

# Institutions That Influence Cross-Boundary Forest Management: Four Cases of Shared Stewardship in Practice

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## Abstract

The USDA Forest Service's 2018 Shared Stewardship Strategy emphasizes the need to coordinate work with actors across boundaries to increase the pace and scale of land management, particularly as it relates to forest restoration and wildfire mitigation. We researched how the Strategy was being implemented at the project level by conducting forty-four interviews with individuals closely involved with four large-scale cross-boundary hazardous fuels reduction projects. Our objectives were to identify institutions that facilitated and challenged cross-boundary work under the Strategy and document how actors innovated to overcome challenges they encountered. We found that Shared Stewardship had the greatest opportunity to shift the larger forest management paradigm within states that created new institutions specifically to support the Strategy and its objectives. However, numerous institutional challenges such as yearly funding levels and complex bureaucratic requirements, frustrated efforts to increase the pace and scale of management actions under the Strategy.

**Study Implications:** We conducted research on cross-boundary projects that met the intent of the USDA Forest Service's Shared Stewardship Strategy. We found that the cross-boundary tenets of the Strategy were best supported when states worked together with the federal government to create new institutions that facilitate multijurisdictional work. Our interviewees said that various bureaucratic hurdles remain difficult to navigate, and that they believe annual funding appropriations are not currently enough to support significant increases in the pace and scale of management. Our interviewees said Shared Stewardship supported cross-boundary actions, but more remains to be done to best support multijurisdictional work.

**Keywords:** Shared Stewardship, cross-boundary, hazardous fuels, governance

Wildfire is increasing across the United States in intensity and extent and particularly in higher elevation forests (Higuera et al. 2021; Noss et al. 2006; Oswalt et al. 2012; Westerling et al. 2016). To address this, land-management agencies like the USDA Forest Service (USFS) are planning management actions to reduce fire hazard across large landscapes (i.e., “landscape-scale” management) (Hanberry et al. 2015; USDA Forest Service 2018). The Infrastructure Investment and Jobs Act of 2021<sup>1</sup> and the Inflation Reduction Act of 2022<sup>2</sup> increased funding to United States (US) land-management agencies to reduce fire hazard in the wildland–urban interface (WUI) and important watersheds; the USFS has developed a wildfire crisis strategy<sup>3</sup> to deploy these new funds to priority areas. In the WUI and elsewhere, the USFS, which is the largest forest and fire management entity in the US, does not have the jurisdiction or capacity to control wildland fire outcomes on its own under current and expected future conditions (USDA Forest Service 2015). This reality necessitates that the agency work with partners (i.e., other landowners/managers/organizations with capacity or jurisdiction to accomplish work). Institutional legacies can insulate the USFS from outside influence and complicate partnerships, although

this is changing, as the agency is increasingly part of a networked governance system (Abrams et al. 2019).

In recent years, congressional and agency leaders have emphasized the need for collaboration and cross-boundary work to increase the pace and scale of forest management actions. This need was articulated, for example, by the USFS's 2018 Shared Stewardship Strategy (hereinafter referred to as the Shared Stewardship Strategy, Shared Stewardship, or the Strategy), which encouraged federal partnerships with states, tribes, and other collaborative partners to jointly prioritize landscapes, leverage diverse capacities, and work across jurisdictions to meet forest management objectives, with a particular emphasis on wildland fire management (USDA Forest Service 2018). Since 2018, the USFS has developed memorandums of understanding with states across the country designed to facilitate Shared Stewardship, with some states creating new institutions, including new positions or project prioritization strategies, to support the Strategy (Kooistra et al. 2021). In this article, we report on research on case studies of Shared Stewardship in the US West, investigating (1) what policies and other institutional factors facilitate and challenge cross-boundary work and (2) how actors find innovative

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ways forward. This work is relevant for understanding the factors that facilitate and impede cross-boundary efforts to restore forest conditions and reduce fire hazard.

## Background and Literature Review

Theories that integrate policy implementation and institutional innovation are useful to understand how policy direction is implemented in the field and adjusted for local contexts. Institutions are the structures, rules, laws, norms, and socio-cultural processes that shape human actions (Steelman 2010; Thelen 1999); together, institutions and actors make up a governance system. Policy implementation theories examine how individual policies (a type of institution) are implemented on the ground. They explore why we see consistency in implementation, usually due to “top-down” factors that affect all actors, such as incentives, organizational capacity and structure, and high-level policy direction; implementation theory also explores why there is variability in implementation across units due to “bottom-up” factors, such as local leadership, other local actors, and local capacities (DeLeon and DeLeon 2002; Matland 1995; Sabatier 1986; Steelman 2010). In thick institutional contexts (explained more below), bottom-up factors, such as local leadership and partnerships, can mean that actors mix and match different institutions in a way that results in differential policy implementation.

Moseley and Charnley (2014) incorporate ideas from both policy implementation theory and historical institutionalism and apply it to forest management. They note that although there may be political support to create new institutional structures, support rarely materializes to completely remove old ones; this results in the layering of institutions over time (i.e., institutional thickness) (Abers and Keck 2013; Pierson 2004). Drawing on Berk and Galvan (2009)’s “creative syncretism,” they explain that although existing institutions shape and constrain policy implementation, actors also can actively combine and shape institutions to fit their needs, particularly in thick institutional contexts like land management; this results in institutional innovation, where institutions are creatively mixed and matched, used in new ways, or selectively evaded (see also Steelman 2010). In addition to traditional top-down and bottom-up variables, they emphasize the importance of local biophysical, economic, and socio-political conditions to understand policy implementation and institutional innovation in the context of national forest management. Other studies have similarly emphasized the importance of local factors, including collaborative history, capacity, and leadership within partner agencies and organizations as variables affecting differential implementation and innovation of collaborative, cross-boundary land-management efforts operating under the same policy context (e.g., working with the Collaborative Forest Landscape Restoration Program or CFLRP<sup>4</sup> and Good Neighbor Authority or GNA<sup>5</sup>) (Bergemann et al. 2019; Bertone-Riggs et al. 2018; Cyphers and Schultz 2019; McIntyre and Schultz 2020).

