an expectation of trust between stakeholders going into the initial investigation of the cases. However, despite initial success in completing the NEPA environmental assessment without significant opposition, the Forsythe Fuels Reduction Project ground to a halt shortly after initial implementation. A highly visible clear-cut (an area from which every tree is removed) drew the attention of local property owners, forest recreators, as well as folks from farther afield, who opposed the methods employed by the US Forest Service and claimed that the agency was not using the most updated vegetation maps in their management of the project. The responsible agency official ultimately decided to halt the project completely. The project was attempted again a year later, this time under the title Forsythe II. This time, the Forest Service employed more rigorous public scoping, analysis of alternatives, and incorporation of public input.

These cases present a unique opportunity to examine closely how stakeholder trust types interact within and on the NEPA process because the cases include extremes on both ends of the spectrum of trust. The Forsythe projects had an expectation of collaboration and trust because of their affiliation with CFLRP and the Front Range Roundtable. However, Forsythe II became a case of extreme stakeholder distrust. Forsythe II was so fraught with conflict that it was the subject of two recent studies on natural resource conflict examining place-based attachment and representation and resistance (Jahn et al., 2020, Brenkert-Smith et al., 2019).

CHAPTER 4 – METHODOLOGY

Purpose

As described in the preceding chapter, I use a case study approach focusing on the Forsythe Fuels Reductions Projects in Colorado. In this section, I describe my methodology within this case study.

The purpose of this study is to identify salient trust judgements in the cases and to examine the interplay of those trust judgements within the NEPA process to evaluate how trust informs NEPA substantive effectiveness. Due to the nascence of this research topic, there are few examples of similar studies by which to model research methodology. Existing descriptive work identified a range of factors influencing NEPA effectiveness (Zhang et al. 2013), but no studies were found to have tested causal relationships between variables. Ceglarz et al. (2017) adopted a similar trust typology to investigate if and how trust informs infrastructure grid development projects, but the research was conducted outside of the United States and did not include an analysis of how trust informed the substantive effectiveness of a similar regulatory environmental law to NEPA. While there are few studies linking NEPA effectiveness and causal variables, there are studies measuring the substantive effectiveness of NEPA through document analysis. For example, Ruple and Capone (2016) used document analysis to examine the substantive effectiveness of BLM oil and gas EISs in the Western United States. A similar method is used here to measure substantive effectiveness of the NEPA projects.

I selected the case for the variation that exists longitudinally across multiple NEPA processes, as well as to hold constant the variables of geography and regional culture differences. Though the projects under study are technically two separate processes, they take place in the

same geographic area and have almost identical purposes and aims. In this way, I treat the two NEPA projects as a single case with substantial within-case variation.

The purpose of this study is not to assert that trust is the only factor or best determinant of NEPA effectiveness. Further, this study is not an investigation of the historical context that created the initial trust judgements at the start of the Forsythe projects, though complex histories and local context certainly inform stakeholder trust judgements. Acknowledging the role that institutions, history, environmental conditions, and political actors play in stakeholder relationships in natural resource planning and decision-making, I set these factors aside to home in on the social factors accompanying the planning process. In short, I am interested in the nuanced ways that stakeholder trust judgements affect the substantive effectiveness NEPA throughout the decision-making process, rather than the more macro-level causes of the trust judgements themselves.

Variables

The dependent variable in this study is *substantive* NEPA effectiveness. I define substantive effectiveness as the extent to which the assessment process meets its' intended objectives (Sadler, 1996). It is important to note that some NEPA critics suggest that the way in which the law has been interpreted by the courts has resulted in a NEPA process that does not reflect the true spirit of the act and that we should be assessing the environmental impacts of NEPA decisions to assess substantive effectiveness. For the scope of this paper, these types of environmentally focused conceptualizations of NEPA effectiveness are defined as normative effectiveness. Since the judicially interpreted purpose of NEPA is to ensure that federal agencies consider the environmental impacts of their action and to involve the public in the process, I measure substantive effectiveness by assessing the different stages of the NEPA process for

changes that occur between public comment periods, reflected in public documents as draft notices of proposed action, EA documents, and final decision notices and revisions (Image 4-1). We can also assess substantive effectiveness through noting the number of alternatives analyzed in an EA and the breadth with which the agency considered environmental impacts (Cashmore et al., 2004). Because the courts have determined that NEPA does not require that an agency choose a more environmentally friendly alternative, I do not place any normative expectation on whether the changes in the process resulted in ecologically impactful outcomes.

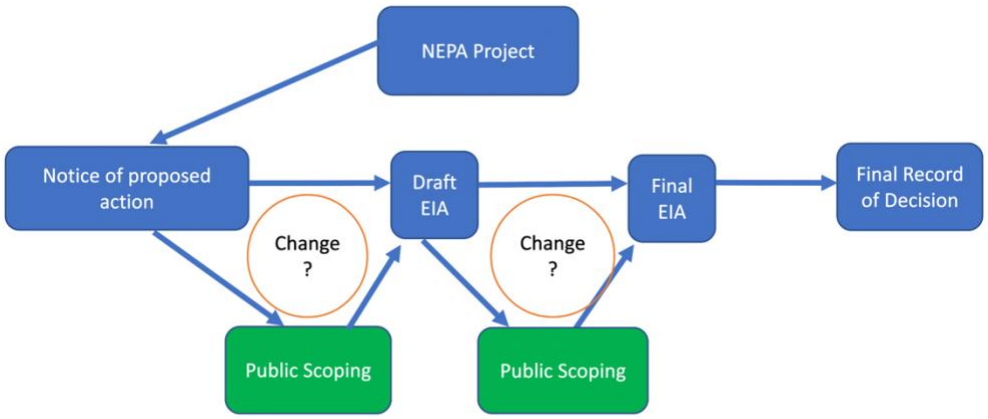

Figure 4-1: Opportunities to measure substantive NEPA effectiveness within the NEPA process through changes in project documents

The independent variables are interpersonal trust, procedural trust, and institutional trust. These trust types were identified through inductive preliminary coding as the most salient to the cases in this research. I combined typologies of trust from Coleman and Stern (2015) with Ceglarz et al.'s (2017) trust types and my inductive findings to create a merged trust typology (see table 3-1).

