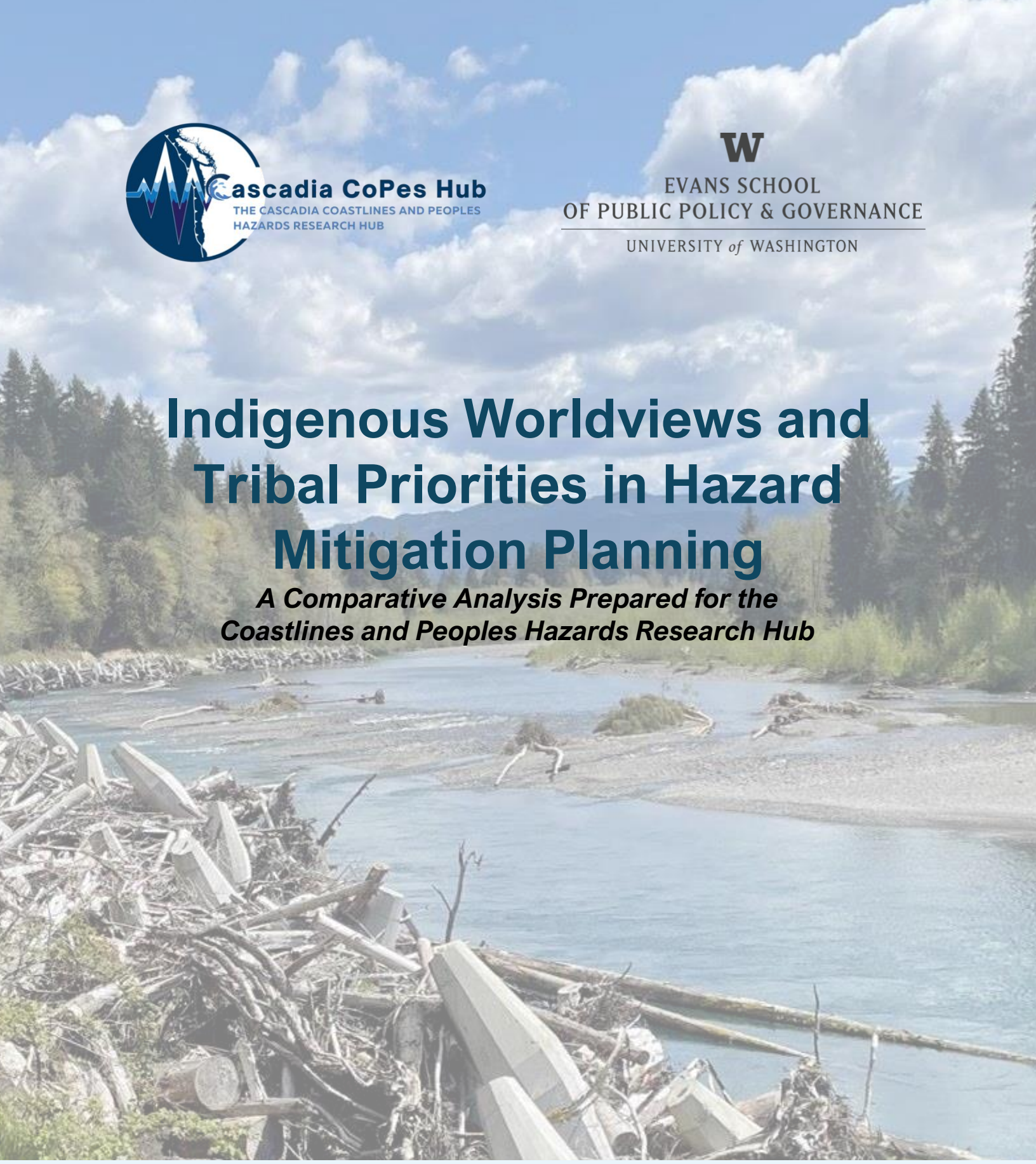
Cascadia CoPes Hub
THE CASCADIA COASTLINES AND PEOPLES HAZARDS RESEARCH HUB

EVANS SCHOOL OF PUBLIC POLICY & GOVERNANCE
UNIVERSITY of WASHINGTON

Indigenous Worldviews and Tribal Priorities in Hazard Mitigation Planning

A Comparative Analysis Prepared for the Coastlines and Peoples Hazards Research Hub



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2023

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Executive Summary

Our research explores the integration of Indigenous worldviews and Tribal priorities in hazard mitigation plans (HMPs) in Washington. Recognizing the importance of culturally inclusive planning, the report aims to identify existing practices, challenges, and opportunities for incorporating Indigenous perspectives into hazard mitigation strategies. This report builds upon prior student research that examined the extent to which Tribal governments had equitable access to FEMA grants (Jenicek et al., 2023). We thank the Cascadia Coastlines and Peoples Hazards Research Hub (Cascadia CoPes Hub) for conceptualizing and funding this project.

Project Scope and Methods

Scope

We limit our scope of analysis to all HMPs adopted by the 29 federally recognized Tribes in Washington, which includes Tribal HMPs and (county-level) multi-jurisdictional HMPs with corresponding Tribal annexes. This excludes two federally recognized Tribes with ceded lands in Washington but reservations in neighboring states. It also excludes several Tribes recognized at the state level as well as Indigenous communities with no formal recognition. To apply for hazard mitigation assistance (HMA), non-federally recognized Tribes must have a hazard mitigation plan and may only apply as a subapplicant to Tribes, states, or territories. Currently, no non-federally recognized Tribes in Washington have ever developed or adopted a FEMA-approved HMP.

Methods

We aimed to assess and compare hazard mitigation plans (HMPs) regarding their incorporation of Indigenous worldviews. To do this, we conducted an initial review of HMPs to familiarize ourselves with plan content, structural differences, and differences in FEMA plan type requirements. We discovered that plans are authored either in partnership with an external consultant or internally within a jurisdiction's emergency planning department. We organized plans into three different types: Tribal HMPs, multi-jurisdictional HMPs, and individual jurisdictional annexes to multi-jurisdictional HMPs.

We then identified two reputable frameworks to analyze differences between the three types of HMPs.

We developed a coding framework adapted from two main sources:

1. Evaluation of Local Hazard Mitigation Plan Quality by Ward Lyles, Philip Berke, and Gavin Smith (2014)
2. The Tribal Climate Change Principles (TCCPs) white paper by Bob Gruenig, Kathy Lynn, Garrit Voggesser, and Kyle Powys Whyte (2015)

We formalized the Lyles, Berke, and Smith principles into a codebook that we systematically applied across plan text, categorizing each principle into a corresponding section of HMPs. We then cross-walked the TCCPs applicable to certain plan sections to strengthen the coding framework principles and further incorporate Tribal accessibility into the codebook. Using this coding framework, we systematically assessed the cultural responsiveness of each plan and its alignment to Indigenous worldviews. We then conducted a comparative analysis, contrasting findings between Tribal and multi-jurisdictional hazard mitigation plans adopted by Tribes in Washington.

We also conducted informal interviews with seven local hazard mitigation planning experts. These interviews helped us better understand the planning process and provided us with valuable insight to guide our analysis.

Key Findings

The findings from the content analysis of hazard mitigation plans (HMPs) across Tribal, multi-jurisdictional, and Tribal annexes reveal important insights into the planning process, risk assessment, mitigation strategies, and plan maintenance process.

The planning process across all plan types emphasizes public outreach initiatives, but there are differences in the level of internal and external coordination. While most plans use community events, online resources, and update methods for public engagement, the level of Tribal involvement varies. Tribal annexes and Tribal HMPs show more emphasis on Tribal involvement in public outreach initiatives compared to multi-jurisdictional HMPs.

The inclusion of Tribal representatives in the planning process varies among multi-jurisdictional HMPs, with some counties actively engaging Tribal nations in the planning process, while others do not.

Hazard identification is a critical aspect of risk assessment, and all plan types identify a wide range of hazards. There is variability in how thoroughly assets are inventoried across identified hazards. Multi-jurisdictional HMPs and Tribal HMPs tend to assess vulnerable assets across a wider and more comprehensive set of categories than Tribal annexes.

Goals identified in HMPs often revolve around decreasing hazard losses, improving coordination, and establishing an overarching vision. Tribal HMPs more often prioritize goals related to protecting Tribal cultural assets and sovereignty. Multi-jurisdictional HMPs list more future-oriented mitigation actions (policies) on average compared to Tribal HMPs and Tribal annexes.

Mitigation strategies include goals, future-oriented actions and policies, and implementation information. These strategies do not vary much between plan types except for the protection of natural mitigation features, which is much higher in Tribal

annexes and Tribal HMPs compared to multi-jurisdictional HMPs. While there are many different definitions of "natural mitigation features", we coded this activity quite broadly to include nature-based solutions, protection of watersheds, fish, wildlife, ground cover, soil, and more. We also coded activities like restoration projects and traditional burning. Even still, multi-jurisdictional HMPs included few activities that fell under this category.

Finally, plan maintenance processes form the shortest section of HMPs. Many plans used formulaic entries for this section. We did note that several Tribes indicated that efforts were underway to create Tribal comprehensive plans, which ultimately helped inform one of our recommendations about further investigating the accessibility of planning processes.