Scholars continue to explore factors that affect cross-jurisdictional and collaborative forest management in the US, as federal forest managers are increasingly working with an array of partners to achieve their missions (Abrams et al. 2017; Maier and Abrams 2018). Research highlights the need to adapt existing institutions to new contexts and persistent challenges, including insufficient funding, inadequate capacity, and complex and inflexible bureaucratic requirements

(Butler and Koontz 2005; Charnley et al. 2020; Kelly et al. 2019; Timberlake et al. 2021). With the publication of the Shared Stewardship Strategy, there was an opportunity to continue to study implementation of new policy direction and how institutional innovation might be necessary to support implementation of large-scale cross-boundary hazardous fuels work called for in the Strategy. The Strategy built on recent efforts such as the CFLRP, GNA, and the Joint Chiefs Landscape Restoration Partnership (JCLRP),<sup>6</sup> which all incentivize collaboration and cross-boundary management. The language in the Strategy emphasized the need for partnerships and creative use of policies and contracting mechanisms to work across boundaries to address increasing wildfire hazard, highlighting the need to work with state forestry agencies, tribes, and other partners (see Kooistra et al. 2022 for additional detail). Many details for the Strategy’s implementation were left to state-level agreements between the USDA or USFS and state governments. Research on the Strategy at the state level found that capacity- and funding-limited land managers planned to take an “all-of-the-above” approach, using an array of existing funding and policies to accomplish the aim of the Shared Stewardship Strategy (Kooistra et al. 2022). Given the urgency of accelerating cross-boundary, collaboratively designed fire-hazard reduction projects, we were interested in expanding on previous work that looked at state-level plans to undertake Shared Stewardship. We took a case-study approach to understand what existing factors affect attempts to implement Shared Stewardship efforts in practice and where actors find a need to undertake institutional innovation to accomplish their goals.

## Methods

This study purposively sampled cross-boundary forest management projects across the western US that incorporated the larger-scale, cross-boundary goals of the Shared Stewardship Strategy and were focused primarily on hazardous fuels reduction objectives. We first selected case candidates by communicating with USFS national, regional, forest, and district leadership and reviewing agency reports on Shared Stewardship efforts to identify projects that shared similar objectives of hazardous fuels reduction within the WUI and met the intent of the Strategy. We then aimed to select projects across regions, anticipating that state and regional leadership might be important factors leading to variability across cases. We selected cases from this list that were farthest along in planning and implementation but were still underway to provide insights on our research questions. Because we required projects that were through the planning phase and implementing work, three of the four projects that we identified had begun several years before the Strategy’s publication. Ultimately, of the forty-five potential projects we were able to identify during our search, we selected the Wildfire Adapted Missoula Project in Montana (WAM Project), the Scattered Lands Project in Idaho (Scattered Lands), the Craggy Vegetation Management Project in California (Craggy Project), and the Beaver River Improvement Project in Utah (Beaver River Project). See Table 1 for a more detailed breakdown of the projects and associated details. We selected cases that our project contacts and contacts at regional levels of the USFS said were operating in a different manner than “business as usual” and used novel or novel-to-the-area strategies to work cross-boundary—whether that be creative uses of

**Table 1.** Breakdown of basic project information.

Project (size in acres)	State/national forest	Key prioritization strategies	Key community outreach Strategies	Key treatment strategies	Key authorities/funding Mechanisms/Contracts Used	Project website
Wildfire Adapted Missoula (455,787)	MT/Lolo	Collaborative dialogues occurred among partners and with members of the public. Missoula Ranger District also worked with Rocky Mountain Research Station to produce fine-grained risk and hazard mapping to facilitate discussions.	USFS partnered with National Forest Foundation and Missoula County to hold public meetings and field tours.	Mechanical treatment/timber harvest/prescribed fire on federal lands, mechanical work on non-federal land, linking treatments	JCLRP, GNA, Wyden Agreements	<a href="https://storymaps.arcgis.com/stories/ea1f3b222598441b-b9adf-c2740200a57b">https://storymaps.arcgis.com/stories/ea1f3b222598441b-b9adf-c2740200a57b</a>
Scattered Lands (173,942)	ID/Idaho Panhandle	Collaborative dialogues occurred among partners and with members of the public to determine where treatment was most needed, where treatment had already been completed, and where NEPA analyses had already been completed so that treatments could be linked together quickly.	USFS, IDL, Bonner County, and NRCS held targeted community meetings followed by mailings and site visits.	Mechanical treatment and timber harvest, linking treatments	JCLRP, GNA, Idaho Shared Stewardship funds	<a href="https://www.idl.idaho.gov/noboundariesforestry/scattered-lands-hazardous-fuels-project/">https://www.idl.idaho.gov/noboundariesforestry/scattered-lands-hazardous-fuels-project/</a>
Craggy Vegetation Management (29,000)	CA/Klamath	USFS and Yreka Area Fire Safe Council worked together to prioritize treatment locations with input from local community members. CAL Fire also was included in prioritization dialogues.	USFS worked with the Yreka Area Fire Safe Council to message project objectives to local communities.	Mechanical treatment/prescribed fire on federal lands, mechanical work on non-federal lands, linking treatments	JCLRP, GNA, CCI Grants, Integrated Resource Contracts	<a href="https://www.fs.usda.gov/detail/r5/land-management?cid=fseprtd604086">https://www.fs.usda.gov/detail/r5/land-management?cid=fseprtd604086</a>
Beaver River Improvement (60,000)	UT/Fishlake	USFS worked with the local fire warden and local government organizations to prioritize treatments around values at risk.	USFS, Utah Department of Forestry, Fire, and State Lands built and maintained long-standing personal and professional relationships to communicate project objectives to local landowners.	Mechanical treatment around values-at-risk, followed by landscape-scale prescribed fire	Utah Shared Stewardship Funding, Utah Watershed Restoration Initiative Funding, Utah State Catastrophic Fire grants	<a href="https://utah-shared-stewardship-utahdnr.hub.arcgis.com/pages/beaver-river-project">https://utah-shared-stewardship-utahdnr.hub.arcgis.com/pages/beaver-river-project</a>