I define interpersonal trust as instances when the trustor believes the trustee will perform actions which benefit or do not harm the trustee, based on the emotions and associated judgments

resulting from either cognitive or subconscious assessments of the qualities of the potential trustee (Coleman & Stern 2015; Rapp 2020, Ceglarz et al. 2017).

Procedural trust is defined as, "Trust in procedures or other systems that decrease vulnerability of the potential trustor, enabling action in the absence of other forms of trust" (Stern and Coleman, 2015).

Finally, *I use Ceglarz et al's (2017) definition of institutional trust* as the belief that the government is operating according to one's normative expectations of how government should function.

Importantly, trust can be conceptualized as existing on a spectrum (Stern & Coleman, 2015). A lack of trust entails an absence of a trust judgement altogether, whereas distrust refers to when the trustor believes the trustee will make decisions that might harm the trustor in some way. Interpersonal distrust, institutional distrust, and procedural distrust are additional concepts I used to analyze the documents. It is helpful to imagine a Likert scale of trust where distrust may be –1, trust 1, and where 0 is a balanced trust judgement rather than a complete lack of trust or distrust.

Within Case Variation

Within a single NEPA environmental assessment there are several phases that produce documents, including an initial proposal or notice of proposed action, a draft EA or EIS, a final EA or EIS, and a final record of decision (See figure 4-2, below).

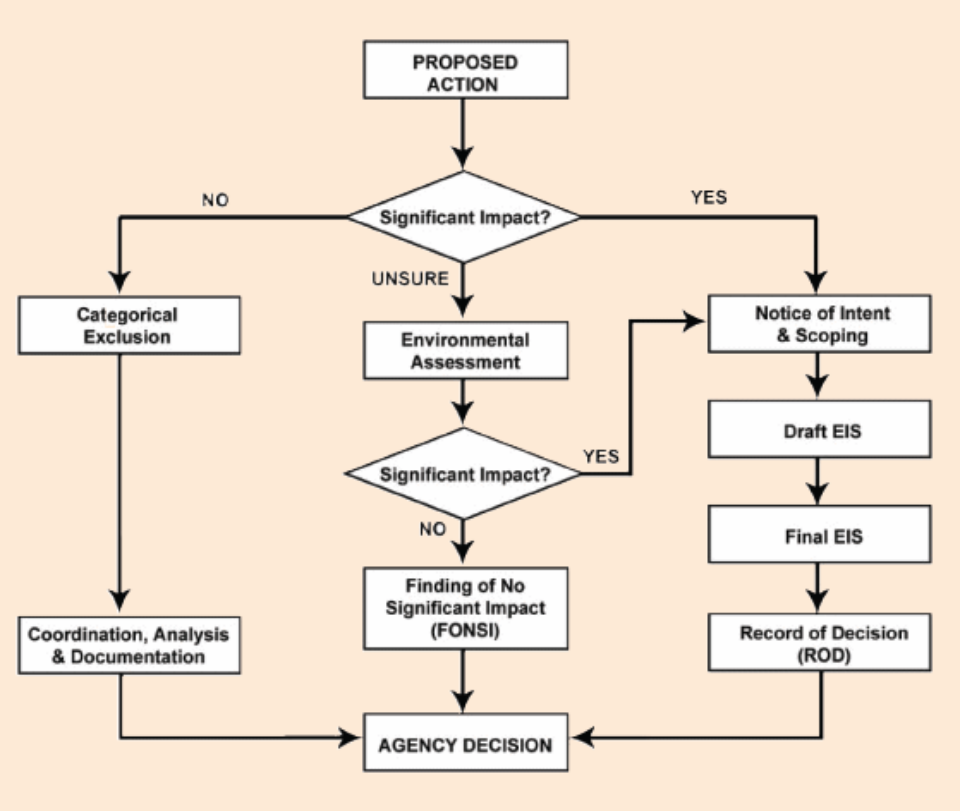

Figure 4-2: Flowchart of NEPA process (USDA, 2017)

Comment and objection periods are required throughout the process, as well as public forums and meetings at the lead agency's discretion. In addition to any legal requirements for public comment periods for EISs, many offices voluntarily hold additional public scoping periods for EAs when warranted. Additionally, within a single environmental impact assessments there are multiple opportunities to measure substantive NEPA effectiveness *within* each NEPA project, effectively increasing the potential for within-case analysis. Each of these phases of the NEPA process can be viewed as 'arenas' in which policy implementation takes place (Zhang et al. 2012). Further, examining two projects from the same national forest and county over a period of seven years allows for the identification of relevant stakeholders across NEPA projects and to observe changes in stakeholder trust over time. Trust levels can be traced to resulting NEPA

documents within and across the two projects to observe how levels of trust types interact with one another and inform NEPA effectiveness.

