

Critical Elements in the Development and Implementation of Community Wildfire Protection Plans (CWPPs)

Pamela Jakes¹, Sam Burns², Antony Cheng³, Emily Saeli³, Kristen Nelson⁴, Rachel Brummel⁴, Stephanie Grayzeck⁴, Victoria Sturtevant⁵, and Daniel Williams⁶

Abstract—Community wildfire protection plans (CWPPs) are being developed and implemented in communities across the United States. In a series of case studies, researchers found that the process of developing a CWPP can lead to benefits beyond those associated with fuels reduction, including enhancing social networks, developing learning communities, and building community capacity.

Introduction

The [Healthy Forest Restoration Act] provides communities with a tremendous opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands. A Community Wildfire Protection Plan (CWPP) is the most effective way to take advantage of this opportunity. (Healthy Forest Initiative 2007)

Communities across the United States have engaged in the development and implementation of community wildfire protection plans (CWPPs) in an effort to “clarify and refine [their] priorities for the protection of life, property, and critical infrastructure in the wildland-urban interface” (Society of American Foresters 2004, p. 2). As might be expected, Western communities have embraced the idea of CWPPs; for example at least 44 counties in Idaho have developed CWPPs, 33 communities in Washington, and 28 communities in New Mexico. However, communities in Eastern States such as Arkansas, Florida, Minnesota, Virginia, and Wisconsin are also developing CWPPs. CWPPs are developed collaboratively and include (1) a prioritized list of areas requiring hazardous fuels treatments and the type of treatment to be used, and (2) recommended measures to reduce structural ignitability. In a project funded by the Joint Fire Science Program, we conducted a series of case studies to identify how CWPPs enhance collaboration between communities and fire management agencies, and how the development of CWPPs builds community capacity. We are interested in the contexts in which CWPPs are developed, processes used to develop CWPPs, and outcomes from the development of CWPPs (fig. 1).

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¹ Project Leader with the U.S. Department of Agriculture, Forest Service, Northern Research Station, St. Paul, MN. pjakes@fs.fed.us

² Research Director, Office of Community Services, Fort Lewis College, Durango, CO.

³ Professor of Forestry and Natural Resource Policy, and Graduate Research Assistant, respectively, at Colorado State University, Fort Collins..

⁴ Professor of Human Dimensions, and Graduate Research Assistants, respectively, at University of Minnesota, St. Paul.

⁵ Professor of Sociology at Southern Oregon University, Ashland.

⁶ Research Social Scientist with the U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO.



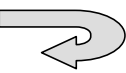
Context 	Process 	Outcomes 
<ul style="list-style-type: none"> • Physical • Biological • Social 	<ul style="list-style-type: none"> • Initiation • Participants • Issue framing • Decision-making process • Networking • Information sharing 	<ul style="list-style-type: none"> • Physical • Biological • Social

Figure 1—A model of community wildfire protection planning focusing on the context in which the CWPP is developed, the CWPP process, and the outcomes of the process.

Although data collection and analysis are ongoing, in this paper we discuss three themes that have emerged across all the communities studied to date:

- social networks
- learning communities
- community capacity

These themes emerged as critical to the CWPP process and as important outcomes resulting from the development of CWPPs.

Methods

We are conducting case studies in eight States: California, Colorado, Florida, Minnesota, Montana, Oregon, Virginia, and Wisconsin. A case, or unit of analysis, was defined as a CWPP. The case study CWPPs have been developed at several scales. The smallest geographic scale for CWPP development in our study was the neighborhood (High Knob near Front Royal, VA). We also had a small-scale CWPP made up of different holdings and a neighborhood (East Portal, CO). At a larger scale are villages and towns, unincorporated (Auburn Lake Trails, CA; Grizzly Flats, CA; Post Mountain, CA; and Taylor, FL) and incorporated (Ashland, OR). We have two cases that are multicomunity regions (the Barnes-Drummond area of northwestern Wisconsin and Harris Park, CO, southwest of Denver in Jefferson and Park Counties). The largest scale for CWPP development was at the county level (Josephine County, Oregon; Lake County, Minnesota; and Lincoln County, Montana).