*Note:* CCI, California Climate Investment; GNA, Good Neighbor Authority; IDL, Idaho Department of Lands; JCLRP, Joint Chiefs Landscape Restoration Partnership; NRCS, Natural Resources Conservation Service; USFS, Forest Service.

authorities, new methods of collaboration with partners, or some other innovation. In summary, the projects that we studied were identified in USFS reports on Shared Stewardship or in communication with the regional offices as ones that were using innovative strategies to accomplish the goals of Shared Stewardship and were through planning and into implementation. Limitations to our sample are that other important measures of success, such as inclusivity of partners or promoting environmental justice, were not explicitly a factor in identifying cases for this research. In addition, reports of novel practices were filtered through the lens of the USFS as an organization and may be biased toward projects that had strong connections to the regional offices.

We used qualitative methods to understand in detail key actors' perceptions surrounding cross-boundary project prioritization, planning, and implementation. We conducted confidential semistructured interviews, using a list of questions with some flexibility in the interview structure for interviewees to expand discussion based on their expertise and experience. Our interview guide focused on partners and their roles within each project, prioritization processes used, collaborative communication and outreach strategies, project funding sources, specific cross-boundary and internal organizational policies, and perceptions on the overall influence of these factors (see [Appendix S1](#)). We contacted project line officers or coordinators to determine an initial list of key project players to sample that could provide insight into the project. We then used "snowball" sampling, a method where interview participants give recommendations for additional interviewees, to bolster our participant cadre. Interviewees included USFS, other federal, state, and local government agency personnel, nongovernmental organization employees, collaborative group members, and industry partners. We interviewed until we reached saturation (i.e., we were not hearing new information regarding our questions) or until we could not identify additional participants with knowledge about our projects. We contacted fifty-four people and forty-four accepted our interview request, for a total of eight to fourteen per project. We note that this sampling strategy potentially overlooks partners that had the potential to be involved in projects but were not for various reasons.

Data were collected during the summer and fall of 2021. Our interviews lasted 30–90 minutes and were conducted either in person, over the phone, or via video call. They were recorded with the informed consent of our participants according to a human subjects research protocol approved by the Colorado State University Institutional Review Board. We transcribed these interviews verbatim using the third-party software "Otter.ai," checked them for errors, and then uploaded cleaned and deidentified versions to the qualitative data analysis program "Dedoose." We then used systematic coding to organize and analyze our data. Codes were developed emergently from the data based on our research questions and sensitizing concepts in the literature, both of which shaped our interview guide (see [Appendix S1](#) for our interview guide). A codebook was collaboratively built by our research team, using a process to develop intercoder agreement on the breadth and application of codes based on an initial set of five interviews (see [Campbell et al. 2013](#)). The first author then coded all interviews independently, and code applications were spot-checked by members of our broader research team. From the analysis facilitated by these codes, which we aggregated into major themes, we produced the results

and discussion found in the following sections. Additionally, we selected quotes from our interviewees (each denoted by a unique number) to illustrate key concepts in participants' own words.

## Results

Our results are presented by research objective. We present the most common themes in our data first.

### Factors Facilitating Cross-Boundary Work

Our interviewees most commonly highlighted four critical factors that facilitated cross-boundary work: additional funding, project coordinators, preexisting networks and partnerships, and GNA. Interviewees spoke positively about additional funding sources they had accessed beyond typical annual appropriations that allowed projects to add staff capacity, attract additional partners, plan and implement work across larger landscapes, and fund hazardous fuels reduction on private lands. Two projects had been awarded JCLRP funds, and a third was in the process of applying for these funds during our interviews. This program, interviewees said, allowed project partners to fund hazardous fuels reduction on both federal and private lands. In the WAM Project, interviewees said Joint Chiefs' funding also allowed them to have a project NEPA coordinator (i.e., planner for conducting required analysis under the National Environmental Policy Act [NEPA] of 1969), a position that several interviewees said was crucial for successfully navigating the project's complex environmental assessment, given the large involvement of stakeholders and partners, and the local district leadership's desire to collaborate with these parties throughout the process. In the Beaver River and Scattered Lands Projects, interviewees discussed how additional funds from their state's respective Shared Stewardship programs positively affected each project. When the Beaver River Project was awarded funding, interviewees said the influx of state funding under the Utah Watershed Restoration Initiative, which supplemented state-level Shared Stewardship funds, led to a significant expansion in the number of partners and accelerated implementation. They also spoke positively of Utah Catastrophic Fire grants that funded fuels treatment on private properties. Scattered Lands Project interviewees said that although the state of Idaho did not provide much direct funding for project implementation, state-level Shared Stewardship positions played important leadership and coordination roles. Craggy Project interviewees emphasized the importance of California Climate Investment (CCI)<sup>7</sup> funds for completing project work after plans for a new mill fell through. Interviewees in all projects discussed federal funding sources that allowed partners to fund hazardous fuels reduction on private lands, an important complement to work on federal and state lands. Most important, according to interviewees, were Steven's Hazardous Fuels Grants<sup>8</sup> and the Environmental Quality Incentives Program (EQIP)<sup>9</sup> appropriations. Interviewees said these funds were critical to strategically reducing fuels across landscapes where private land intermixed with federal and state ownerships.