Data Collection

I collected data through archival research of USFS databases, requests for public meeting minutes from nearby municipalities, and FOIA requests for missing public comments. Initial contact with the USFS Boulder County Ranger District began on October 20th, 2021, and all data requested were received by December 7th, 2021. Appeals comments and meeting minutes from public forums could not be obtained due to a lack of electronic records, time constraints, and the study coinciding with the USFS overhaul of their electronic reading room for public comments. The bulk of the collected data are public comments from each of the scoping periods which took place Sept 6th -October 14th, 2011, September 4th – October 5th, 2015, and December 31st – January 30th, 2016.[1]

Investigative Techniques

Process tracing was my primary investigative technique. To augment the analysis of the cases, archival research and document analysis of US Forest Service Environmental Assessments, public comments, and other publicly available reports and publications provided me with the diagnostic evidence I needed to perform the process tracing. To measure trust, I coded public documents from the scoping phases of each of the NEPA projects. I coded 80% of the comments from Forsythe I and 30% of the comments from Forsythe II. The low count of

[1] Content analysis of existing documents does not require that the researcher interfere in the lives of any human subjects (Babbie, 2021). However, the public comments from the NEPA projects do include personal identifying information (PII). These PII were given freely during the NEPA project's requests for public comment. Due to these documents being used for research purposes which the original comment contributor was not aware of at the time of submitting their comments, efforts were made to safeguard the PII in the writing of the final research report. No PII is included in any part of the final report.

comments from Forsythe II is attributable in large part to the prevalence of identical, duplicate "form comments" promulgated by a local opposition group that garnered significant public attention. Due to a change in the data management methods of the U.S Forest Service during this project, I was unable to obtain appeals comments, indicated in the table with an N/A code. However, close reading and analysis of the data and project documents provided other forms of diagnostic evidence such as the number of appeals comments received for each project. For example, the first Forsythe project received two appeals, while Forsythe II received 26, indicating the escalating institutional distrust from the first project to the second.

I also measured each NEPA project for its' substantive effectiveness. I used content analysis of the gathered NEPA documents (Notice of proposed action, draft EAs, final EAs, final decision notices, etc.) to measure change within each project from beginning to end. Changes are defined as any alteration from one document sequentially to the next in response to public comment, such as a reduction in acres treated or the addition of further information in the environmental analysis or comparison of alternatives. Changes to the project design within a NEPA process in response to public input reflect a component of substantive effectiveness, acting as a proxy for understanding how substantively effective each project was. Taken together with other details of the cases, such as number of alternatives considered and the extent to which public input informed the changes made to the project design, we form an understanding of the rigor with which the agency conducted the NEPA process requirements. The Forsythe II project administrative record included a table of the changes that occurred throughout the project and the rationale for each change linking the project design alteration to either public input from the scoping phases or to a specific objection comment. I reviewed the EA documents for consistency and added a few columns of missing data. For Forsythe I, I created a table through document

analysis of EA documents using the same variables used by the USFS for Forsythe II (see results for tables).

Data Analysis

I employed the qualitative method of process tracing to trace stakeholder trust types and frequencies to variation in substantive NEPA effectiveness. Process tracing is defined as the "systematic examination of diagnostic evidence selected and analyzed in light of research questions and hypotheses posed by the investigator" (Collier, 2011). Process tracing is unique in its ability to gain greater understanding of the "how" in complex policy processes (Kay and Baker, 2015). The method is employed in political science and other fields to evaluate causal claims for within-case analysis and requires careful description and close attention to sequences of variables (George and Bennett, 2005; Collier, 2011). Process tracing is well-suited to my research questions because I aim to better understand what types of stakeholder trust and distrust matter, and how they interact with one another and operate within the NEPA decision-making process. Process tracing allows the researcher to collect and weigh evidence cumulatively throughout the process or event under examination, ultimately identifying the likelihood that the mechanisms under investigation are sufficient or necessary to bring about the observed change in the dependent variable.

CHAPTER 5 – RESULTS

In this chapter I present comprehensive accounts of the cases, using evidence from content analysis, coding, and archival research to trace the influence of stakeholder trust judgements to NEPA effectiveness. Throughout, I provide measurements of trust types and NEPA substantive effectiveness gathered from content analysis of public scoping comments and EA documents. These quantitative descriptive measurements serve as diagnostic evidence alongside the case details to illustrate how the sequences of events coincide with the measurements of trust and substantive effectiveness.

Forsythe I: Interpersonal Trust Moderates Institutional Distrust

When Forsythe I was first proposed, its stated purpose was to reduce hazardous fuels and manage for mountain pine beetle. Many stakeholders who commented on the proposal agreed that these were important goals, but some also expressed concern that the proposed treatment area would take place on land that had been managed in previous projects such as the 2001 Winiger Project and the Sugarloaf Project. The USFS held a public meeting on September 29th, 2011 which about 40 stakeholders attended, and sent out individual letters about the proposed project to 2000 recipients (Forsythe Fuels Reduction Project EA, 2012). A total of 135 comments were received during the public scoping period. Issues brought up by the stakeholders included completion of projects and funding, previously treated areas, concerns about managing for mountain pine beetle, project effects on wildlife, cutting of large diameter ponderosa pine, tree windthrow and blowdown after treatment, human health effects of prescribed broadcast burning, soil impacts, roads and trails, noxious weeds, scenery, many comments about an inadequate map, climate change, and an addition to the proposed treatment area.