Structure of Report

The report proceeds as follows:

Chapter 1 provides background information and a problem diagnosis to anchor our analysis.
Chapter 2 summarizes the results of a review of relevant literature from the federal government, academic publications, Indigenous scholars, and other sources.
Chapter 3 describes our research methods for this project, which include a systematic analysis of all tribal-specific HMPs in Washington state and all multi-jurisdictional HMPs adopted by Tribes.
Chapter 4 presents our findings concerning the incorporation of Indigenous worldviews and Tribal priorities in Tribal HMPs and multi-jurisdictional HMPs.
Chapter 5 provides recommendations for FEMA policy change and future research.

Positionality and Land Acknowledgement

We have made a conscious effort throughout the research process to recognize and acknowledge the inherent limits of our perspectives as non-Indigenous people. Central to our approach has been a commitment to seeking out and incorporating the work of Indigenous scholars, whose insights and perspectives are essential for building our understanding around the complex issues at hand. We approach our work with humility and respect for the diverse knowledge systems and cultural practices of all Indigenous communities.

We also acknowledge the limitations that accompany the conduct of research within the framework of the institution of higher education. While this framework provides us with access to valuable resources, we are mindful of the historical and systemic inequities that shape academic discourse, research agendas, and accessibility to higher education. Our engagement with this institution is accompanied by a responsibility to critically examine its structures and biases, and to strive for inclusivity and equity in our research practices.

Above all, we recognize and honor the profound privilege of residing, working, and learning on the unceded ancestral lands of the Coast Salish peoples.

Acknowledgments

This project would not have been possible without the unwavering support, guidance, and mentorship of many individuals. We extend our heartfelt gratitude to:

Dr. Ann Bostrom, Evans School of Public Policy & Governance, University of Washington; Cascadia CoPes Hub
Evan Mix, Environmental & Occupational Health Sciences, University of Washington; Cascadia CoPes Hub
Dr. Nicole Errett, Environmental & Occupational Health Sciences, University of Washington; Cascadia CoPes Hub
Dr. Jamie Donatuto, Swinomish Indian Tribal Community; Cascadia CoPes Hub
Emily Keller, University Libraries, University of Washington
All **anonymous interviewees** who shared their time and knowledge

We also acknowledge support from the National Science Foundation, award 2103713 to the Cascadia Coastlines and Peoples Hazards Research Hub, which helped fund this research.

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Glossary[1]

American Indian: Sometimes shortened simply to "Indian," this term refers to the Indigenous peoples of the continental United States (i.e. exclusive of arctic Indigenous populations such as the Inuit, Yupik, and Aleut) and individual members of those populations. It originates from the mistaken belief by European colonizers upon reaching the North American continent that they had landed in India. Despite its geographic inaccuracy, the term "American Indian" remains in use, particularly in federal law.

Cascadia Coastlines and Peoples Hazards Research Hub (Cascadia CoPes Hub): Cascadia CoPes Hub is a team of researchers funded by the National Science Foundation (NSF Award 2103713) working to increase knowledge about hazards and climate change risks coastal communities face and ways to increase their resilience. They work with communities in the Pacific Northwest, including Washington, Oregon, and Northern California, to increase their ability to mitigate and adapt to impacts from coastal hazards like Cascade Subduction zone earthquakes, tsunamis, sea level rise, landslides, erosion, and climate change.

Critical facilities: Typically, hospitals, fire stations, police stations, record storage facilities, and other facilities that should be given special consideration in hazard mitigation planning.[2]

Department of Homeland Security (DHS): Formed in response to the September 11 terrorist attacks, DHS is responsible for domestic public security of the United States, including disaster prevention and management and border security. The Federal Emergency Management Agency (FEMA) is an agency of DHS.

Disaster: As defined by FEMA, a disaster is "an occurrence of a natural catastrophe, technological accident, or human-caused event that has resulted in severe property damage, deaths, and/or multiple injuries."[3] A disaster may be categorized as a:

> **Rapid-onset disasters:** These are disasters that arrive rapidly and often with little warning, such as earthquakes, wildfires, or flash flooding.
>
> **Slow-onset disasters:** The effects of these disasters are slow to be realized. Accordingly, the damage and disruption they cause may last over an extended period of time. Drought and sea level rise are examples of slow- onset disasters.

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[1] Many definitions in our glossary were originally compiled by Jenicek, A., Mix, E., Noltner, A., & Veith, C. (2023). A "Hole-in-the-Community" Approach: How Federal Disaster Policy Overlooks Indigenous Communities. [Capstone project]. Daniel J. Evans School of Public Policy & Governance. http://hdl.handle.net/1773/50012. We thank this team of student researchers for building a foundational glossary from which we built upon for this research.

[2] Federal Emergency Management Agency. (n.d.). Glossary. U.S. Department of Homeland Security. Retrieved May 16, 2024, from https://www.fema.gov/about/glossary

[3] Ibid.

Disaster management: Also referred to as emergency management, disaster management is the process of preparing for and responding to disasters.

Disaster management cycle: The disaster management cycle encompasses the four phases of emergency or disaster management:

> **Preparedness:** Planning, training, organizing, and other activities meant to prepare a community for the threats posed by disasters.
>
> **Mitigation:** Actions taken prior to the onset of potential future disasters to lessen negative impact and reduce the loss of life and property.
>
> **Response:** The operational actions and capabilities necessary to protect people, property, and the environment during or after a disaster incident.
>
> **Recovery:** Actions taken to assist communities affected by a disaster incident in recovery.

Emergency declaration: More limited in scope than a major disaster declaration, an emergency declaration involves fewer federal programs and is not normally associated with recovery programs. However, the President may issue an emergency declaration prior to an actual incident to lessen or avert the threat of a catastrophe. Generally, federal assistance and funding are provided to meet specific emergency needs or to help prevent a catastrophe from occurring. The Stafford Act grants the chief executive of an affected Indian Tribal government the authority to request a declaration by the President.[4]

Federally recognized Tribe: The U.S. government officially recognizes 347 Indian Tribes within the contiguous 48 states, and 227 Alaska Native Villages/Tribes within the State of Alaska as of the date this report was published. Recognition affords these Tribes a unique political status under United States law that includes a sovereign relationship with the U.S. government, the power to govern territory and Tribe members, and access to funding and services from the Bureau of Indian Affairs and other federal agencies. There are also many state- recognized Tribes, recognized by the governments of the states within the boundaries of which they are located, and various non-recognized Tribal groups.

Federal Emergency Management Agency (FEMA): FEMA is the lead federal agency dedicated to supporting citizens and emergency personnel to build, sustain, and improve capabilities in all stages of the disaster management cycle. FEMA often provides its support through funding and technical assistance to states, Tribal

[4] Congress. (2022, December 28). Robert T. Stafford Disaster Relief and Emergency Assistance Act. [Government]. U.S. Government Publishing Office. https://www.govinfo.gov/app/details/COMPS-2977, 76.

governments, and local jurisdictions. FEMA is an agency of the Department of Homeland Security.

Flood Mitigation Assistance (FMA): FMA is a competitive grant program, the funds from which can be used to mitigate repetitive flood damage to structures insured under the National Flood Insurance Program. Jurisdictions eligible to apply, including federally recognized Tribes, are required to have a FEMA-approved Hazard Mitigation Plan.

Hazard Mitigation: Any sustainable action that reduces or eliminates long-term risk to people and property from future disasters.

Hazard Mitigation Assistance (HMA): HMA refers to seven FEMA programs that provide funding to states, local, Tribal, and territorial governments for the purpose of reducing risk related to disasters: Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA), Flood Mitigation Assistance Swift Current (Swift Current), Hazard Mitigation Grant Program (HMGP), HGMP Post Fire, Pre-Disaster Mitigation Program (PDM), and Safeguarding Tomorrow (STORM).[5] In this analysis, we focus only on HMGP and PDM.

> **Building Resilient Infrastructure and Communities (BRIC):** BRIC is a relatively recent FEMA grant program established in fiscal year 2020. This program makes funding available to states, territories, local governments, and federally recognized Tribes for hazard mitigation efforts. Non-recognized Tribes may apply as sub-applicants.
>
> **Hazard Mitigation Grant Program (HMGP):** Provides funding to state, local, Tribal and territorial governments so they can develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses in their communities. All state, local, Tribal, and territorial governments must develop and adopt hazard mitigation plans to receive funding for hazard mitigation project application. Authorized under Section 404 of the Stafford Act, HMGP funding is contingent upon a Presidential Major Disaster Declaration, with the amount granted determined by the estimated total federal assistance and the FEMA-approved Hazard Mitigation Plan.
>
> **Pre-Disaster Mitigation Program (PDM):** Federal funding to support governments to plan and implement measures aimed at reducing future hazard risks and decreasing reliance on federal disaster funding. To this end, the Consolidated Appropriations Act of 2023 allocated $233 million to support 100 community and Tribal Nation resilience projects.

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[5] Federal Emergency Management Agency. (n.d.). Summary of FEMA hazard mitigation assistance (HMA) programs. U.S. Department of Homeland Security. Retrieved May 16, 2024, from https://www.fema.gov/fact-sheet/summary-fema-hazard-mitigation-assistance-hma-programs

Hazard Mitigation Plan (HMP): These plans aim to identify risks and vulnerabilities in a community and develop a strategy to protect people and property from those risks. A FEMA-approved Hazard Mitigation Plan is a requirement for many applications for FEMA assistance. The plan must be re-approved every five years, but the administrative checklist must be completed annually.