Some projects used jointly funded project coordinators, and interviewees described the importance of these positions in facilitating communication and work across organizations. The Scattered Lands Project benefited from Shared Stewardship coordinator positions jointly funded by the state

of Idaho and the USFS to lead the project and its diverse contingent of stakeholders, whereas the WAM Project used the Missoula County and USFS jointly funded “Wildfire Preparedness Coordinator” to serve as a bridge between actors, including Missoula County, members of the public, and the Missoula Ranger District. Interviewees in these cases were unequivocal that these jointly funded coordinators were crucial to the success of their larger-scale endeavors by organizing partners across boundaries and facilitating effective communication and strategic planning throughout the life of each project.

Whether institutional arrangements that facilitate communication and collaboration were well established or novel, actors in all projects tapped into existing professional networks and relationships to facilitate projects, going above and beyond traditional practices. Beaver River Project interviewees described how the USFS leveraged its long-standing connections with state agencies and local governments to discuss treatment locations, treatment plans, and engage private landowners when new opportunities arose to fund projects within the Beaver River watershed. As one interviewee put it:

*What has made us successful, I truly believe it's the partnerships...And I believe that relationships first create excellent projects later, and that you've got to build those relationships with your partners. I think that's something that we've done over the last 15 years. I think that's what's making it successful. It's our partners – we're all committed to doing what's right on the ground. (Beaver River 3)*

Interviewees in all projects emphasized that the long-standing professional relationships between organizations minimized the amount of learning between organizations that needed to occur and provided a foundation of trust when projects encountered challenges.

Across all projects, interviewees considered the GNA to be an essential policy tool for bridging capacity gaps. They spoke positively of the utility of GNA for leveraging state resources and bypassing complicated federal contracting requirements. One Beaver River Project interviewee explained:

*[The state] is actually implementing the contract. We gave them the dollars, we helped them write up the prescription, and they're actually implementing it for us, which is a huge boost to us. It definitely lightens our load and helps them out because they didn't have the funds to get everything done that they wanted on their side. (Beaver River 1)*

This general sentiment held across projects. Within the Scattered Lands Project, line officers opted to execute all planned federal timber sales through GNA.

### Factors Challenging Cross-Boundary Work

Our interviewees identified five major factors that challenged cross-boundary work. These included insufficient funding, communication issues, internal organizational processes, general capacity gaps, and mismatched organizational timelines. People said that regular appropriations were insufficient to scale up projects compared to past endeavors. Several interviewees associated with the WAM Project expressed concern that the project might lose momentum if a replacement for their expiring Joint Chiefs' funding could not be found. As one person stated, “*Jumping from one grant to the other*

*is not going to suffice. We don't want to over-promise or over-commit, and then under-deliver on everything that we have going on” (WAM 10).* The Craggy Project experienced similar uncertainty. One interviewee stated that it was lucky that CCI provided funding opportunities around the same time the planned mill failed to materialize. Across the board, interviewees were clear that their projects were unlikely to have progressed very far without additional funding opportunities and expressed concern about lack of funding in the future.

Existing communication strategies with members of the public also were perceived to present difficulties. Interviewees with the WAM and Scattered Lands Projects said that they believed that existing protocols for public engagement by federal agencies were insufficient for communicating with the public about large-scale hazardous fuels reduction work. Interviewees associated with the WAM Project said that they expected that significant engagement with the greater Missoula community would be required due to past conflict related to hazardous fuels reduction work. Similarly, Scattered Lands Project partners also anticipated hesitancy concerning their efforts, which they attributed to local patterns of distrust toward government organizations rather than any specific past action. Interviewees for this project stated they believed they would need to go above and beyond traditional engagement practices to bring local communities to the table and successfully affect fire risk across boundaries.

Interviewees discussed challenges related to individual organizational processes. One USFS line officer discussed how hiring complexities forced them to prioritize filling one position over another, even though adequate funding was available and each position was deemed critical to their project's long-term objectives. Many Scattered Lands Project interviewees mentioned Natural Resources Conservation Service (NRCS) information rules as a critical challenge related to prioritization efforts within their landscape. These rules prevented the NRCS from sharing information identifying private parcels treated using EQIP, posing a problem to land managers seeking to strategically link treatments between different ownerships, given the prominent role NRCS plays engaging private landowners.

Interviewees in multiple projects also cited internal organizational capacity constraints as a persistent problem. Some said that USFS contracting and grants and agreements departments were limited in capacity, and that the combination of this limitation and the general lack of staff to complete environmental analyses under NEPA and implement planned work prevented the USFS from increasing the pace and scale of management activities. In some instances, interviewees discussed how limited local industry capacity also formed an upper ceiling of hazardous fuels reduction work that could be potentially completed. Causes for this limited industrial capacity identified by our participants included challenging economic factors such as high extraction costs and low value for harvestable timber. Interviewees closely tied to the forest products industry expressed concern that unless industry capacity could expand, large-scale restoration activities would be consistently hampered because, in some geographic locations, there is not an adequate implementation force to complete planned work.