Trust measurements during the public scoping period indicated interpersonal trust (net +9, see table 5-1), net positive, but low procedural trust (+1), and moderate institutional distrust (-9). The trust judgement data help paint a picture of the stakeholder trust landscape of the project. Despite some trepidation about past projects that had left debris in piles throughout the forests, many stakeholder comments expressed support for the USFS's aims and even asked for the agency to treat areas of the forest neighboring their properties that were not included in the original proposal. Requests for project expansion and general approval of the project plans coincided with statements of interpersonal trust. Comments referred to friendly interactions with the agency staff and indicated interpersonal trust through positive statements about or towards agency personnel such as, "I appreciate your apparent sensitivity to this issue," and "Jim knows us and where we live – again, we'd be happy to help in any way we can". The Forest Service subsequently expanded meadowland/shrubland treatment acres by 35% between the EA and the final decision.

Table 5-1: Forsythe I Frequencies of Trust Judgement Types

Project Phase	Interpersonal Trust	Interpersonal Distrust	Procedural Trust	Procedural Distrust	Institutional Trust	Institutional Distrust
Forsythe I Scoping	11	2	3	2	33	42
Forsythe I Objection	N/A	N/A	N/A	N/A	N/A	N/A
Forsythe I Net Trust	9		1			-9

When the comment period ended and a final EA was released, the environmental assessment for Forsythe analyzed only two alternatives - no action, and the proposed alternative. The Healthy Forest Restoration Act of 2003 (HFRA) prioritizes wildfire mitigation in NEPA planning and allows for the analysis of fewer alternatives. Prior to making a final decision, the Boulder Ranger District issued a notice on April 16th, 2012, soliciting objections from those who

had already commented or participated otherwise in the planning process for the project. Two formal objections were received. The Finding of No significant Impact (FONSI) for the project states that the objections were resolved through meetings and correspondence with the objectors. The Final Decision, made by District Ranger Sylvia Clark on August 3rd, 2012, selected a modified proposed action alternative that included minor changes to the original proposal such as a 7% reduction in total treatment acres (Table 5-2). The FONSI document states that the selected modified alternative was informed by the objection process.

Table 5-2: Forsythe Fuels Reduction Project Substantive Changes from Proposal to Final Decision

Forsythe I						
Type	**Forsythe I Initial Proposal**	**Forsythe I Proposed Action**	**Forsythe I Draft Decision (EA)**	**% Change from proposed action to draft**	**Forsythe I Decision**	**Percent Change from Initial proposal to final decision**
Total Acres Planned						
Total treatment acres		5214	5381	3.20%	5005	-6.99%
Patch cut size/clearcut size		N/A	N/A	N/A	N/A	N/A
% Of Unit treated in lodgepole		N/A	N/A	N/A	N/A	N/A
Lodgepole treatment acres		2235	2368	5.95%	2012	-9.98%
Lodgepole regeneration thin acres		N/A	N/A		N/A	N/A
Ponderosa Pine Treatments		1506	1540	2.26%	1533	1.79%
% Basal area reduction in mixed conifer treatment		N/A	N/A	N/A	N/A	N/A
Maximum diameter cut limit (inches)		N/A	N/A	N/A	N/A	N/A
Aspen Restoration Treatment Acres		296	209	-29.39%	209	-29.39%
Meadow/Shrubland Restoration Treatment acres		209	209	0%	283	35.41%
Broadcast burn		968	968	0%	968	0%
Defensible space acres		N/A	N/A	N/A	N/A	
No cut buffer	NA	N/A	N/A	N/A	N/A	N/A

The NEPA planning process for Forsythe I was completed on August 3rd, 2012, and implementation began shortly after. Despite existing institutional distrust of the agency and its previous operations that left some undesirable conditions in the forest, moderate levels of interpersonal trust between stakeholders and agency personnel appears to have insulated the NEPA process from stakeholder institutional distrust, at least temporarily, and resulted in a project with fewer substantial changes relative to the next iteration of the project.

In 2014 the USFS completed the first phase of Forsythe I implementation which included a large clear-cut in a highly visible location. The action resulted in public outcry and the formation of the Magnolia Forest Group (MFG) in September 2014. The MFG argued that the project negatively impacted recreation and aesthetics, quality of life, and property value. In October of the same year, the USFS published a supplementary information report (SIR) regarding the project. The SIR acknowledged that discrepancies between the Forsythe I environmental assessment and conditions on the ground had been identified by the public and acknowledged that design criteria in the EA may not have been precisely implemented in the field. Rather than recommend any further analysis, the SIR made the determination to halt the project.

Forsythe II: Institutional and Interpersonal Distrust Rises

The process was started anew in 2015 under the name Forsythe II with almost identical goals as the first Forsythe Project to reduce the severity of wildfire in the WUI and create more resilient forest landscapes. The need for addressing mountain pine beetle infestation was dropped, and instead the agency adopted a focus on forest restoration. The new project proposed to treat 3,800 acres under the Healthy Forest Restoration Act, in contrast with the 5,000 acres proposed in Forsythe I. Prior to publishing the project proposal for Forsythe II, USFS employees

attended a field trip organized by the MFG in April 2015. Public comments were solicited in September 2015 and ~2400 postcards sent out to stakeholders. On September 26th, 2015, the USFS hosted a public field trip about the proposed management project that was attended by 30 stakeholders. After issuing a more detailed proposed action incorporating public comments and input from the preliminary comment period and field trip, a formal comment period began on December 31st, 2015. The USFS received 374 comments on the proposed action. Measurements of trust judgement frequencies from the comments are provided in Table 5-2.