Case study CWPPs can be nested in other plans. For example, Em Kayan in Lincoln County, Montana, has a Firewise Communities/USA plan that identifies projects that feed into the Lincoln County CWPP, which serves as a chapter in the county's pre-disaster mitigation plan (fig. 2). The Lincoln County Pre-Disaster Mitigation Plan is tied to the Montana Multi-Hazard Mitigation Plan. The Post Mountain CWPP is an appendix to the Trinity County Fire Safe Council Fire Plan. In turn, some case study CWPPs have other plans nested in them, such as the Josephine County CWPP, which has the Illinois Valley CWPP within it. This nestedness adds to the complexity of the context in which CWPPs are developed and makes it difficult to study one CWPP without considering linkages to other CWPPs.

Key informant interviews were conducted in each CWPP community. Interviews followed an interview guide covering the topics of inquiry identified in figure 1. Interviews were conducted with members of the CWPP team, adjacent land management agencies and local governments, and interested local residents. Each interview was audio-taped, with a transcript created of each tape. Analysis is being conducted around themes identified by the research team.

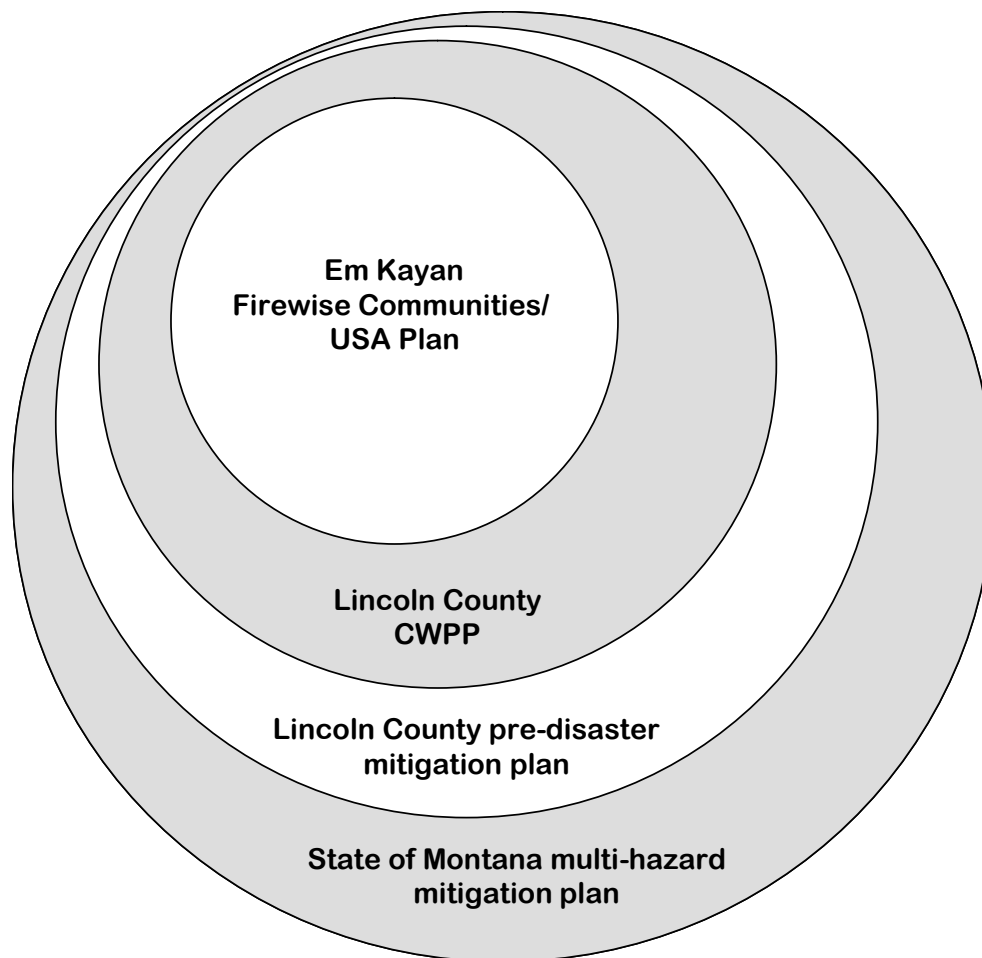


Figure 2—Community wildfire protection plans can be nested in other plans and other plans can be nested in the CWPP, as in this example from Montana.

Findings

Social Networks

A social network is “a set of individuals or groups and the ties representing some interrelationship between them” (Brass 1992, p. 300). Social networks create bridges between groups that facilitate interaction and collaboration and/or bonds that build group identity. Social networks played a critical role in the CWPP process, and the development of social networks was a positive outcome from the creation of CWPPs.

During the CWPP process, a variety of networks were used to obtain the information, skills, and resources to complete the plan. Members of the CWPP teams served as nodes, connecting the CWPP team to other networks in which members participated. For example, local fire departments often have strong networks with other fire and emergency management agencies, and in locations such as Harris Park and Josephine County, having fire department representatives at the table gives access to these networks during CWPP development. Environmental groups are linked to other environmental groups, and in Post Mountain and Ashland, representatives of these groups tap into their environmental networks to achieve CWPP objectives. Having local units of government at the table is especially important for community support and buyin. In Ashland, the city forester is connected with private landowners, and this relationship was critical for reducing fuels around homes and reducing structural ignitability.