> **Local HMP:** A hazard mitigation plan adopted by a local government that covers a geographical region over which the local government has jurisdiction, as opposed to a state government. Local HMPs can be single- or multi-jurisdictional.
>
> **Multi-Jurisdictional HMP:** A hazard mitigation plan that covers multiple jurisdictions. Typically, a multi-jurisdictional HMP is authored by one or more county emergency management departments and is co-developed with cities, Tribes, and/or special districts (i.e. schools, fire districts). Most multi-jurisdictional HMPs entail a base plan that covers unincorporated areas in a county along with separate annexes for local and Tribal jurisdictions.
>
> **Annex:** A supplement to a multi-jurisdictional HMP, typically 20-50 pages in length, that is specific to a single local jurisdiction (Tribe, city, special district).
>
> **Tribal HMP:** A hazard mitigation plan that covers a single Tribe.

Hazard Mitigation Plan Sections: Most state, local, and Tribal HMPs are organized into four sections including a Planning Process, Risk Assessment, Mitigation Strategy, and Plan Maintenance Process. These sections correspond to regulations from Title 44 CFR section 201.

> **Planning Process:** This section defines the planning area, key individuals, agencies, partners, and stakeholders.
>
> **Risk Assessment:** This section is a fact-based analysis of the potential impacts of identified hazards, typically including a description of hazards, a vulnerability assessment, an analysis of potential dollar losses, and an inventory of critical facilities at risk.
>
> **Mitigation Strategy:** This section is a "blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools."[6] Jurisdictions must include mitigation goals, an analysis of current and future

[6] Electronic Code of Federal Regulations. (n.d.). Title 44: Emergency management and assistance. Retrieved May 16, 2024, from https://www.ecfr.gov/current/title-44/chapter-I/subchapter-D/part-201?toc=1

mitigation actions (or policies) to reduce the effects of hazards, a prioritization plan, and potential funding sources as part of the Mitigation Strategy section.

Plan Maintenance Process: This section describes the process a jurisdiction will take to monitor, evaluate, and update the plan.

Indigenous knowledges: Covering a diverse range of knowledge systems, Indigenous knowledges are often deeply rooted in the natural world and integrate the culture and shared knowledge of Indigenous communities.

Local government: Any unit of government within a state, including a county; borough; municipality; city; town; township; parish; local public authority, including any public housing agency under the United States Housing Act of 1937; special district; school district; intrastate district; council of governments, whether or not incorporated as a nonprofit corporation under state law; and any other agency or instrumentality of a multi-regional, or intra-State or local government.

Major disaster declaration: Provides more federal programs for response and recovery than an emergency declaration. The Stafford Act grants the authority for the President to provide financial assistance "in States that have received a major disaster declaration in the previous 7 years, or to any Indian Tribal government located partially or entirely within the boundaries of such States."[7] Unlike an emergency declaration, a major disaster declaration may only be issued after an incident.

Natural hazards: As defined by FEMA, a natural hazard is something that is dangerous or harmful and "related to weather patterns and/or physical characteristics of an area. Often natural hazards occur repeatedly in the same geographical locations."

Nature-based solutions: Environmental engineering and management practices that integrate natural processes and features to accomplish community goals, often related to environmental adaptation or resilience. A nature-based solution such as a clam bed may have significant social and economic benefits that differ from traditional structural solutions such as a seawall.

OpenFEMA data: Our source for hazard mitigation plan statuses, including expiration dates and plan type (i.e. multi-jurisdictional HMP or Tribal HMP). The OpenFEMA Data Sets do not specify whether a Tribe covered by a multi-jurisdictional HMP has an annex or not.

Risk reduction: Policies, procedures, and practices aimed at reducing existing and preventing new disaster risk.

[7] Congress. (2022, December 28). Robert T. Stafford Disaster Relief and Emergency Assistance Act. [Government]. U.S. Government Publishing Office. https://www.govinfo.gov/app/details/COMPS-2977, 76.

Self-determination: The inherent right of a people to govern itself, independent of the preferences of any other nation. The right to self-determination is an implicit characteristic of recognized Tribes.

Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Pub. L. 100-707, 42 U.S.C. § 5121, et seq., provides legal authorization for FEMA's actions in disaster management and response.

Sandy Recovery Improvement Act: An appropriations bill enacted in 2013 in response to Hurricane Sandy which provides funding for post-hurricane relief efforts. It amended the Stafford Act to include a provision providing federally recognized Tribal governments the opportunity to request a Presidential emergency or major disaster declaration. Previously, such a request would have to be made by the government of the state in which the Tribe is located.

Tribal Climate Change Principles (TCCP): Principles developed by the Tribal Climate Project that build on recommendations from the 2014 President's State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience. They are intended to guide the federal government in actions regarding Indigenous Peoples and climate change.

Tribal governments: Tribal governments are composed of the political bodies through which individual Tribes exercise self-governance. They are political entities within the United States distinct from the federal government and the governments of states and localities. Federally recognized Tribal governments are recognized under U.S. law as domestic dependent nations with sovereign authority over the lands and people they govern.

Tribal sovereignty: The inherent authority of Tribal nations to self-govern. Recognition by the United States government affords Tribes the inherent right of sovereignty, which is in theory recognized by the executive, judicial, and legislative branches of the federal government.

Tribe: A group of people connected by shared descent, customs, traditions, and/or governance. In the United States and in this report, the term "Tribe" refers specifically to Indigenous groups of this character. Tribes are culturally, historically, and politically distinct from one another.

Vulnerability: Defined by the United Nations Office for Disaster Risk Reduction, vulnerability is "the characteristics determined by physical, social, economic and

environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards."[8]

[8] UNDRR. (2024, May 16). "Vulnerability" https://www.undrr.org/terminology/vulnerability#:~:text=The%20conditions%20determined%20by%20physical,to%20the%20impacts%20of%20hazards.

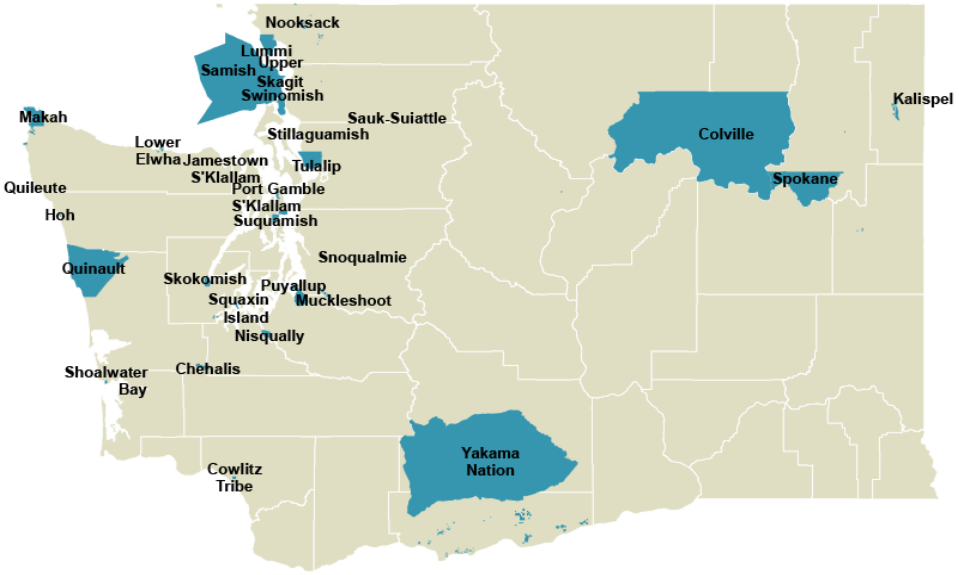
Chapter 1 – Introduction

1.1 Background

For millennia, North American Indian Tribes have cultivated distinct worldviews, cultures, and deep connections to ancestral lands across what is now called the State of Washington. The process of white settler colonization, which predates the formation of the United States, forcibly and coercively removed Tribes from their traditional homelands. This displacement continued through the following centuries and was later carried out by the United States federal and state governments, sometimes under the premise that it would provide Tribes with resources for continued self-governance (Cordova, 2022). In many cases, these smaller land allocations are disproportionately vulnerable to major disaster events like flooding, wildfires, and other environmental hazards, risks that have been exacerbated by climate change (ibid).

This history has profoundly shaped contemporary Tribal relations with the federal government. The federal government maintains trust obligations to federally recognized Tribes, including disaster management assistance from the Federal Emergency Management Agency (FEMA) (Bureau of Indian Affairs, *Cherokee v. Georgia,* 1831). Under the Sandy Recovery Improvement Act of 2013, FEMA helps federally recognized Tribes prepare for, mitigate against, respond to, and recover from major disasters (Sandy Recovery Improvement Act, 2013). Figure 1 displays a map of federally recognized Tribes in Washington.

Figure 1 – Map of Federally Recognized Tribes in Washington



Notes: *Figure 1 displays the land of 29 federally-recognized Tribes in Washington borrowed from the Northwest Center for Public Health Practice at https://www.nwcphp.org/docs/tribes-toolkit/tribal/washington.html.*

Among its key initiatives, FEMA allocates grant funding to state, local, and Tribal governments to bolster their mitigation capabilities, a process facilitated through hazard mitigation planning. Hazard Mitigation Plans (HMPs) delineate the risks posed by hazards and outline strategies to safeguard communities and infrastructure over the long term. HMPs must be approved by FEMA before state, local, and Tribal governments are eligible to receive hazard mitigation assistance (HMA).