Table 5-3: Forsythe II Measures of Trust Judgement Types

Project Phase	Interpersonal Trust	Interpersonal Distrust	Procedural Trust	Procedural Distrust	Institutional Trust	Institutional Distrust
Forsythe II Scoping	8	15	11	10	15	58
Forsythe II Objection	N/A	N/A	N/A	N/A	N/A	N/A
Forsythe II Net Trust		-7	1			-43

Stakeholder comments from the early scoping phases of Forsythe II paint a picture of declining trust in all trust types except for procedural trust, which remained consistent between the two projects. Measures of institutional and interpersonal trust dropped significantly between the two projects (see table 5-3). A result of the significant institutional and interpersonal distrust in Forsythe II was an increase in public involvement. The Magnolia Forest Group (MFG) mobilized the public and extended the parameters of "affected stakeholders". Many comments came from people who resided far from the Forsythe proposed treatment area and who did not own property there. Comments included statements such as, "A catastrophic fire would actually probably be better than what you're doing"; "PLEASE STOP THE DESTRUCTION! We cannot continue on this path, or it will be the demise of our great forest" and, "One question. Why? It is not for fire prevention but a complete destruction of trees and lands. It's not right and you are all

wrong. Voicing my disdain and anger right now…. How can you sleep at night?" The comments indicate that, in the mind of the public, the Forsythe II project would become yet another “failed” forest management project.

Distrust in both the administrators and institutions fueled intense scrutiny of the proposed action as well as the agency itself. In response to the stakeholder distrust and active opposition, substantial changes to the project design and alternatives analysis were made throughout the NEPA process. Unlike Forsythe I which considered only two alternatives as allowed under HRFA for fuels reduction projects, Forsythe II considered four alternatives in addition to the no action alternative in the environmental assessment. Specific changes from the initial proposal to the proposed action in response to public input included the addition of old growth specific management activities, two emergency egress route options, a diameter cut limit to keep larger trees on the landscape, a decrease in the percentage of basal area reduction in mixed conifers and old growth retention, and a reduction to the percentage of a given unit to be clear-cut or patch cut by 30% (See table 5-4).

By the time a final decision was issued, the total treatment acres for Forsythe II were reduced by 17% with individual treatment types reduced by as much as 25%. Additional parameters were also added, such as limits to the size of clear-cuts and to the diameter of trees allowed to be harvested that the original Forsythe I had not considered in its EA.

When a draft decision for Forsythe II was issued and the appeals process still received 26 appeals letters with standing, the USFS made yet more changes to the project design criteria (Table 5-4).

Table 5-4: Substantive Changes in Forsythe II as percentage change

Forsythe II						
Type	**Initial Proposal**	**Proposed Action**	**Draft Decision**	**% Change from proposal to draft**	**Final decision**	**% Change from draft to final**
Total acres planned	3839	3901	3892	1.38%	3234	-16.91%
Total treatment acres	3540	3212	2855	-19.35%	2462	-13.77%
patch cut size/clear-cut size	1-5 acres/5-20 acres	1-5 acres/5-20 acres	1-5 acres/5-10 acres	-50%	1-5 acres/5-10 acres	0%
lodgepole unit acres	1496	1378	1482	-0.94%	1104	-25.51%
% Unit treated in lodgepole	80	50	30	-62.50%	30	0%
Lodgepole treatment acres	1197	689	445	-62.82%	331	-25.62%
lodgepole regeneration thin acres	not broken out	14	17	21.43%	17	0%
Mixed conifer treatment acres	1425	1594	1449	1.68%	1233	-15%
% Basal area reduction in mixed conifer treatment	50	40 (30 for old growth)	40 DF/50 PP/30 old growth	delineated between stand types, more precise	40 DF/50 PP/30 old growth	0%
Maximum diameter cut limit (inches)	none	16	14	-12.50%	14	0%
Aspen Restoration Treatment Acres	196	193	231	17.86%	189	-18.18%
Meadow/Shrubland Restoration Treatment acres	54	54	45	-16.67%	37	-17.78%
broadcast burn	968	968	968	0%	945	-2.38%
defensible space acres	not totaled	1969	2032	3.20%	2187	7.63%
No cut buffer	none	none	none	NA	653 (395 treatment area)	

Stakeholders that opposed Forsythe II project designs were ultimately brought into the decision-making and project implementation through a multi-party monitoring group agreement

between the USFS, the MFG, and other interested stakeholders. When the USFS issued their Final Decision for the Forsythe II project, the MFG wrote on their website, "While we still feel this project is misguided, we did make some inroads in the design of the project" (Long, 2017). Long's (2017) comments indicate some amount of satisfaction with the negotiations that occurred throughout the NEPA process, but institutional distrust remained ever present. Long (2017) listed the numerous changes that the USFS had made but reiterated that the work was not over yet. "We have not taken legal action off of the table. This will depend on whether the USFS acts in good faith with regards to the MMG (multi-party monitoring group), or whether it is just another opportunity for them to check a bureaucratic box. We are hopeful that this will be an opportunity for true collaboration to improve the project, but that remains to be seen" (Long, 2017).