Some interviewees discussed how differing budgetary timelines among agencies made it difficult to communicate deadlines. An example given by WAM Project interviewees

was how the USFS and the NRCS could not reapply for Joint Chiefs' funding due to a mismatch of budget timelines. Because of miscommunications around these timelines, the NRCS did not have the available capacity to complete a second Joint Chiefs' application by the required deadline.

### Institutional Innovations

Interviewees for each project described instances of field-level actor agency to overcome specific funding gaps, communication difficulties, internal agency processes, and general capacity gaps they perceived to be challenges (see Table 2). To overcome financial gaps, the Craggy Project used an innovative approach. Interviewees described how the lack of consistent merchantable timber within the project's footprint led the agency to develop Integrated Resource (IR)<sup>10</sup> contracts that could be paired with GNA agreements, creating the first revenue-generating GNA timber sale in California. Our interviewees confirmed that previous GNA work in California had occurred; however, it required significant financial investment from the state to implement successfully. Interviewees said that these new IR contracts permitted the state of California to avoid revenue loss on GNA projects within the area and incentivized collaboration between the state and the federal government in a project footprint without large stands of merchantable timber. One interviewee explained:

*In this instance, [state personnel] were acting as if they were the Forest Service. They solicited bids for our timber contracts and did everything that we would have done. So it was the first-ever GNA that had timber product removal in this region, and so it's a bit different than typical GNA [in California]. (Craggy 1)*

Interviewees from two projects spoke about innovative ways the USFS and its partners opted to generate and share data to enhance communication between organizations. Scattered Lands Project interviewees detailed the development of shared ArcGIS project databases that allowed land managers to share planned and completed projects and permitted actors to prioritize management actions across the

landscape and determine the best treatments and funding sources for private landowners. As one interviewee stated,

*I think the whole database thing is big. It allows us to be able to communicate with each other that we did outreach to these people so that we're not always pancaking on top of each other. The landowner's not going to distinguish or decipher what each program is. They just need help, and so I hope that this database will help us point them in the best direction. (Scattered Lands 4)*

Given the highly intermixed land ownership pattern within the project area, interviewees remarked that such databases were critical to the efficient use of limited funds and capacity and for accurate progress tracking over the life of the project. On the WAM Project, the Missoula Ranger District worked with the Fire Modeling Institute of the Rocky Mountain Research Station to produce fine-grain vulnerability and hazard mapping within the WAM Project footprint. The resulting product, interviewees claimed, helped project partners confidently engage community members in high-priority watersheds and communicate risk with more nuance, as well as more effectively prioritize limited funds.

Our interviewees also described ways in which project partners worked to create new public outreach practices. Interviewees with the WAM and Scattered Lands Projects said project partners designed public engagement methods in response to the perceived attitudes of local stakeholders. Within the WAM Project footprint, the USFS, the National Forest Foundation, and the Missoula County Office of Emergency Management collaborated to develop multiple targeted community meetings called "learning labs" in high-priority treatment areas to address people's hesitancy. Interviewees relayed that they believed these meetings effectively engaged community members who held strong feelings about forest management. In the words of one interviewee,

*Some of the public outreach stuff for the Forest Service can be box-checking, like, 'Hey, we've got to have some public meetings, let's just get this over with. Let's kind of do it minimal, check the box, and then get on to our project.' I*

**Table 2.** Breakdown of challenges across projects and solutions employed by local actors.

Challenge type	Project	Challenge description	Innovationsolution
Funding gap	Craggy	Limited funds to complete low-value hazardous fuels reduction work	Use of IR contracts paired with GNA
Communication	Scattered Lands	Communication among partners about treatment locations/community engagement and local distrust.	Shared ArcGIS databases/targeted community meetings and bi-fold mailers
Communication	WAM	Community engagement and local distrust/communication among partners on prioritization	Targeted community meetings and field trips/fine-grained risk mapping by Fire Modeling Institute
Organizational processes	WAM	Hiring restrictions	Inter-agency agreement between USFS and BLM to have BLM employee serve as NEPA coordinator for one year
Organizational processes	Scattered Lands	NRCS personal and private information rules	Bifold mailers soliciting permission to share locational data
Capacity gaps	Scattered Lands	Lack of USFS personnel to complete NEPA analysis quickly	Agreement with state to use their personnel to complete analysis
Capacity gaps	Craggy	Inability of USFS to apply for grants with existing capacity	USFS partnered with NGOs to use their capacity to apply for grants

*Note:* GNA, Good Neighbor Authority; IR, Integrated Resource; NEPA, National Environmental Policy Act; NGO, Non-governmental organization; NRCS, Natural Resources Conservation Service; USFS, Forest Service; WAM, Wildfire Adapted Missoula Project in Montana.

*think the public feels that at those meetings it is box checking, and that nobody wants to be there. And I think the Missoula Ranger District did a great job at really giving an earnest effort at public engagement in a way where the community felt respected. (WAM 9)*

Scattered Lands Project partners also anticipated hesitancy concerning their efforts, which they attributed to local patterns of distrust toward government organizations rather than any specific past action. To address this, project partners hosted targeted community meetings in areas where significant fuels reduction on private land was anticipated to be necessary and sought to present a well-coordinated and united front that demonstrated expertise and collaborative spirit. After community meetings, project partners sent bifold postcards to specific areas offering financial assistance for fuels reduction and ways to connect with local land-management professionals. Scattered Lands interviewees said that these tactics produced interest in private land hazardous fuels reduction opportunities that exceeded even their most optimistic estimates.