Representatives from non- or quasigovernmental organizations are important nodes on many networks. In our California cases, the networks developed by the local Fire Safe Councils were critical to identifying where necessary information could be obtained and where funds might be tapped to support planning activities. In Auburn Lake Trails and Em Kayan, designation as a Firewise Community/USA means that they are tied to other Firewise communities across the country, and residents have access to a vast array of resources to guide them in eliminating hazardous fuels around their homes and reducing structural ignitability. In East Portal the YMCA has strong relationships with the county mitigation specialist and Colorado State Forest Service due to previous Firewise activities, which were valuable in CWPP development. In the isolated community of Post Mountain, the strong relationships built by the Watershed Training and Research Center brought resources and expertise to the CWPP process. In communities such as Auburn Lake Trails and High Knob the local homeowners associations provide the links to local residents and other organizations that can aid in the development of CWPPs.

The CWPP processes we studied improved relationships within the community, strengthened existing networks, and developed new networks. In northwestern Wisconsin, tension between the Drummond town board and Chequamegon-Nicolet National Forest over Federal land use decisions eased as representatives of the two organizations worked on the CWPP. In Lake County, Colorado, networks that linked the fire department and community members were strengthened through the CWPP process, as were the relationships between the fire and county emergency agencies in Josephine County, Oregon. New networks among community members facilitated bonding in Grizzly Flats and High Knob.

The importance of social networks to the CWPP process and as an outcome of the CWPP process was enhanced by several process characteristics. First, it is important to have the right people at the table—meaning, people who are well connected in the community. Second, the CWPP goals and

objectives must be relevant to team members so they are willing to draw on their networks to move the CWPP process forward. Third, members of the CWPP team need to have opportunities to get to know one another as representatives of their agencies or organizations and as individuals. Finally, the probability of having these process characteristics is enhanced by having a facilitator who keeps team members involved, informed, and organized.

Learning Communities

Another outcome of the CWPP process relative to social networks is the creation of learning communities. Learning communities develop in environments that encourage information sharing and are places where people come together to share knowledge that affects performance. One benefit of a learning community is that members find common ground in their areas of interest (Finneran 2007). In our cases, common ground was found in the way in which the wildland fire issue is framed, in the identification of high priority fuels reduction projects, and in approaches to reduce structural ignitibility.