Linking Changes in Trust and Substantive NEPA

Figure 5-1 shows the relationship between stakeholder trust types and final treatment acres as a percentage of the initial proposal. Where interpersonal trust was higher in Forsythe I (interpersonal trust +9), the final treatment acres as a percentage of the initial project proposal was 96%, demonstrating that fewer alterations were made to the project design during the NEPA process. Conversely, interpersonal and institutional trust dropped significantly in Forsythe II (institutional trust -43; interpersonal trust -7, see Table 5-1). Final treatment acres as a percentage of the initial proposal for Forsythe II was 70%. Though treatment acres are only one descriptive factor measuring substantive changes within the NEPA process, they point to the larger picture of change and rigor of analysis that occurred within the process.

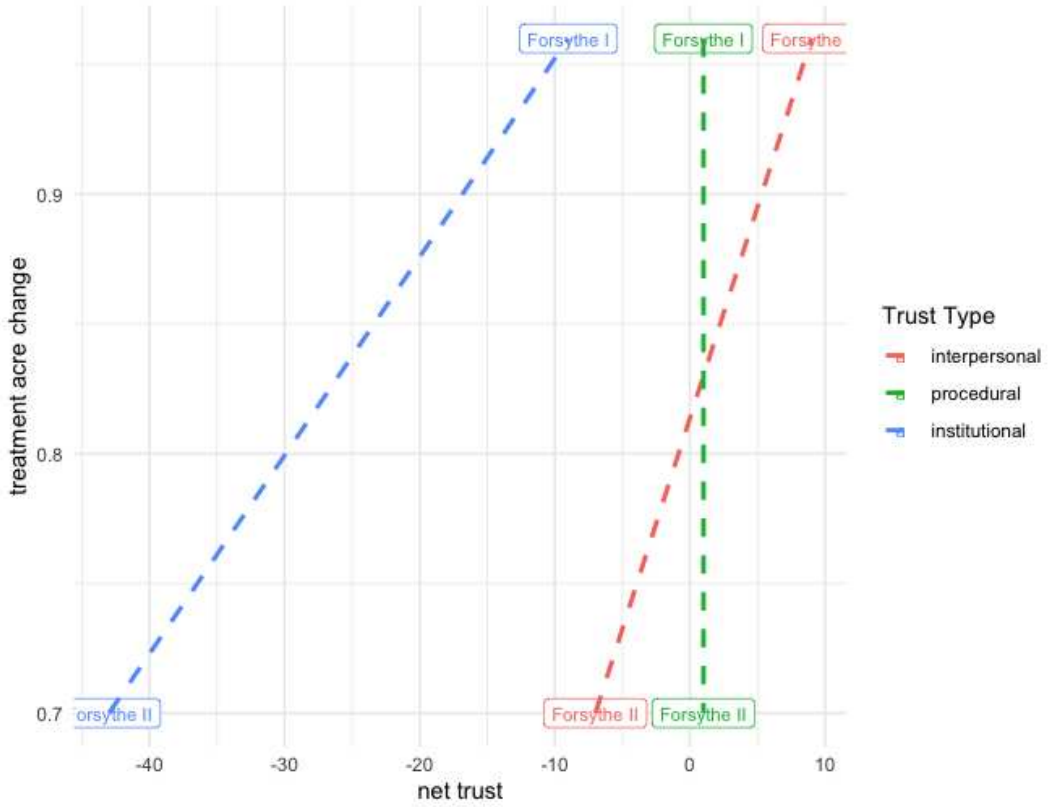

Figure 5-1: Linking stakeholder trust types to substantive NEPA effectiveness

Stakeholder's institutional trust altered the most in the study period, dropping from net -9 to net -43 in just five years, but interpersonal trust was present throughout the first Forsythe project and resulted in fewer changes to the project criteria and the bare minimum number of alternatives considered in the EA, suggesting that interpersonal trust acted as a counterweight to moderate institutional distrust.

Though one could argue that the opposing interpersonal trust and institutional trust might cancel one another out, the ways in which the agency responded to the stakeholder distrust suggests otherwise. During Forsythe I, where interpersonal trust was higher relative to other positive trust judgements, the USFS held only one public forum and analyzed only the two required alternatives (no action and proposed action) in its environmental assessment. The project design criteria altered slightly during Forsythe I and included additions to the treatment

area in response to a selection of stakeholder requests from the scoping period and in negotiation with objectors. The USFS only briefly justified its decision not to alter the project to align with other stakeholder input such as assessing climate impacts of the proposed action, concerns about managing previously treated areas, and social issues such as impacts to property value.

Forsythe II saw significant declines in measures of institutional and interpersonal trust following Forsythe I implementation. Active stakeholder participation took the form of petitions and a flood of public comments from stakeholders mobilized by the MFG. The USFS's approach to the increased stakeholder distrust was to evaluate more alternatives to the proposed action, attend a field trip hosted by the MFG in addition to holding their own site visit, and to negotiate substantive changes to the project design criteria to reflect public input (U.S. Forest Service, 2017). Though the alternatives considered did not vary significantly to the proposed action, they did offer more choices for implementation of the project relative to the first attempt at the Forsythe project which did not move beyond evaluating the minimally acceptable proposed action and no action alternatives. In the end, the district ranger selected a combination of the four alternatives and an agreement to form a multi-party monitoring group with the MFG to oversee project implementation. The final decision included reductions to the total treatment acres and safeguards for old growth, clear-cut size limits, and more defensible space acres that reflected the public's demands for project alterations.

CHAPTER 6 – DISCUSSION

The investigation of stakeholder trust types, their interplay, and how they inform NEPA substantive effectiveness highlights that trust is a complex and multidimensional concept. Though trust does not have a linear relationship with NEPA outcomes or outputs, when I consider the different dimensions of trust, I identify feedback and interactions among different trust types. Though my investigation considered a myriad of trust types (institutional, interpersonal, and procedural spectrums of trust and distrust), institutional distrust, interpersonal distrust, and interpersonal trust specifically played prominent roles in the Forsythe cases. While my study is of limited scope, here, I find two specific trust relationships that are worth further study.