Both WAM and Scattered Lands Project partners innovated to overcome challenges related to internal organizational rules. WAM Project interviewees highlighted an interagency agreement signed between the USFS and the Bureau of Land Management (BLM) that allowed the USFS to circumvent both hiring and agency detailing rules. This agreement permitted a BLM employee to serve in the role of NEPA coordinator for the WAM Project for 1 year—three times as long as a traditional 120-day USFS detail. Interviewees said that this was critical to managing disruption associated with positional turnover and allowed the USFS to maintain NEPA process momentum during the first year of the COVID-19 pandemic. Scattered Lands interviewees described how project partners used bifold postcards—the same ones mailed after community meetings—to solicit permission to share location data for private parcels that had received or wanted to receive treatment within the project landscape. Our participants regarded this as a key strategy to navigate NRCS personally identifiable information rules that prevented a full accounting of treatments in areas dominated by private land.

In many instances, project partners used innovative methods for collaborating to meet shared objectives when capacity gaps were exposed. Scattered Lands Project interviewees described how the Idaho Department of Lands entered into an agreement with the USFS that allowed state specialists to help complete NEPA analyses for federal parcels. Although interviewees said there was a learning curve for state personnel to comply with federal NEPA requirements, the collaboration allowed the NEPA process to move efficiently without forcing the USFS to sacrifice progress on other endeavors. For the Craggy Project, interviewees said the USFS's partnership with the Northern California Resource Center and National Fish and Wildlife Foundation expanded the capacity to pursue funding and allowed the project to increase the amount of funding available to private landowners beyond what was offered by Joint Chiefs' EQIP funds.

## Discussion

We identified various institutions that challenged or facilitated cross-boundary work, and several innovations that actors used to meet their goals. Facilitating factors included

boundary-spanning leadership positions, additional funding sources beyond yearly appropriations, funding sources targeting private lands, capacity sharing mechanisms such as GNA, and communicative forums to share information across boundaries. Challenging factors were sometimes related and included inadequate funding levels, organizational policies for both federal and nonfederal entities, and insufficient capacity levels. As theory would predict, we saw a mix of top-down, agency-wide variables, including policies, capacities, and funding sources that can affect projects and bottom-up variables, such as local-level leadership positions and communication forums that can support projects and explain some of their variability. We also saw examples of institutional innovation, including unique types of agreements, creative ways to present and share data, novel public outreach methods, and new cross-boundary positions. Some of these innovations might have been one-off instances of institutional work, such as the WAM Project's BLM detail arrangement, but they have the potential to emerge as innovations that diffuse across the system to facilitate the type of work envisioned under the Shared Stewardship Strategy. Additionally, we found evidence that economic conditions, such as cost of treatment and industrial capacity, and social and political conditions, such as existing collaborative networks and local community acceptance of hazardous fuels reduction, influenced the direction institutional development followed.

Although we saw examples of creativity on all projects, our findings suggest that Shared Stewardship may have the greatest potential to support innovative project approaches in states where state and federal agency leaders work together to create new institutions at the state level (i.e., positions, programs, and funding opportunities) specifically to support Shared Stewardship. For instance, in Idaho, this included the new state-level coordinator positions funded by both the USFS and the state that function as boundary-spanning coordinators, indicating a longer-term commitment to cross-boundary coordination that supported the Scattered Lands Project. In Utah, this included the creation of new funding opportunities provided jointly by the state and the USFS, indicating increased focus and investment on projects working across boundaries, which were valuable for the Beaver River Project. In other states, such as Montana and California, it was less clear whether the Strategy will result in changed practices, although people continued to innovate at the project-level. Other research has identified investment in Shared Stewardship efforts in these states at the state level, including some state positions and funding sources, but the impact of these programs was not mentioned by our interviewees (Kooistra et al. 2022).

Our research also uncovered ample evidence for the role of actor agency and the importance of institutional work. Interviewees in multiple projects described instances where actors innovatively wielded existing tools or applied them in novel contexts to overcome specific challenges. These findings align with the idea that actors can engage in institutional work, and more specifically, support Berk and Galvan (2009)'s assertion that actors "combine" institutions in ways that may result in new institutions. However, innovations were frequently constrained by existing factors, begging the question of whether the tenets of the Shared Stewardship Strategy can be successful without more substantive change at state and federal levels, particularly if it depends on the creativity and persistence of key project leaders who often will move on to

new positions. Further research would be valuable regarding the persistence of new institutions in the context of our study and, ultimately, where existing institutions cause persistent barriers that may require more substantive institutional change. These findings are important for the ongoing expansion of interest in cross-boundary forest management and contribute to our understanding of the limitations of institutional work to accomplish novel land-management goals, as well as the multilevel interplay of institutional innovation.

### Implications for Practice and Policy

The recent publication of the Wildfire Crisis Strategy of 2022 includes guidance for billions of dollars in funding from the Infrastructure Investment and Jobs Act of 2021<sup>1</sup> to support hazardous fuels reduction with an emphasis on cross boundary work. Efforts as part of this initiative will build on Shared Stewardship Strategy efforts, as they both emphasize fire hazard reduction through partnerships and work across boundaries. Our findings are relevant for the ongoing implementation of such efforts.