Different types of knowledge are shared during the CWPP process. This knowledge varies in its complexity from relatively simple information of low complexity to multidimensional information of high complexity, and the knowledge also varies in its scale, from information that was applicable to an individual home or forest stand to information applicable to a region or landscape. Figure 3 illustrates some of the information shared in the development of our case study CWPPs. Although the placement of any one piece of information on the graph may be debated, the range of information is clearly depicted. Different members of the CWPP teams brought different information to the processes. Using East Portal as an example, we find that the USDA Forest Service provided access to GIS layers on fuel levels and topography included in a pre-existing regional risk assessment; the National Park Service provided information on forest ecology; the Colorado State Forest Service

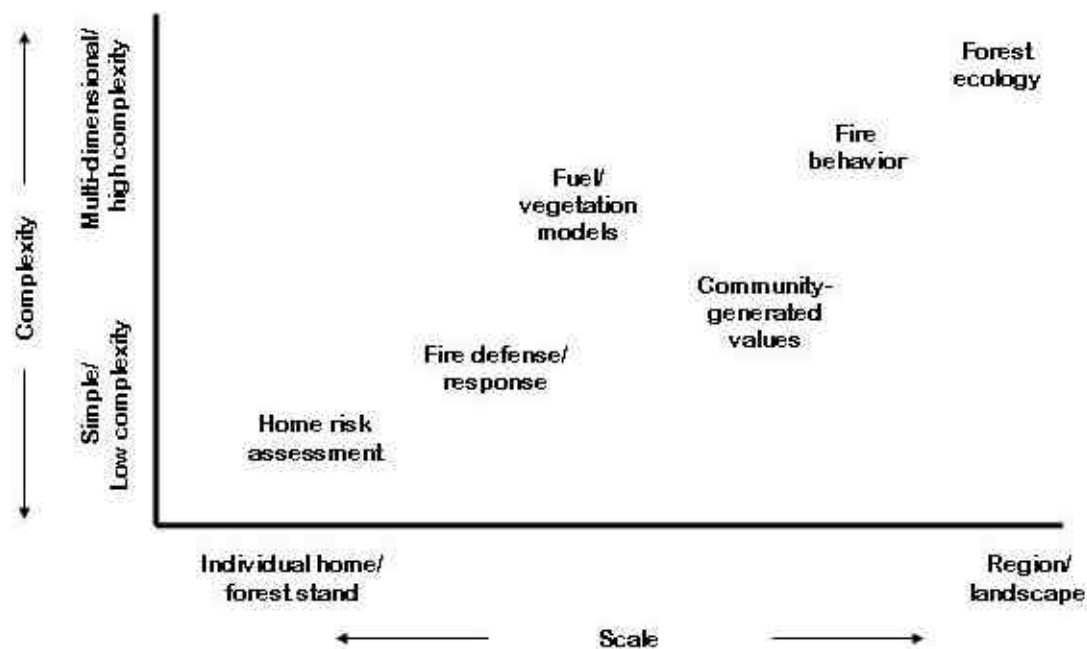


Figure 3—Knowledge shared during the community wildfire protection planning process by complexity and scale.

provided information on forest ecology, fire behavior, and forest management; the county hazard mitigation specialist provided information on fire defense and response; the fire department provided information on fire response; and community members identified and mapped community values.

An array of methods is used to share information with team members and the public. Continuing with East Portal as an example, we find that they use many different outlets to share information including team meetings, team field visits, homeowner association meetings, demonstration projects, and community events such as cleanup days. In addition, community members who heard the information at one these outlets carried that information to their groups and associations, and were effective in face-to-face interactions with neighbors and friends. Interagency funding supports a community educator who has developed and staffed booths at public events in the Estes Valley.