Federally recognized Tribes in Washington can pursue FEMA mitigation funding and non-emergency Stafford Act assistance in at least two ways:

1. **Developing and adopting a Tribal HMP**: A Tribe can choose to create its own, single jurisdictional plan that outlines the Tribe's specific hazard risks and mitigation strategies for its communities. The Tribe controls the HMP process but must meet certain requirements with respect to structure and content. According to FEMA, Tribal HMPs are "tailored for both large and small Tribes and can improve internal coordination and communication," (FEMA, 2019).

2. **Co-developing and adopting a Local (Multi-Jurisdictional) HMP**: Instead of or in addition to a Tribal HMP, Tribes can choose to collaborate with neighboring local governments and/or other Tribes in a multi-jurisdictional plan that covers all participating jurisdictions (i.e. a county's Multi-Jurisdictional HMP can cover participating cities, Tribes, ports, colleges, utility districts, and more). In Washington, most multi-jurisdictional HMPs constitute a county-level base plan covering unincorporated areas and smaller mitigation plans (annexes) for other local governments including Tribes, if applicable.

While both Local and Tribal Mitigation Plans guide decision-makers in allocating resources, the two types of plans differ in one important respect. Namely, Local Mitigation Plans form the basis for state-level assistance and funding prioritization whereas Tribal Mitigation Plans form the basis for federal-level assistance and funding prioritization (Title 44 CFR section 201.6; Title 44 CFR section 201.7). According to Washington's 2023 State Enhanced Hazard Mitigation Plan:

> *"Local HMPs (including multi-jurisdictional HMPs that may include tribal partners) are submitted to EMD's Mitigation Strategist for official state review and approval, given the authority to do so by the State Hazard Mitigation Officer. Standalone tribal HMPs in Washington are typically funded independently of the State, so it is uncommon for them to be submitted to EMD for review and approval. The majority of tribal HMPs [that] EMD reviews and approves are annexed in county-level multi-jurisdictional HMPs, in which case they follow the same review and approval process as any other jurisdiction in the HMP (but using the Tribal HMP Policy as a guide as opposed to the Local Policy)."*
>
> - ***Washington State Enhanced Hazard Mitigation Plan 2023***

In other words, a Tribe with its own plan can work directly with FEMA to pursue funds while a Tribe participating in a multi-jurisdictional plan must undergo multiple layers of approval at the county and state level.

Table 1 summarizes hazard mitigation plan types and statuses for the 27 federally recognized Tribes in Washington that have submitted HMPs. Twenty-two of those 27 Tribes are covered by unexpired plans and are thus currently eligible to apply for FEMA support. Funding for hazard mitigation assistance is authorized after a presidentially declared disaster or when a Tribe submits a disaster declaration request. Governments must submit grant applications for funding after a disaster declaration, and funds are split up based on the number of applicants and the damage sustained in their respective jurisdictions.

Table 1 – Status of HMPs Adopted by Federally Recognized Tribes in Washington

HMP Type	HMP Status	Number of Tribes	Tribes
Tribal HMP	Approved	16	• Confederated Tribes of the Chehalis Reservation • Hoh Tribe • Lummi Nation • Makah Tribe • Port Gamble S'Klallam Tribe • Puyallup Tribe of Indians • Quinault Indian Nation • Samish Indian Nation • Sauk-Suiattle Indian Tribe • Shoalwater Bay Indian Tribe • Spokane Tribe of Indians • Squaxin Island Tribe • Stillaguamish Tribe of Indians • Suquamish Tribe • Tulalip Tribes • Upper Skagit Indian Tribe
	Expired	5	• Confederated Tribes of the Colville Reservation • Nooksack Indian Tribe • Quileute Nation • Skokomish Indian Tribe • Snoqualmie Indian Tribe
Multi-Jurisdictional HMP	Approved	5	• Jamestown S'Klallam Tribe (Clallam County) • Lower Elwha Klallam Tribe (Clallam County) • Kalispel Tribe of Indians (Pend Oreille County) • Muckleshoot Indian Tribe (King County) • Swinomish Indian Tribal Community (Skagit County)
	Expired	1	• Cowlitz Indian Tribe (Lewis County)
Total		N = 27*	

Notes: *Table 1 summarizes the HMP type and plan status of federally recognized Tribes in Washington (FEMA, 2024). FEMA has no record on its webpage of the Nisqually Indian Tribe or the Yakama Nation adopting a hazard mitigation plan.*

1.2 Problem Diagnosis

27 of Washington's 29 federally recognized Tribes have developed and adopted FEMA-approved Tribal HMPs or Tribal annexes to multi-jurisdictional HMPs. While both Tribal and multi-jurisdictional HMPs entitle Tribes to seek FEMA mitigation funding and non-

emergency Stafford Act assistance, each pathway has tradeoffs. For example, Tribal HMPs potentially offer Tribes more latitude to center cultural values, Indigenous knowledge systems, and Tribe-specific priorities. However, substantial administrative capacity and technical expertise are needed to draft a plan that meets current regulatory requirements. Administrative capacity and technical expertise are two costly inputs that may discourage Tribes from pursuing Tribal mitigation plans (Jenicek et al., 2023).

In contrast, collaborating on a multi-jurisdictional HMP can leverage joint resources and ease administrative burdens on Tribes. However, Tribes don't have control over how projects are ultimately prioritized or how much funding is allocated. Also, multi-jurisdictional HMP approval processes at the county and state levels may fail to recognize and uphold Tribes' specific priorities and worldviews.

Notably, the 2023 Washington State Enhanced Hazard Mitigation Plan sets a goal to "embed cultural understanding into [its] mitigation work" and a sub-goal to "honor Tribal treaty-rights and incentivize improved use of nature-based solutions in mitigation grants" (Washington Military Department, 2023). While it is evident that Washington intends to improve its recognition and funding of tribe-specific priorities, it is unclear whether this goal has been met.

Amongst various tradeoffs and differing funding landscapes, the extent to which Tribal or multi-jurisdictional HMPs uphold a Tribe's inherent right to self-determination as expressed through hazard mitigation planning remains a pressing question. Currently, no systematic review has evaluated the extent to which different types of plans successfully incorporate the Indigenous worldviews or priorities of federally recognized Tribes in Washington.

1.3 Research Question

Our research aims to analyze how Tribal HMPs reflect Indigenous worldviews and enable Tribes to enact their own hazard mitigation priorities compared to multi-jurisdictional HMPs. As such, we ask:

To what extent are Indigenous worldviews and Tribal priorities represented in multi-jurisdictional plans, their annexes, and Tribal mitigation plans in Washington state?

We frame our analysis around the following sub-research questions, corresponding to the four primary sections of hazard mitigation plans:

How do worldviews and priorities differ between multi-jurisdictional plans, their annexes, and Tribal mitigation plans in...

- Planning Processes?
- Risk Assessment?
- Mitigation Strategy?
- Plan Maintenance Processes?

Chapter 2 – Literature Review

2.1 Review of Strategy and Scope

We reviewed relevant academic literature and governmental regulations, reports, and documents about Tribes' historical relationship with FEMA and the federal government, Tribal priorities around hazard mitigation planning, and federal policy or regulations that may enable or inhibit the inclusion of Indigenous worldviews and Tribal priorities in hazard mitigation plans and planning.

Our review included a search and assessment of articles available through the University of Washington Libraries and of the federal policies that inform federal regulations. We supplemented these materials with additional articles, policies, regulations, and reports recommended by our client and project advisor.

We organize our literature review as follows:

1. Indigenous worldviews around hazard mitigation planning and climate adaptation
2. Summary of Tribes' relationships with the federal government
3. Summary of Tribes' relationships with local governments
4. Federal regulations and hazard mitigation planning
5. Scholarly analysis of hazard mitigation plans

2.2 Indigenous Worldviews

Tribes have evolved over time both individually and in relation to one another, and the same is true of their worldviews. For millennia, they have experienced the impact of hazard events and developed their own diverse mitigation and restoration efforts to protect their communities (Maldonado, 2013). While there are certain common themes that provide a distinct orientation compared to Western paradigms, Indigenous worldviews are not universally shared. These commonalities often encompass distinct conceptions of the role of nature, traditional knowledge, and community identity that are rooted in cultural traditions shaping ways of life for Indigenous peoples across many Tribes (Smith, 2021). However, each Tribe's worldview has developed along its own trajectory based on its unique history, environment, and experiences.

This review aims to highlight worldviews that are held in common across many Indigenous communities, as documented in the literature, while acknowledging that each community holds unique knowledge and values based on their own distinct worldviews.

2.2.1 Connections to Ancestral Homelands, Place Based Peoples

Indigenous worldviews commonly cultivate a profound spiritual and material connection to ancestral lands and natural landscapes, forming a reciprocal bond of respect and interdependency (Cochran et al, 2013). Often, cultural symbolism, Tribal activities, and

social roles stem directly from land formations, water sources, climate patterns, and species unique to Tribal homelands (Bales, 2013). This contextual grounding leads to distinct interpretations of environmental risks and hazards.

For example, while flooding is often characterized in mainstream Western discourse as a hazard, some Tribes recognize that it can also bring benefits, such as by depositing fertile soil that supports the growth of culturally important plants. For the Karuk, Yurok, and Klamath Tribes in the Klamath River Basin, flooding events improve the quality and health of willow roots and sticks used for basketry (Mucioki et al., 2021). Without the fertile soil deposits left by flooding, willow tree populations would decline and the basket-weaving practices that are central to Tribal cultural continuity would be disrupted.