Nearly all our interviewees said they perceived relationships among land managers, or between land managers and the public, to be key boundary-spanning relationships that they often credited for the success of their efforts. From a practical perspective, this suggests that a critical first step for line officers seeking to work cross-boundary at a large scale is to invest in the practice of working with potential partners on smaller projects before scaling up. This allows partners to learn one another's processes and timelines when the stakes are relatively low and the projects are comparatively simple. Interviewees on the WAM and Scattered Lands Projects also said they believed specific jointly funded coordinator positions that facilitated communication and coordination across boundaries were important for keeping the projects on track. Although the formalized role of these positions varied between the two projects, they were nonetheless largely responsible for facilitating prioritization dialogues and overseeing implementation contracts and agreements. This finding aligns with past results in the collaborative governance and cross-boundary management literature, which highlight the importance of positions that can coordinate diverse actors across jurisdictional boundaries (Davis et al. 2021; Huber-Stearns et al. 2019). Importantly, our findings from the Scattered Lands and WAM Projects seem to indicate that jointly funding coordinator positions between primary project agencies or organizations for the duration of a large-scale hazardous fuels reduction project could be a successful strategy for spanning jurisdictional boundaries, a finding that aligns and expands on past work in this space (Charnley et al. 2020).

Our research also found that certain federal bureaucratic requirements posed challenges to actors attempting to work across boundaries. Interviewees described difficulties with USFS contracting processes, federal hiring processes, and NRCS rules around sharing private information. None of these findings are necessarily novel, although our work identified unique solutions to these issues (see Butler et al. 2015; Cyphers and Schultz 2019; Santo et al. 2021). Regardless of the solutions we identified, interviewees maintained that existing restrictions were significant hurdles that required considerable time investment from already capacity-limited agencies. These innovations suggest that these types of cross-boundary efforts depend on significant individual initiative to overcome

persistent challenges and could be more effectively facilitated through more permanent institutional change at the federal level. A transparent accounting of these challenges and how they might be overcome during the implementation of the 2022 Wildfire Crisis Strategy might reveal important priorities for institutional change or for streamlining learning so that individual project innovations can be adopted more widely.

Overall, the perceived value of GNA when attempting to increase the pace and scale of management actions on USFS land is difficult to overstate. Interviewees on all projects and from almost all organizational affiliations repeatedly extolled the benefits of the authority. These included both the ability to bypass contracting requirements and to facilitate capacity sharing. Although this institution is still relatively new compared to other administrative practices, early investigation of its usage yielded similar findings (Abrams 2019; Abrams et al. 2017; Bertone-Riggs et al. 2018), and past studies have highlighted the importance of capacity-sharing authorities (Charnley et al. 2020; Cyphers and Schultz 2019; Kelly et al. 2019). However, positive assessments by our interviewees were not without caution. Some interviewees believed that unless the USFS found a way to structure agreements as net positive revenue streams for state agencies (or other eligible groups such as tribes and counties), the motivation to engage with the Forest Service on projects outside of shared priority areas would be limited. Interviewees also noted that GNA agreements for these projects relied entirely on the limited capacity of state agencies and as such, the reevaluation of USFS contracting processes will likely be needed to eliminate persistent barriers with federal contracting.

Our findings also indicate that guaranteed funding commitments are strong motivators for cross-boundary engagement. Because many land management or natural resource-oriented organizations are capacity-limited, line officers often must act strategically; therefore, concrete assurances of funding create more attractive opportunities to invest time and personnel. Past research on the JCLRP and CFLRP programs demonstrated how increases in promised funding can attract greater participation (Bergemann et al. 2019; Cyphers and Schultz 2019; McIntyre and Schultz 2020). Our study not only echoes this, but the Craggy and Beaver River Projects both offer examples of how increased funding commitments can alter the trajectory of cross-boundary participation. In each of these cases, influxes of funding attracted new partners and provided motivation to engage with the USFS on large-scale cross-boundary work. Institutionalizing ways to commit funding early in project development will likely improve overall partner engagement and allow for more comprehensive landscape-scale approaches.

In summation, it appears that cross-boundary work requires communication networks that are suitably flexible to incorporate multiple partners, coordinators to keep work objectives on track, the ability to bridge capacity and expertise gaps when they arise, and sufficient, committed funding to both attract partners and maintain project momentum.

### Research Reflections

Our research suggested several directions for future study and also had several limitations. First, although our work hinted at possible permanent institutional change, our two-year timeframe of investigation did not permit us to track



new practices over a long enough period to confidently assert whether institutions had been permanently altered or only temporarily adjusted. A potential limitation of our study may be that it did not investigate less successful projects or projects that failed outright. In other words, although our research did not uncover fatal institutional factors in the projects we considered, that does not eliminate the possibility that these types of fatal factors might be present in other contexts. Limited industry capacity was briefly discussed as a constraint by many interviewees, and more research should be conducted to identify sustainable ways to support industrial capacity, especially in locations with low-value timber. Furthermore, our study focused on projects with specific suites of objectives centered on wildfire risk mitigation with particular emphasis on community protection, and future research could investigate projects with other objectives. Although our research touched on cross-boundary data sharing, more research should also be conducted on challenges related to this practice and on data sharing's overall impact to cross-boundary work. The utility of data sharing across boundaries is well recognized by academics and land managers alike; however, the practice is still limited (Kooistra et al. 2022).