First, interpersonal trust mediates the effect of institutional distrust on the substantive effectiveness of the NEPA process. Previous research asserts that individuals who believe an agency shares their values and is morally competent are less likely to become involved in natural resource planning activities (Smith et al. 2013; Parkins, 2005). Similarly, I found that the stakeholders who expressed interpersonal trust in USFS personnel were less likely to significantly oppose project plans, resulting in less substantive changes to the project within the NEPA process. From a bounded rationality perspective, the reason for this might be that individuals who trust the forest administrators do not feel compelled to question their decisions because they already trust that the administrators are looking out for their best interest. Simply, even if the public does not trust the institution of the U.S. Forest Service, trusted administrators may be able to reduce the burden and required changes to complete a NEPA process. Of course, this may not mean the resulting assessment is of higher quality. The agency may not feel the

need to assess a wider range of alternatives if public scoping reveals that stakeholders are generally trusting of the administrators.

Second, stakeholder institutional and interpersonal distrust results in more substantive changes in the NEPA environmental assessment process. A large majority of trust judgements measured within the Forsythe I and II projects were statements of institutional distrust, suggesting that those who participate in natural resource planning processes are those individuals who do already do not trust the agency. If we do not trust the experts or the institutions they work for, then we are more likely to scrutinize their actions and want to influence the outcome (Parkins, 2005). Distrust, whether interpersonal or institutional, may stimulate public involvement in natural resource planning (Smith et al, 2013, Parkins, 2005). In this way, institutional distrust may act as a catalyst for public discourse and civic engagement (Sunstein, 2003; Warren 1999). This finding corresponds with the public administration theory of external reform. The external reform theory posits that interactions between the agency and the public will lead to the agency incorporating public concerns and contributing to democratic effectiveness (Culhane et al., 1986).

These findings align with my two guiding propositions established in chapter three; Higher levels of interpersonal trust relative to other positive trust judgements corresponded with less substantive changes to the project within the NEPA process, while higher institutional and interpersonal stakeholder distrust relative to other trust and distrust types resulted in a more substantively effective NEPA process.

A critique of these findings is that NEPA regulations anticipate that controversial projects will generate more robust NEPA analysis. My findings do not dispute the fact that the USFS anticipated that Forsythe II would be met with greater opposition. Rather, the results show that

institutional and interpersonal distrust are driving social factors within controversial natural resource management conflicts. I make the argument that it is those specific types of distrust within controversial settings that inform how the agency responds in the NEPA planning process.

Finally, procedural trust remained constant throughout the two Forsythe cases and did not allow for me to observe how changes in procedural trust interacted with other trust types. However, I found that stakeholders commonly expressed simultaneous trust in procedures and distrust in institutions and administrators, suggesting that a baseline level of procedural trust might motivate stakeholders to engage in planning processes even when they do not trust the agency or the experts. Procedural trust did not appear to have any effect on other types of trust in the cases explored here, but it could allow for distrusting stakeholders to act in planning processes that will inform NEPA substantive effectiveness by decreasing their perception vulnerability (Coleman & Stern, 2015). In short, faith that the democratic procedures in place will allow for a fair outcome, regardless of whether the agency or administrators are trusted, enables stakeholders to attempt to influence planning outcomes (Coleman and Stern, 2015; Davis et al. 2018).

Policy Implications

Through improved understanding of the nuanced ways that stakeholder trust judgements inform the NEPA planning process, the USFS can better allocate resources to addressing specific areas of contention. One major finding in this study was that institutional distrust remains salient even in projects that benefited from a foundation of improved stakeholder collaboration. Though the focus of this study was on the social factor of trust as an independent variable impacting NEPA projects, it would be short-sighted not to consider here in the discussion the long history of clientelism between the USFS and timber industry in the American West, and how history

might still inform how stakeholders perceive the USFS. While history cannot be undone, the USFS must grapple with how its past informs its present actions today.

Though my findings suggest that interpersonal trust can mediate institutional distrust and reduce the burden and required changes to complete a NEPA process for the USFS, I do not suggest that administrators focus solely on improving a single trust type. As mentioned above, a reduction in regulatory burden and conflict does not imply that the process was of higher quality. A NEPA process need not be conflict free to be considered effective by the agency. As the second finding and previous research shows (Smith et al. 2013), distrust of institutions or administrators can fuel public involvement and encourage the agency to widen the scope of their alternatives assessment and improve the substantive effectiveness of their environmental assessments.

Forest management, especially in the wildland-urban-interface, requires that land management agencies negotiate with stakeholders about which values are prioritized. While the process of negotiation can be improved, it will almost always involve some amount of disagreement. An effectively administrated NEPA process utilizes these points of disagreement to improve the quality of the environmental analysis and aid the agency in considering a more robust range of project alternatives they may not have considered without the inclusion of the public.

Based on my findings, I echo others in their call for the U.S. Forest Service to look beyond public involvement as a procedural requirement and instead employ a more deliberative, interactive, early, and ongoing approach to engaging with stakeholders (Parkins, 2003, Shepard and Bowler, 1997; Reed et al. 2018). To accomplish this, the USFS might consider conducting more in-person field-site visits and public forums to facilitate stakeholder interpersonal and

institutional trust. Where feasible, the agency should hold more deliberative-style conversations between the agency and stakeholders, perhaps utilizing trained objective facilitators to work through tensions that arise during the planning process.