Similarly, cyclical, predictable flood patterns have historically shaped many Tribal governance systems, providing reliable timeframes for certain food production activities and cultural events. The regular, predictable nature of these floods allowed Tribes to plan around them and incorporate them into their worldviews and practices. For example, villages of Lummi Nation traditionally follow the migratory paths of salmon, which thrive in nutrient-rich waters following flood events (Lummi Natural Resources Department, 2020). The Lummi view these regular floods as essential parts of a holistic system that supports the salmon lifecycle.

This contrasts starkly with Western conceptions of floods as unpredictable crisis events to be controlled, rather than integral and beneficial components of the ecosystem when they occur in a predictable, cyclical manner. While Western discourse often frames all floods as hazards, many Tribes recognize that regular flooding supports important natural processes and cultural practices, as long as the floods follow predictable patterns that allow for planning and adaptation.

Concurrently, climate shifts and land development increasingly alter traditional flood timing, heights, and environmental impacts in ways that disconnect flooding events from Tribal needs (Jojola, 2008). For Lummi Nation, more intense and irregular flooding destroys salmon habitats (Lummi Natural Resources Department, 2020). This unpredictability strains Tribal capacity to calibrate cultural activities to flood patterns known for generations.

The divergent perspectives on hazard events held by Tribal and Western communities underscore the notion that disasters are social constructs, defined by their impacts on humans and human systems within a specific societal context. What constitutes a hazard depends on the distinct priorities, values, and experiences of different societies. Indigenous worldviews contextualize hazards through intimate connections to places, recognizing the interdependence between human well-being and the health of the environment (Smith, 2021). In contrast, Western views have historically separated environmental risks from human risks, framing the environment as a resource to be exploited and controlled by humans (Smith, 2021).

This difference in worldviews often leads to distinct strategies for disaster management. The Western approach tends to focus on technical solutions and top-down interventions, treating hazards as discrete events to be mitigated or responded to, rather than understanding them as the product of long-term social, economic, and political processes that shape a community's vulnerability (Marino & Foss, 2020). By recognizing disasters as social constructs, we can better understand how different worldviews and value systems shape the way communities perceive, prepare for, and respond to hazard risks, enabling more effective and culturally sensitive disaster risk reduction strategies.

2.2.2 Knowledge and Ways of Knowing

Indigenous knowledge refers to intergenerational wisdom, practice, and worldviews passed down to continuously renew bonds between indigenous communities and their ancestral habitats (Whyte, 2013). This grounding in context and continuity avoids compartmentalizing nature, culture, science, and broader society (Whyte, 2013). Oral traditions, like stories, songs, and rituals, serve to pass down place-based teachings across generations, while simultaneously renewing bonds between Tribes and non-human native species across adapting landscapes (North-Smith et al., 2016). This situational, cumulative knowledge system stands juxtaposed to Western assumptions that tend to commodify empirical information for economic or political gains (Smith, 2021).

In the Pacific Northwest, this tension has played out in divergent mindsets toward altering landscapes. During the 19th and 20th centuries, European settlers conceptualized the Salish Sea and Duwamish River as opportunities for economic development. As a result, they dramatically reshaped Northwest shorelines and riverways, such as by straightening the Duwamish River and creating a ship canal linking Puget Sound with Lake Washington to enable maritime trade (Thrush, 2006). In contrast, Coast Salish worldviews have traditionally favored gradual landscape adaptations grounded in sustained reciprocal relationships between people and the environment that anchor livelihoods. For instance, Thrush (2006) describes how the Muckleshoot and Duwamish peoples have long-sustained reciprocities with salmon by monitoring spawning grounds and adjusting fishing efforts and ceremonies based on the health and abundance of the salmon population. Thus, this contrast between Western engineering development schemes and Tribal knowledge sustaining gradual adaptations that reflect intertwined human-ecosystem bonds exposes divergent interpretations of environmental change and decision-making.

2.2.3 Community Identity – Intergenerational Responsibility, Ancestors, Collective

> *"We are looking ahead, as is one of the first mandates given to us as chiefs, to make sure and to make every decision that we make relate to the welfare and well-being of the seventh generation to come, and that is the basis by which we make decision in council. We consider: will this be to the benefit of the seventh generation?"*
>
> ***-Oren Lyons, Chief of the Onondaga Nation***

Indigenous worldviews tend towards notions of communal identity, collective responsibility across generations, and consensus-based decision-making as opposed to the individualistic social structures underpinning most Western cultural identities and political processes (Whyte, 2018). A key component of Tribal perspectives is consideration for the "Seventh Generation" – the idea that each generation has a responsibility to make decisions that sustain resources and well-being for descendants into the future (Trosper, 1995). Trosper quotes a statement from Iroquois leader and college professor, Oren Lyons, to help illustrate this idea:

The emphasis on collective identity and responsibility is also reflected in tribal governance structures and decision-making processes. Collective leadership structures, such as Tribal councils, serve to pass down the accumulated wisdom and experiences of ancestors. Consensus-based models of deliberation, like talking circles, ensure that a wide range of perspectives are considered in the decision-making process (Trosper, 1995). This approach to governance prioritizes the collective well-being of the community and the sustainability of resources for future generations rather than individual interests. As a result, notions of identity and purpose in Tribal contexts remain fundamentally collective and oriented towards long-term stewardship, in contrast to Western emphasis on individualism and short-term gain (Smith, 2021).

2.3 Summary of Federal Relations with Tribes

2.3.1 Eras of Federal Policy

The foundation of the legal relationship between the United States and Tribes is *plenary power*, or an interpretation of the *Constitution* that gives Congress broad and exclusive power to determine and modify the powers of Tribal governments (*United States v. Kagama*, 1886; Ablavsky, 2015). Adjacent to plenary power is the federal Indian trust responsibility, a self-imposed "obligation" of the federal government to act "…of the highest responsibility and trust" toward Tribal nations (*Seminole Nation v. United States*, 1942). Since the landmark case of *Cherokee v. Georgia* (1831), numerous Supreme Court cases have relied on the trust doctrine to interpret and enforce the fiduciary obligation of the United States to protect tribal treaty rights, lands, assets, and resources (Bureau of Indian Affairs). However, plenary power and the trust doctrine have often

conflicted with one another, resulting in the federal government deciding what is in the best interest of Tribes rather than supporting Tribes' sovereign interests (Steele, 2016).

Despite the trust doctrine, historical and ongoing antagonistic federal policies have constrained Tribes' jurisdictional authority, resources, and administrative capacity, limiting their ability to translate these worldviews into autonomous planning initiatives that reflect their sovereign priorities (Cordova, 2021). Unpacking federal policy toward Tribes helps illuminate the context in which Tribal nations pursue adaptation and hazard mitigation planning. More, understanding the legal relationship between the federal government and Tribes highlights the federal government's unique role in supporting Tribal hazard mitigation planning.

Between the 1830s and 1850s, the federal government set policy for the forced removal of tribes from their traditional homelands to new land west of the Mississippi River (Wilkins & Stark, 2017; Indian Relocation Act, 1830). By the mid-1850s, policymaking evolved to establish a reservation system that restricted Tribal nations to bounded lands, held in trust by the US government (Wilkins & Stark, 2017). However, policies like the General Allotment Act (Dawes Act) of 1887 broke apart reservation lands, violently forcing Tribal assimilation to Western culture, property norms, and agricultural practices (Wilkins & Stark, 2017).

The Dawes Act allotted parcels of land in defined sizes to individual Tribe members instead of being held in trust for Tribes as collectives, with the "surplus" reverting to federal control. Much of this surplus land ultimately went to settlers, destroying community held land bases. Over time, many of these allotted parcels fell into fragmented ownership by multiple individual Indigenous owners via inheritance or into the hands of non-Indigenous owners, such as when taxes were not paid and the property was repossessed and sold at auction or conveyed on the market. This process led to the "checkerboarding" phenomenon, create a complex patchwork of land ownership that makes governance difficult (Barnard, 2015; Adams, 2012).

Overall, the Dawes Act resulted in over 80 million acres of unallotted Tribal lands reverting to the federal government (Wilkins & Stark, 2017; Cordova, 2021). Together, these federal policies undermined Tribal self-governance and self-determination, including important land management practices such as environmental stewardship, adaptation, and hazard mitigation planning (Itchoak, 2017).

In the following decades, shifts in federal policy occurred to restore a degree of Tribal sovereignty. The Indian Reorganization Act of 1934 ended allotment and aimed to encourage Tribal self-governance and economic recovery following the Depression Era (Wilkins & Stark, 2017). Often called the Indian New Deal, the Act enabled Tribal governments to construct corporations that pursue economic development on their lands (Wilkins & Stark 2017; Cordova, 2021). However, to qualify for benefits, Tribal governments were required to adopt a Western-style constitution and institutional

structure, undermining traditional Tribal leadership and community structures (Kelly, 1975).

In the years following the Indian Reorganization Act, assimilationist sentiments regained prominence in federal policy. The Termination Act of 1953 sought to end the federal government's trust obligations to Tribal nations on a case-by-case basis. The ultimate goal was to end this obligation to all tribes, but the process was carried out piecemeal, with each Tribe being evaluated for termination based on its perceived “readiness” to assimilate (Wilkins & Stark, 2017). To reduce the need for these services, the act promoted the relocation and assimilation of Tribal nations into urban areas rather than reservations via inducements like aid with housing and employment. In total, over 100 Tribal nations were terminated under this policy with estimates of over one to two million acres of Tribal lands reappropriated under this policy (Wilkins & Stark, 2017; Cordova, 2021).