The development of learning communities as part of the CWPP process lead to several outcomes in regards to the CWPP document itself and community perceptions of wildland fire management and the agencies involved. We observed that strong, active learning communities tended to produce CWPPs that provide:

- strategic direction for wildland fire mitigation
- clarification and coordination of responsibilities
- information-sharing approaches that can be used in future CWPP efforts such as implementation

Learning communities resulted in (1) homeowners who are better informed about fire dependent ecosystems and wildfire risk, (2) better understanding between agencies and a community and its homeowners, (3) improved trust in agencies and among community members, and (4) increased community and homeowner support for and participation in wildland fire mitigation actions.

Community Capacity

Community capacity is the ability of a community to meet the day-to-day needs of its residents (Forest Ecosystem Management Assessment Team 1993). Community capacity is often monitored or evaluated using indicators, with one common set of community capacity indicators being the capitals. Capital is generally described as resources that are invested to create new resources (Rule and others 2000). Communities transform the capitals through policies, laws, social relations, incentives, and institutions to achieve desired outcomes such as community wildfire protection. Sustainable communities accumulate capital over time, while unsustainable communities deplete capital. In addition, Flora (2000, p. 85) argues that favoring one form of capital over other forms “can destroy the ecosystem, create a dependent, fragile economy, and increase social inequity.”

Flora and others (2004) have identified seven capitals:

- financial capital
- physical capital
- natural capital
- human capital
- cultural capital
- social capital
- political capital

Financial capital is the monetary resources available for local use (Kusel 2002). Financial capital includes debt capital, investment capital, tax revenue, savings, tax abatements, and grants (Flora 2000). Rule and others (2000, p. 378) suggest that this type of capital is the “easiest to identify and the most commonly accounted for in many cost-benefit analyses.” In Auburn Lake Trails, the Auburn Lake Trails Property Owners Association Board of Directors was able to create financial capital by increasing the membership fees paid by property owners. These new funds are being used to carry out fuels reduction projects on common property and to meet requirements for matching funds for some grants.

Physical capital is the local infrastructure that facilitates community activities (Pretty 2000). Physical capital includes housing and other buildings, roads and other transportation systems, communication systems, and markets. Building infrastructure was a high priority in the Grizzly Flats CWPP, as residents focused on the need for an alternative evacuation route and worked with National Forest staff to develop an egress through Federal land.

It is becoming increasingly common for communities to view ecological systems as capital assets (Wills and Gray 2001). Pretty (2000, p. 77) defines natural capital as “nature’s economic and cultural goods and services.” People are drawn to places like our case study communities by their natural beauty. In Lake County, Minnesota, the strong attachment to place and strong sense of responsibility that characterizes residents are due, in part, to northeastern Minnesota’s natural capital.

Pretty (2000) sees human capital as the knowledge, skills, and abilities individuals develop and accumulate over time. Human capital was critical to the success of our case study communities in developing CWPPs. In Ashland, highly trained professionals, many educated in the ecological sciences, are a major influence on National Forest land management planning and CWPP development. In Auburn Lake Trails, the knowledge, skills, and abilities of retired professionals are facilitating CWPP implementation.

Some social scientists distinguish between human capital and cultural capital—with human capital acquired through education or other formal training, and cultural capital through informal learning, as a result of a person’s culture or environment (Kusel 2002). We see evidence of the importance of cultural capital in Post Mountain where the experience and technical knowledge of third generation loggers is being melded with the traditional scientific knowledge of Forest Service professionals to develop and implement CWPP projects that fit the local biological, physical, and social contexts.

Social capital can be defined as “the ‘glue’ that binds a community together and enables collective action for the benefit of the community. It has also been referred to as the ‘grease’ that enables things to happen smoothly” (Kay 2005, p. 166). Local leadership is one indicator of social capital, and in East Portal there was an abundance of local leadership built through the community’s Firewise activities. In the area around Libby (Lincoln County, Montana), social capital developed as community residents came together to address a number of issues, including the closing of the local mill and cleanup of an asbestos mine. Experience handling these challenges has facilitated the community coming together to address wildland fire issues. The strong neighborhood networks in Harris Park are examples of networks that build trust and facilitate collaboration, a critical component of social capital.