Additionally, the USFS should not avoid conflict and distrust at all costs. Constructive stakeholder distrust may fuel more robust democratic processes that will improve the environmental assessment process and ultimately allow for meaningful engagement and deliberation to translate stakeholder values into the planning process, even in seemingly intractable resource conflicts. Even when not legally required to do so, the U.S. Forest Service should consider assessing a wider range of alternatives in an environmental assessment. Ideally, a proposed action will be formulated with input from diverse stakeholders prior to the issuance of the proposed action document and with ongoing communication throughout the process outside of formal comment and appeal periods.

Accomplishing these goals will require well-trained agency NEPA and public engagement personnel, efforts to reduce employee turnover, and a paradigm shift in the way the USFS utilizes the NEPA process. Rather than viewing NEPA requirements as a ceiling, they should implement the policy with creativity and attention to specific place-based contexts (Reed et al. 2018). From a resource allocation perspective, this approach may be especially pertinent in locations of higher population density and socio-economic status where agency actions are more visible, have greater social impact, and where opposition to forest management activities is more likely (Stern et al. 1993). Importantly, agencies and stakeholders must negotiate and determine together what a successful project means within the context of specific, place-based conditions. Normative NEPA effectiveness is an essential part of those discussions between the managing agency and impacted stakeholders.

My results also contribute to the perennial debate on NEPA modernization and whether the policy needs to be updated (Luther, 2007). Some scholars disagree that the NEPA process can ever bring about real public deliberation. Poisner (1996) argues that the NEPA process as described in the law and CEQ regulations actively discourages dialogue and escalates political tensions between stakeholders and federal agencies. The synoptic model of planning on which NEPA is based, he argues, is incompatible with the reality of cultural concerns (Poisner, 1996). "The scientific world view cannot analyze the public interest in terms of ethical relationships and value choices" (Poisner, p.17, 1996). While I do not argue that NEPA's use historically has often stymied democratic processes, I do not anticipate that NEPA will be altered to reflect concerns like Poinser's. More realistically, any changes made to NEPA, especially under conservative administrations ("CEQ Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act," 2020), will limit the public's ability to engage in the decision-making process and exacerbate the risk of litigation, leading to a ratcheting up of inauthentic public engagement to hedge the risk of litigation.

I assert that NEPA *must* grapple with the public interest, ethical relationships, and value choices, and it can do so if NEPA is viewed as the floor, rather than the ceiling, of public engagement. Based on the literature and my findings, there is substantial opportunity within the existing legal framework for improved NEPA implementation and higher quality environmental impact assessment. Stakeholder trust and distrust can and should be considered as agencies implement NEPA processes and work to incorporate constructive forms of distrust into the design and analysis of environmental impact assessment. Rather than attempting to alter the statute or CEQ regulations, federal agencies should allocate resources to better support NEPA planning personnel in recognition of the vital importance of robust planning efforts to the long-

term accomplishment of agency missions. In short, natural resource management decisions cannot be separated from the political reality they exist within. The "best", most evidence-based decision-making is at risk of failure if stakeholder concerns, and by proxy the concerns of political actors at successively higher levels, are not brought into the process and negotiated into the final decision.

Limitations

Methodologically, my analysis has limitations that should inform future research designs on trust and policy implementation I relied on reconstructing the NEPA processes from the available administrative record. The nature of the NEPA process for Forsythe I and II was such that public involvement occurred infrequently, so my measures of trust are "point in time" data. Public forum meeting minutes were not available and stakeholder interviews were not viable due to the length of time since the Forsythe projects occurred. While I set out to obtain appeals comments from each project as well, ultimately these were unavailable. Future research might be replicated on ongoing NEPA projects where the researcher can gain access to additional sources of trust judgement data from public meetings, field visits, and interviews.

Conclusion

In summary, this research contributes to the literature on stakeholder trust in natural resource planning by providing empirical evidence of the complex trust environment and its effects on USFS project planning. This work sheds light on the myriad ways in which trust judgements interact with one another and inform the NEPA planning process. My findings highlight the tension that the U.S. Forest Service faces in building trusting relationships with stakeholders to allow more efficient NEPA planning processes without sacrificing the integrity

of the democratic ideals of NEPA that stakeholder distrust can fuel. It also speaks to the debate over NEPA effectiveness and whether the law should be updated.

Public land management is inherently political. Rather than viewing it as a procedural barrier, the USFS should view the NEPA process as a tool to be implemented with "both common sense and imagination" (Bear, p. 932, 2003). In regions like the U.S. Mountain west where the effects of climate change and urban growth are increasing significantly, effective NEPA projects are at the center of critical land management projects that seek to give the USFS more discretion, flexibility, and efficiency to keep up with rapidly changing conditions on the ground. Better understanding the roles and functions of stakeholder trust on the NEPA process will help inform how the USFS implements NEPA more creatively to better meet rapidly changing environmental and social conditions.

In terms of future research, it would be useful to extend the current findings by examining how the past five years of multi-party monitoring between the USFS and the Magnolia Forest Group has impacted stakeholder trust. Has the formation of more collaborative processes in this specific case resulted in less extreme institutional distrust or an increase in interpersonal trust? Future work might also examine the environmental outcomes of USFS NEPA projects and how trust types informed different aspects of NEPA effectiveness such as normative or transactional effectiveness.

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