Concurrent to these swings in federal attitude regarding Tribal self-governance, questions around jurisdictional authority have also long constrained and burdened Tribal sovereignty. Public Law 280 (P.L. 280), passed in 1953, transferred federal authority over criminal and civil cases on Tribal lands to certain state authorities without Tribal consent. While promoted as an expression of federalism, the law corroded the trust and working relationships between federal and Tribal governments.

Checkerboarding has also contributed to insufficient funding for Tribal governments. The fragmented land ownership resulting from this phenomenon has led to complex property rights and jurisdictional issues, making it difficult for Tribal governments to effectively manage or develop their lands (Shoemaker, 2020). This, in turn, limits their ability to generate revenue and fund essential services.

Under the initial version of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Tribal governments were excluded as beneficiaries of funding grants, which were allocated only to state and local governments. Tribes were forced to apply as subgrantees through state governments, meaning they could theoretically access funds via an intermediary, but were not recognized as primary recipients. This not only severely limited the resources for individual Tribal governments, but also increased their dependence on state and county governments, which has been a primary tactic in Tribal assimilation (Adams, 2012). Although Tribes can now apply for funding under the Stafford Act directly, funding levels still fail to meet federal obligations to Tribal nations; resources remain inadequate for Tribal governments to effectively address pressing public health and safety issues on their own (Hanana and Hoss, 2020).

The complex history of Federal policy toward Tribes shows how external constraints have long undermined Tribal self-determination, including the ability to develop environmental initiatives grounded in Indigenous worldviews. While federal recognition of Tribal sovereignty is expanding, many Tribes still face jurisdictional, funding, and

capacity barriers as well as Western systems' incompatibility in implementing hazard mitigation planning tailored to community needs. However, contemporary efforts continue to showcase the resilience of Tribes working to translate holistic conceptions of human-environment relations into policies upholding health, safety, and ecological balance.

2.3.2 Obama Administration: State, Local, and Tribal Leaders Task Force

In recognition of the effects of climate change on Indigenous communities, in 2014 President Obama appointed a State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience. This task force led an effort across the country to consult with Indigenous leaders on how the federal government can better support their nations in preparing for the effects of climate change. These efforts resulted in the Tribal Climate Change Principles (TCCPs), which advocate for equitable access to financial and technical resources to assess and address climate impacts and underscore the federal government's trust responsibility to support adaptation and mitigation efforts. We utilize these principles in Chapter 4 to evaluate the extent to which the hazard mitigation grant program (HMGP) is equitably accessible to and sufficiently acknowledging federally recognized Tribes in Washington (Table 2.1).

Table 2 – Tribal Climate Change Principles (TCCPs)

Principle	Principle Definition
Principle 1	Federally recognized Tribes and other Indigenous Peoples and Indigenous communities must be partners with full and effective participation in assessing and addressing the problems of climate change at the local, regional, national, and international levels and must be accorded at least the status and rights recognized in the U.N. Declaration on the Rights of Indigenous Peoples and other international standards relevant to Indigenous Peoples.
Principle 2	Tribes must have fair and equitable representation on all federal climate committees, working groups, and initiatives in which states, local governments, and other stakeholders are represented.
Principle 3	The federal government should establish a high-level interagency Tribal government task force to examine and propose solutions to close gaps across the federal agencies' relationships and programs with Tribes, and to develop, recommend, and implement Tribal-specific solutions that enable the agencies to support and foster Tribal climate-resilient planning and investment.
Principle 4	Indigenous Peoples must have direct, open access to funding, capacity-building, and other technical assistance, with their free, prior and informed consent, to address the immediate and long-term threats from climate change.
Principle 5	Tribes must have fair and equitable access to federal climate change programs.
Principle 6	Tribes must be made eligible for existing and future federal natural resource funding programs for which states are eligible, but from which Tribes are currently, or might be, excluded.
Principle 7	A fair and equitable set-aside of direct monies or allowances must be made available for distribution to Tribes through legislation, administrative actions, and existing and future federal natural resource funding programs.

Principle 8	Indigenous traditional knowledges, with the free, prior, and informed consent of Indigenous Peoples, must be acknowledged, respected, and promoted in federal policies and programs related to climate change.

Notes: *Table 2 summarizes the Tribal Climate Change Principles which advocate for Tribes having equitable access to federal climate change programs. The principles were authored by Gruenig, Lynn, Voggesser, & Whyte (2015) and developed in consultation with Indigenous leaders.*

2.4 Summary of State and Local Relations with Tribes in WA

2.4.1 State Government to Tribal Government

Federally recognized Tribes maintain sovereignty and are not subject to state authority unless specifically sanctioned by Congress (U.S. Const. art. 1, S 8, cl 3).

At the federal level, Public Law 83-280 (P.L. 280) granted the state criminal jurisdiction over all Tribal nations "within" its borders from 1957 to 1963 (Washington State Legislature, 2011). As of 2012, the State of Washington has exercised PL 280 jurisdiction as follows (HB 2233, 2012):

- Full: Muckleshoot, Nisqually, Skokomish Indian tribe, and Squaxin Island
- Limited[9]: Chehalis, Colville, Hoh, Kalispel, Lower Elwha Klallam, Lummi, Makah, Port Gamble S'Klallam, Puyallup, Quileute, Quinault, Shoalwater Bay, Spokane, Suquamish, Swinomish, Tulalip, and Yakama
- Uncertain[10]: Cowlitz, Jamestown S'Klallam, Nooksack, Samish, Sauk-Suiattle, Snoqualmie, Stillaguamish, and Upper Skagit.

These overlapping frameworks of regulation and responsibility necessitate government-to-government partnerships between the state and Tribes to ensure effective and efficient outcomes.

Washington has worked to develop government-to-government relationships with Tribes via the Centennial Accord. Since 1989, the Centennial Accord has served as a formal agreement and framework for state and Tribal government relations in Washington (Governor's Office of Indian Affairs). The Centennial Accord includes an annual meeting between Tribal leaders and the governor to discuss Tribal issues.

2.4.2 Local Government to Tribal Government

One notable example of collaboration between a local government and Tribal government is the Swinomish Comprehensive Plan. In 1986, the Swinomish Tribe and Skagit County established a Memorandum of Understanding to coordinate around land management policy and develop this collaborative plan. This was followed by a Memorandum of Agreement in 1996, which aimed to construct procedures for land management planning. These agreements streamlined administrative processes and

[9] PL 280 jurisdiction is limited to eight subject areas (e.g., public assistance, mental health).
[10] None have consented to PL 280 jurisdiction, and it is uncertain whether Washington may assert PL 280 jurisdiction over them (HB 2233, 2012)

helped build mutual trust and understanding between the Tribal and county governments (Mangle, 2022). Agreements like these demonstrate the potential for successful collaboration despite the challenges posed by the checkerboarded nature of some reservations, which can lead to conflicts in planning processes spanning multiple jurisdictions.

Another example of a partnership between a local government and a Tribal government is the potential agreement between Clallam County and the Makah Tribe regarding policing authority within their respective jurisdictions. This potential agreement establishes a framework for collaborating outside of the independent authority possessed by each jurisdiction. It outlines the capacity in which Clallam County and the Makah Tribe can assist each other and specifies who has the authority to approve such assistance (Bawley, 2023).

2.5 Federal Hazard Mitigation Regulations and Guidance

2.5.1 Federal Hazard Mitigation Regulations

Compliance with federal regulations is integral to the successful submission, review, and approval of hazard mitigation plans, underscoring the significance of regulations in shaping planning activities and plan content and structure. The specified regulations for Local and Tribal Mitigation Plans are detailed in Title 44 of the Code of Federal Regulations (CFR), Part 201.6 and Part 201.7. For a full description of regulations, refer to Appendix 3.

Notably, the regulations between Title 44 CFR section 201.6 and 201.7 are mostly the same. Both require that hazard mitigation planning should entail activities (and reporting) on the planning process, risk assessment, mitigation strategy, and plan maintenance process. One important deviation in Title 44 CFR section 201.7 states that a Tribe can describe vulnerability in terms of:

> *"Cultural and sacred sites that are significant, even if they cannot be valued in monetary terms."*
>
> - ***Title 44 CFR Section 201.7***

Still, as mentioned in Chapter 1, the primary difference between regulations for Local and Tribal Mitigation Plans pertains to funding and review. Local Mitigation Plans form the basis for state-level assistance and funding prioritization, and Tribal Mitigation Plans form the basis for federal-level assistance and funding prioritization (Title 44 CFR section 201.6; Title 44 CFR section 201.7).

In congruence with federal regulations, we organize our analysis of plans in Chapter 4 by regulated plan content: planning process, risk assessment, mitigation strategy, and plan maintenance process. We describe each section's purpose as recommended by federal regulations, handbooks, and guides below.

2.5.2 Planning Process Guidance

The planning process serves as an "open public involvement process" for hazard mitigation planning (Title 44 CFR section 201.6; Title 44 CFR section 201.7). The requirements for local and Tribal HMPs both align and differ.

Both local and Tribal hazard mitigation planning processes are required to include opportunities for the public to comment on the plan during both the drafting stage and pre-approval stage. Distinctly, Tribal HMPs are also required to define the "public" (Title 44 CFR section 201.7(c)).

Guidance for local and Tribal HMPs diverges in several other respects. For example, local HMP regulations mandate both collaboration with local and regional agencies and review and incorporation of existing plans and research. Conversely, Tribal HMP regulations encourage such collaboration and coordination as deemed appropriate by the Tribe.