Some researchers have identified the networks and relations that facilitate the use of political systems to accomplish goals as a separate capital—political capital (Flora 2003). In Grizzly Flats, experience and relationships developed during the CWPP process have empowered the community to work with its

local U.S. Representative to obtain funding for a new community center and fire hall. Other communities have been able to take advantage of Federal programs not directly related to wildland fire to support planning efforts. The Secure Rural Schools and Community Self-Determination Act (SRS) provides transitional assistance to counties affected by the decline in revenue from timber harvests on Federal land (FirstGov 2007). SRS authorized the establishment of 55 Resource Advisory Committees (RACs) in 13 States. The RACs have implemented more than 4,500 projects on National Forests and National Grasslands and adjacent non-Federal lands. In Josephine County and Post Mountain, county governments were willing to work with their local RACs to invest SRS funding in the CWPP process.

We discovered several truths about our communities in regards to community capacity. First, our communities had a varying constellation of capitals, and high levels of stocks were not sufficient to produce and implement a CWPP. It was critical for a community to have mobilizers (flow capitals), such as local leadership and networks, to produce a CWPP.

In addition, it was important to have participation of agencies or intermediary organizations that link the CWPP team to the resources necessary to complete the plan. An intermediary organization is typically a nongovernmental or quasigovernmental organization that serves as a bridge between private individuals and government institutions, or between neighborhoods and communities and public organizations (Berger and Neuhaus 1996). More formally, intermediary organizations help communities mobilize their own resources and gain access to outside inputs (information, technology, finances) that enhance their capacities (Lee 2006). In several communities we observed consultants playing the role of intermediary.

Community organizations provided collaborative “spaces” for the development of CWPPs. Examples of community organizations active in our case study communities include Fire Safe Councils, Firewise committees, collaborative stewardship groups, homeowners associations, public utility districts (PUDs) and water boards, regional planning commissions, and various local social groups.

In addition to providing links to outside resources, we observed community organizations and intermediaries filling a number of roles in CWPP development, including:

- generate interest in natural resource issues
- gather together residents and important players
- facilitate meetings (CWPP and community)
- provide administrative assistance with communication, organizational structure, collaboration, and monitoring
- lend technical skills (for example with GIS)
- assist in grant writing
- help implement fuels reduction in neighborhoods

As mentioned above, contractors play an important role in the development of CWPPs. When we initiated this research, we heard stories about contractors who were irresponsible in dealing with communities in the development of CWPPs, but we also saw examples of contractors who played important roles in developing networks, connecting communities to other similar communities for advice and counsel, and facilitating collaboration. In several cases these contractors were retired Forest Service employees who had valuable contacts in the local fire management community.

Finally, agencies at the county, State, and Federal level provide funding, data, and key leadership in the development of CWPPs. In Lake County,

Minnesota, the Superior National Forest hired a partnership coordinator who has initiated the CWPP process in counties with large Federal holdings. She provides key leadership, is a node to a variety of networks, and facilitates access to the resources (data, maps, and staff) of the National Forest.

Case study communities that could be classified as high capacity communities based on the amount of capital at their disposal were able to engage in activities not possible for lower capacity communities. We found that several of these high capacity communities increased property owner fees to generate funds to hire contractors or to implement projects identified in the CWPP. The retired professionals found in these communities bring a high degree of human capital to any local endeavor—especially valuable in the development of CWPPs are grant writing and planning skills. Residents in our high capacity communities had experience in other programs, such as stewardship or fire programs or fire cooperatives, which could be directly applied to the development of CWPPs. Finally, agencies and programs will often target high capacity communities for collaborative projects because they believe that their potential for success is greater than in lower capacity communities. This practice can benefit the broader community or region by providing models for action, but eventually lower capacity communities will need to be brought into the process.