Additionally, our team did not design this study to explore inclusive collaborative engagement or the promotion of environmental justice or equity, something we plan to address more proactively in future research. We relied on USFS reports and input to select our cases and selected those that were meeting the primary goals of the Shared Stewardship Strategy at the time of our work. Our study evaluated who was included and their relative roles and importance, rather than who was excluded and why. This is an important caveat because projects selected may inadvertently favor communities with higher socioeconomic status rather than historically underserved populations; however, past research has not necessarily indicated that this is a consistent occurrence (Adams and Charnley 2020). Regardless, advancing environmental justice and equity is federal policy and a specific goal of USFS fuel hazard reduction work (Charnley et al. 2023; USDA Forest Service 2022). Future research should explicitly explore how this goal is being pursued. Incorporating an explicit environmental justice and equity focus might involve asking how federal policy to promote environmental justice is being addressed, specifically investigating partnerships (or the lack thereof) with underserved communities and selecting case studies situated within or near historically marginalized communities. Additionally, it is USDA policy to pursue co-stewardship of public lands with tribes, and enhanced engagement with tribes is a major goal in the USFS' equity plan (USDA Forest Service 2022). Researchers (ourselves included) should proactively identify tribal partners and other important actors that are not included in collaborative cross-boundary projects and determine why. In our study, for instance, although we asked about tribal engagement, no project said they had significant tribal engagement strategy or tribal partners. Future work like ours could determine the tribes that are rightsholders or whose homelands are within or near project boundaries and seek to understand why projects are not engaging with tribal partners. Addressing this will be particularly relevant given the recent expansion of GNA in 2018 to include tribes as well as investments of the Bipartisan Infrastructure Law of 2021 and the Inflation Reduction Act of 2022 in the milieu of broader agency policies to advance equity and justice. In addition, we note that strategies that

effectively lead to partnership with states may exclude tribes where there is conflict between state policy and tribal interests and rights (Fletcher 2013).

On a final note, at the time of our interviews, the USFS was undergoing budget modernization. This process involves reorganizing the accounting structure for the agency—specifically separating funds supporting agency salaries from all other funds. When we talked with those familiar with the changes to the agency's budgetary framework, they expressed uncertainty regarding future impacts. Interviewees expressed concern that it might significantly reduce funding flexibility line officers rely on as project or unit-level circumstances change throughout the fiscal year. An example of this includes how district rangers could previously shift funds expected to support an employee's salary to an external agreement with a project contractor if that employee's position became vacant, thereby maximizing the utility of unspent dollars to support ongoing projects. Although they acknowledged flexibility might be lost, interviewees also thought budget modernization could provide a more transparent accounting of agency resource expenditure. Further research is needed to determine long-term consequences of this change.

## Supplementary Materials

Supplementary data are available at *Journal of Forestry* online.

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## Conflict of Interest

This work was funded by the Forest Service but was completed independently with no funder input on our study design, data analysis, or conclusions.

## Endnotes

- 1 The Infrastructure Investment and Jobs Act. Pub. L. 117-58, No. 135 Stat. 1097 (2021).
- 2 The Inflation Reduction Act. Pub. L. 117-169 (2022).
- 3 Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America's Forests. <https://www.fs.usda.gov/managing-land/wildfire-crisis>. (2022). The Wildfire Crisis Strategy combines a historic investment of congressional funding with scientific research and planning into a national effort that over the next decade will dramatically increase the scale and pace of forest health treatments.
- 4 Collaborative Landscape Forest Restoration Program. Pub. L. 111-11, Title IV, 123, Stat. 991. <https://www.fs.usda.gov/restoration/CFLRP/>. (2009). The Collaborative Forest Restoration Program funds landscape restoration activities on federal lands for collaboratively designed projects at least 50,000 ac in size.
- 5 Good Neighbor Authority. <https://www.fs.usda.gov/managing-land/farm-bill/gna>. (2018). The Good Neighbor Authority permits federal, state, county, and tribal agencies to sign cooperative agreements

- to use state, county, and tribal capacity to implement restoration activities on federal land.
- 6 Joint Chiefs Landscape Restoration Partnership. <https://www.nrcs.usda.gov/programs-initiatives/joint-chiefs-landscape-restoration-partnership>. (2014). The Joint Chiefs Landscape Restoration Partnership provides funding for projects encompassing federal and private lands that mitigate wildfire risk, improve water quality, restore forest ecosystems, and contributes to the USDA's efforts to combat climate change.
  - 7 California Climate Investments. <https://www.caclimateinvestments.ca.gov/about-cci>. (2015). California Climate Investments work to reduce greenhouse gas emission, strengthen economies, improve public health and the environment, and provide meaningful benefits to the most disadvantaged communities, low-income communities, and low-income households through administration of seventy-five different programs administered by twenty-three California state agencies.
  - 8 Steven's Hazardous Fuels Grants. Pub. L. 107-63, 115 Stat. 446. (2002). Steven's Hazardous Fuels Grants (also known as Community Assistance Funds Adjacent to National Forest System lands or CAFA funds) provide funding for hazardous fuels reduction treatments on "adjacent non-federal lands for the purpose of protecting communities when hazard reduction activities are planned on national forest lands." These grants are administered by the State and Private Forestry Deputy Area of the USFS, which funnels funds to states, local government, cooperative, and nonprofit organizations or to small businesses (i.e., contractors) to complete hazardous fuels reduction work.
  - 9 Agricultural Improvement Act. Pub. L. 115-334 (2018). The Environmental Quality Incentives Program (EQIP) provides both financial and technical assistance to agricultural producers and forest landowners to address water and air quality issues, soil health and dynamics, wildlife habitat concerns, and drought and other weather volatility concerns. Task and Delivery Order Contracts. 41 U.S.C. § 4101-4106 (2011).
  - 10 Integrated Resource Contracts FS-2400-13 and FS-2400-13 of October 4, 2004. Code of Federal Regulations. 69 FR 59577. <https://www.federalregister.gov/documents/2004/10/05/04-22338/integrated-resource-contracts-fs-2400-13-and-fs-2400-13t>. Integrated Resource Contracts can be used by federal agencies to fund restoration or harvest work when the value of material coming off the land is unequal to the cost of the work being contracted out.
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