2.5.3 Risk Assessment Guidance

Risk assessment is defined as a fact-based analysis of the potential impacts of identified hazards, serving as the foundation for the mitigation strategy (Title 44 CFR section 201.6). The risk assessment must provide the jurisdiction with sufficient information to identify and prioritize the most effective mitigation actions to reduce losses. In other words, it establishes the basis for the proposed mitigation strategy outlined later in the plan. Via the two main options for Tribes when creating an HMP – writing a Tribal HMP or joining a multi-jurisdictional HMP, each path comes with similar risk assessment responsibilities.

If a Tribe chooses to develop a Tribal HMP, it bears full responsibility for a comprehensive risk assessment. This involves:

1. Thoroughly describing hazards that might impact the Tribal planning area.
2. Conducting a vulnerability assessment of these hazards, including an assessment of cultural and sacred sites, even if they cannot be assigned monetary values.
3. Estimating potential dollar losses from identified hazards.
4. Detailing infrastructure and critical facilities at risk

FEMA's Tribal Mitigation Planning Handbook provides additional context regarding the requirement to include an assessment of cultural and sacred sites. The handbook states:

"You should consider what sacred and cultural sites, including important landscape features, may be vulnerable to hazards and are important to protect. FEMA recognizes that some sites have religious and cultural significance that would be vulnerable to looting if their location becomes known. You do not need to specifically identify or show these resources on maps or describe their location in publicly available plans. However, it is recommended that you consider their vulnerability to natural hazards and discuss ways to protect them from hazard events."

- ***FEMA Tribal Mitigation Planning Handbook***

The handbook offers guidance on assessing the vulnerability of these cultural and sacred sites to identified hazards without publicly disclosing sensitive information, which may involve consulting with Tribal elders, cultural leaders and other knowledge holders.

If a tribe opts to join a multi-jurisdictional HMP, it shares risk assessment responsibilities with other participating jurisdictions. However, the Tribe must still ensure that its unique risks are adequately evaluated and represented in the plan. This involves:

1. Collaborating with other jurisdictions to describe hazards impacting the shared planning area
2. Working with other jurisdictions to estimate potential dollar losses, with a focus on Tribal assets
3. Identifying Tribal infrastructure and critical facilities at risk

Notably, in FEMA's Local Mitigation Planning Handbook, there is no guidance around the inclusion or Tribal cultural and sacred sites.

2.5.4 Mitigation Strategy Guidance

The regulations describe a mitigation strategy as a "blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools," (Title 44 CFR section 201.6; Title 44 CFR section 201.7). Jurisdictions must include mitigation goals, an analysis of current and future mitigation actions (or policies) to reduce the effects of hazards, a prioritization plan, and potential funding sources as part of the Mitigation Strategy section (ibid.).

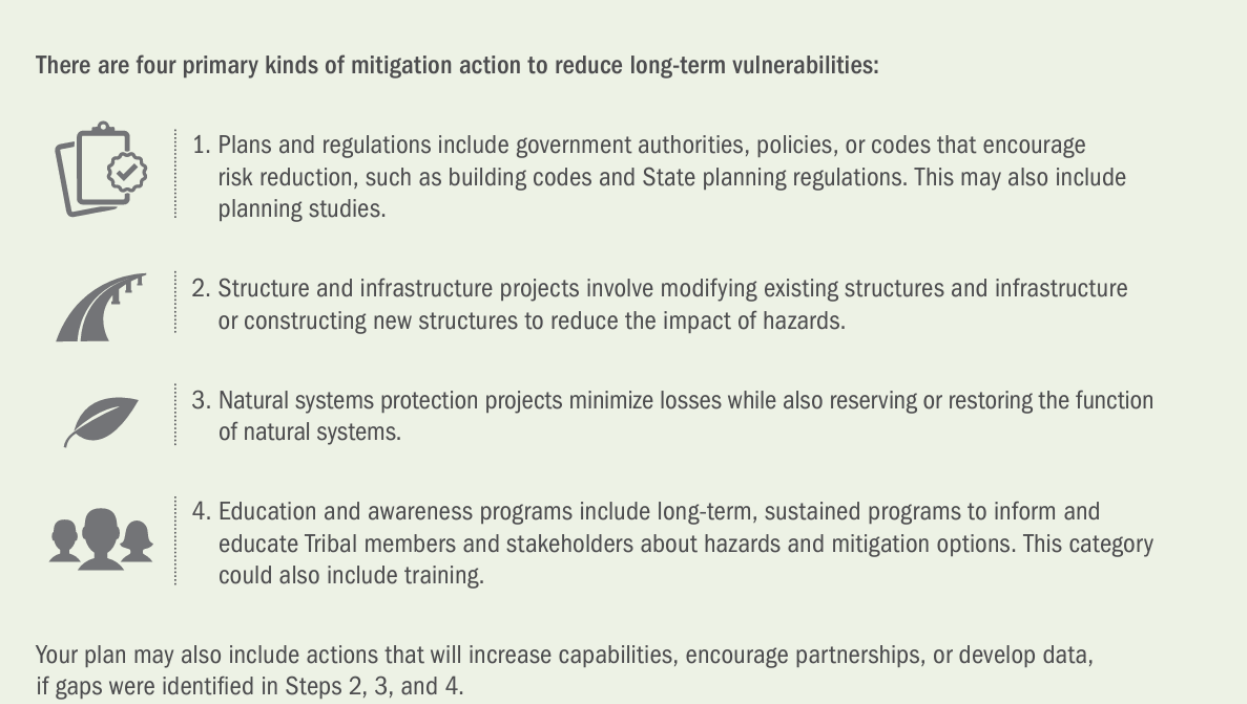
Beyond federal regulations, FEMA hazard mitigation planning handbooks, toolkits, and other resources elaborate on the structure and content of an HMP's Mitigation Strategy. The Tribal Mitigation Planning Handbook describes goals as "general guidelines and broad policy statements that explain what you want to achieve," (FEMA, 2019), for example:

- Minimize loss of life, injury, and damage to property, the economy, and the environment from natural hazards.

- Build and enhance local mitigation capabilities to ensure the safety and resilience of all community members. Reduce damage to public buildings and ensure continuity of emergency services.
- Maintain the jurisdiction's natural and man-made systems that protect against natural hazards.
- Increase cooperation and coordination among private entities, local agencies, state agencies, and federal agencies.
- Protect natural, historic, and cultural resources.

Conversely, FEMA describes mitigation actions as specific projects, policies, or tasks that will help a jurisdiction achieve its goals (FEMA, 2019). Examples include planning and regulations, structure and infrastructure projects, protection of the natural environment, and educational programs (FEMA, 2019; FEMA 2023a). Figure 2 provides more information about four primary kinds of mitigation actions that FEMA recommends to reduce long-term vulnerabilities. Notably, the primary kinds of mitigation actions do not differ between the Tribal and Local Mitigation Planning Handbooks.

Figure 2 – Mitigation Actions from the Tribal Mitigation Planning Handbook



Notes: *Figure 2 displays types of mitigation actions recommended by FEMA to reduce long-term vulnerabilities, borrowed from the Tribal Mitigation Planning Handbook (FEMA, 2021).*

2.5.5 Plan Maintenance Process Guidance

Plan maintenance keeps the HMP relevant as conditions change and as jurisdictions complete mitigation activities. The regulations require that local and Tribal plan maintenance sections describe activities to monitor, evaluate, and update the plan, and

ensure continued public participation (Title 44 CFR section 201.6; Title 44 CFR section 201.7). However, Tribal regulations list two additional expectations: developing a system for monitoring implementation of mitigation measures and project closeouts and establishing a system for reviewing progress on achieving goals and activities identified in the mitigation strategy (ibid.). In practice, the multi-jurisdictional HMPs we reviewed also included monitoring mechanisms and an annual progress review.

The Tribal and Local Mitigation Planning Handbooks further guide plan maintenance processes. Both planning handbooks recommend that governments build maintenance planning into pre-existing city, County, or Tribal meeting structures. The handbooks also offer similar suggestions for plan evaluation cadence and activities. Concerning plan monitoring, the Tribal Handbook specifies that the plan "must describe the system [the Tribe] will use to track and implement the mitigation actions.... This is more specific than general monitoring of the plan... and must include a schedule, department, office, or agency responsible." The Local Handbook offers considerations for questions to ask in plan monitoring but does not specify the need for a specific monitoring system. Finally, with respect to plan updates, the Local Handbook states that jurisdictions must repeat the whole planning process (FEMA, 2023a). In contrast, Tribes are simply advised to include "new development or redevelopment, progress in mitigation efforts, and changes in priorities," (FEMA, 2023a).

2.6 Scholarship on Hazard Mitigation Plan Analysis

While federal regulations establish requirements for HMP content and structure, individual plans still vary in content and quality. In a 2009 meta-analysis, Berke & Godschalk reviewed plan quality evaluations across multiple planning domains including hazard mitigation, sustainable development, and housing. This seminal paper revealed key principles and criteria which have been subsequently used to evaluate plan quality for state and local HMPs (Berke, Smith, & Lyles, 2012; Lyles, Berke, & Smith, 2014). We report the principles from Berke & Godschalk (2009) subsequently utilized in Lyles, Berke, & Smith (2014) in Table 3 below.