Although communities described as low capacity may be seen as having fewer resources to bring to the CWPP process, we found many characteristics of these communities that facilitated CWPP development. Lower capacity communities often exhibited a stewardship ethic that encourages involvement in fuels mitigation projects that would result in more healthy forests. The social cohesion and sense of mutual obligation and responsibility found in several of these communities provides a foundation for working together collaboratively on the CWPP. A history of self-reliance means that several of our low capacity communities believed that they could accomplish an objective like fuels mitigation. Communities that lack many of the characteristics that enhance community capacity can be more responsive to goals defined by agencies or organizations (such as developing a CWPP), and to offers for outside assistance. Networks in lower capacity communities tend to be informal, but they do exist, and can serve community wildfire protection planning. Leadership in lower capacity communities can be more diffuse, but the community leaders that are found tend to be more multifaceted because they need to be. Finally, community members exhibit a high degree of trust in their volunteer fire departments. The knowledge, skills, and abilities found in volunteer fire departments in lower capacity communities can provide the nucleus for broader community projects.

At the beginning of our discussion of community capacity, we cited examples of how the CWPP process contributed to each of the capitals. In summary, we observed many examples of the CWPP process increasing community capacity by:

- building leadership in communities and organizations
- strengthening relationships among agencies
- providing visibility for players
- gaining access to networks and participating in coordinated efforts
- enhancing stewardship and community buyin for projects
- facilitating social learning
- producing successful projects that spawn other projects
- creating a sense of hope and trust

The impacts of the CWPP process on community capacity were not all positive. If merely imported from another community and treated as a fill-in-the-blank exercise, the CWPP process may not realize many of the benefits listed above. If agency staff direct the process with little community involvement or collaboration, the CWPP process will build little community capacity. We also saw examples of the CWPP process creating or enhancing conflict among agencies, across programs, or among interest groups.

Several findings from our case studies related to community capacity are surprising. We have often heard that communities that are bedroom communities—with part time and/or commuting residents—will not be successful in collaborative activities requiring community involvement. This was not the case in our communities if the communities had high natural capital, human capital, and social capital (including a stewardship ethic). We found that economic advantage and political support are not enough to produce a CWPP; rather social and human capitals are most significant. Finally, early in our interviews we would hear complaints about the fact that the Healthy Forest Restoration Act did not designate a leadership agency for the development and implementation of CWPPs. However, we found that by not designating a leadership agency, there was flexibility for leadership to emerge at the scale where the capacity was the greatest.

Discussion

Agencies and groups interested in monitoring and evaluating the success of CWPPs often focus on number of plans signed or acres treated. In our preliminary analysis of findings from case studies in eight States, we find that benefits from the development and implementation of CWPPs in regards to building networks, learning communities, and community capacity may be as significant and enduring as fuels reductions. By building community capacity, CWPPs will help ensure that the initial fuels work done in communities and on public land adjacent to communities will be maintained as well as the reduction in risk from wildland fire.

There remain a number of questions yet to be answered by this and future research projects. Regarding information sharing we ask:

- What information is lacking or needed?
- What are the most effective information sharing mechanisms?
- What information sharing method would community members like to learn more about?
- How has new information improved work in CWPPs?

Regarding embedding CWPPs in other plans:

- What priorities exist for embedding CWPPs in existing plans?
- How important is this for success?
- What does it mean for CWPP implementation?

Regarding networks:

- What network lessons from CWPP planning transfer to CWPP implementation?
- How do we track resource flows along bridging networks?

Finally, regarding community capacity:

- Do CWPPs provide new opportunities for community-based organizations and for building community capacity?
- Are more low-capacity communities being reached through the CWPP process than through other wildland fire management planning efforts?
- What are the needed capacities and essential components for moving from strategic plans to sustainable implementation?
- Because intermediaries and contractors play such an important role in CWPP development, how can they receive sustained support in order to assist in implementation?

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