Table 3 – Conceptual Plan Quality Principles and FEMA HMP Sections

Conceptual Plan Quality Principles	
Direction Setting Principles Principle 1: Fact Base Principle 2: Goals Principle 3: Actions (Policies) ***Action-Oriented Principles*** Principle 4: Participation Principle 5: Implementation Principle 6: Inter-Organizational Coordination Principle 7: Monitoring	
FEMA Plan Sections and Requirements	**Corresponding Principles**
Planning Process	**Principle 4: Participation** ● Engagement Methods

Documents all types of planning participants and development methods, coordination among agencies, and program(s) integration	
Risk Assessment Identifies and profiles hazards, assesses vulnerability, and estimates potential losses	**Principle 1: Fact Base** ● Hazard Identification ● Vulnerability Assessment ● Risk Analysis
Mitigation Strategy Identifies goals; mitigation actions, and implementation information ***Mitigation Strategy (continued)***	**Principle 2: Goals** ● Hazard loss reduction ● Coordination improvement ● Mitigation vision achievement; increase resilience, and promote sustainability **Principle 3: Actions (Policies)** ● Emergency Services ● Preventative Land Use ● Property Protection ● Protection of Natural Mitigation Features ● Public Information & Awareness ● Structural Controls **Principle 4: Implementation** ● Identifies cost(s), timeframe, lead responsibility for each mitigation strategy
Plan Maintenance Process Monitoring, evaluating, and updating the plan and monitoring progress of mitigation actions	**Principle 6: Inter-Organizational Coordination** ● Local or Tribal Comprehensive Plans ● Other planning processes (flood mitigation plans, climate action plans, etc.) **Principle 7: Monitoring** ● Implementation obstacles ● Post-disaster tracking ● Parties involved in plan update ● Monitoring system ● Ongoing public engagement intention

Notes: *Table 3 outlines the analytical framework utilized by Lyles, Berke, & Smith (2014) to evaluate 174 local mitigation plans across California, Florida, Georgia, North Carolina, Texas, and Washington.*

The principles listed in Table 3 serve two important purposes. First, they provide a framework for evaluating the quality of HMPs within and across different jurisdictions. Second, these principles help identify similarities and differences in the content of plans across jurisdictions. In Chapter 4, we apply this framework to analyze the content of Tribal HMPs, multi-jurisdictional HMPs, and Tribal annexes in Washington.

To further justify using this framework in answering our research questions, we present key findings from Lyles, Berke & Smith (2014) in Table 4. Their study demonstrates how these principles can effectively reveal differences in plan content. Moreover, the authors' findings serve as an important benchmark for comparing our results, especially considering that their analysis included local mitigation plans in Washington, although it did not cover Tribal plans.

Table 4 – Findings by Principle (Lyles, Berke, & Smith, 2014)

FEMA Sections	Principles	Findings
Planning Process	Principle 4: Participation	Most plans thoroughly described the planning process, including public notices and meetings, but few mentioned targeted outreach methods like focus groups, surveys, or citizen advisory committees.
Risk Assessment	Principle 1: Fact Base	Most plans identify a wide range of hazards, with flooding being the most commonly addressed, while climate change and sea level rise are rarely included. Plans provide the most detailed information on vulnerabilities related to critical facilities and infrastructure, property, and population life, health, and safety, while environmental assets and especially vulnerable populations receive less attention. Most plans do not include loss estimates for public or private structures.
Mitigation Strategy	Principle 2: Goals	The most frequently stated goals in the plans were to reduce property damage, protect public safety, and increase the availability of information, while goals related to enhancing resilience and sustainability or reducing the unequal distribution of impacts were less common. Little variation was observed between jurisdictions.
	Principle 3: Actions (Policies)	Emergency Services approaches are the most common actions (policies) listed by local governments. Notably, FEMA considers emergency services as preparedness and response rather than mitigation activities. Property protection, public information and awareness, and structural controls are other common mitigation approaches that local jurisdictions employ. The least common types of future-oriented actions by all local jurisdictions are preventative land use approaches and protection of natural mitigation features.
	Principle 4: Implementation	Overall, plans demonstrate a moderate to high level of inclusion of information about agencies responsible, timelines, and cost for actions proposed in mitigation strategies. This finding varied widely across plans. Almost all plans identify the agency with lead responsibility for monitoring the plan and indicate that the public will be involved in future monitoring and updating of the plan. However, few plans include indicators for tracking progress or identifying obstacles to implementation faced in the past.
Plan Maintenance Process	Principle 6: Inter-Organizational Coordination	Although most plans outlined a general process for integrating the mitigation plan with other planning efforts and referenced the local comprehensive plan, few mentioned specific components of the comprehensive plan relevant to mitigation or other relevant planning initiatives such as disaster recovery plans, climate change planning, and hazard mitigation planning in adjacent jurisdictions.
	Principle 7: Monitoring	Most plans identify the responsible agency or role for monitoring progress and involving the public in future updates. Past obstacles to

		implementation and specific indicators for tracking progress are not present in most plans.

Notes: *Table 4 summarizes the main findings from Lyles, Berke, & Smith (2014). These findings serve as a benchmark for comparing the results of our analysis including how Indigenous worldviews and priorities align and diverge.*

Chapter 3 – Research Methods

3.1 Research Question

To what extent are Indigenous worldviews and Tribal priorities represented in multi-jurisdictional plans, their annexes, and Tribal mitigation plans in Washington state?

Our research aims to analyze how Tribal mitigation plans reflect and enable Tribes to enact their own hazard mitigation priorities compared to multi-jurisdictional plans. As such, we ask:

How do worldviews and priorities differ between multi-jurisdictional plans, their annexes, and Tribal mitigation plans in...

- Planning Processes?
- Risk Assessment?
- Mitigation Strategy?
- Plan Maintenance Processes?

3.2 Informal Interviews

3.2.1 Objective

Conduct informal interviews with hazard mitigation professionals, consultants, and scholars to gain insight and context about FEMA and local and Tribal participation in hazard mitigation planning.

3.2.2 IRB Application Process

Although our team did not analyze data collected throughout the informal interview portion of the project, we still submitted this study to the Institutional Review Board (IRB) at the University of Washington in consultation with our capstone advisor and clients. The University of Washington's IRB found in February 2024 that our project (STUDY00019814) was exempt from federal human subjects regulations, including the requirement for IRB approval and continuing review.

3.2.3 Interviewees

We selected a purposive sample of interviewees with guidance from researchers from the Cascadia CoPes Hub. Prospective interviewees had existing relationships with researchers at the Cascadia CoPes Hub and were selected for their insights into hazard mitigation planning and their experience working with Tribes participating in hazard mitigation planning. Of the ten prospective interviewees, seven agreed to participate in informal interviews.

3.2.4 Questions and Interviews

We developed interview questions based on our research questions and guidance from our client. At the start of each interview, we read a script describing the purpose of the interview and obtained informed consent. Next, we asked interview questions tailored to the role and expertise of the interviewee. We also sought insight into how to collect missing hazard mitigation plans (see Phase 2: Hazard Mitigation Plan Content Analysis). We document a list of interview questions and clarifying questions in Appendix 1.

3.2.5 Compensation

We compensated three of the seven interviewees with honoraria commensurate to interview length. Interviewees received $100 gift cards for interviews lasting 1 hour and $150 for interviews lasting 1.5 hours. The remaining interviewees were employees of the University of Washington or other public entities and therefore not eligible for honoraria.

3.2.6 Limitations

One important limitation of the interview process is that we were not able to conduct interviews with emergency management staff from a robust sample of federally recognized Tribes in Washington. While doing so would have expanded our analysis, interviewing members of Tribes would require an approved Tribal IRB, a process that can take several months. Our project's timeline did not allow for such a process.

3.3 Hazard Mitigation Plan Content Analysis

3.3.1 Objective

Collect hazard mitigation plans and investigate how Tribal HMPs differ from multi-jurisdictional HMPs and Tribal annexes in Washington State in their inclusion of Indigenous worldviews and priorities.

3.3.2 Collecting Hazard Mitigation Plans

The population of HMPs of interest includes all Tribal HMPs and multi-jurisdictional HMPs (including annexes) that Tribes have most recently adopted in Washington. According to FEMA's database, OpenFEMA, two Tribes, the Nisqually Indian Tribe and the Yakama Nation, have not been party to an HMP of either type, limiting the population of interest to 27 of 29 federally recognized Tribes of Washington. OpenFEMA provided helpful information on the type and status of plans most recently adopted by Tribes. Accordingly, we obtained most hazard mitigation plans through Tribal and county websites.

3.3.3 Analyzed Sample of Hazard Mitigation Plans

After consulting interviewees and employing multiple search methods, we were able to locate 14 Tribal HMPs (some in draft form), all five multi-jurisdictional HMPs, and five

Tribal annexes. Notably, HMPs in the population that are missing from the final sample are exclusively Tribal HMPs and Tribal annexes. We discuss this as an important limitation in multiple sections throughout the paper. Table 5 provides a summary of the population of HMPs of interest and final analyzed sample of HMPs based on their findability.

Table 5 – Population and Sample of Hazard Mitigation Plans

Plan Type	Tribes	Pop.	Sample	Missing
Tribal HMP	• Confederated Tribes of the Chehalis Reservation • Confederated Tribes of the Colville Reservation • Hoh Tribe • Lummi Nation • Makah Tribe[1] • Nooksack Indian Tribe[1] • Puyallup Tribe of Indians • Quileute Nation • Quinault Indian Nation • Samish Indian Nation • Sauk-Suiattle Indian Tribe • Shoalwater Bay Indian Tribe • Skokomish Indian Tribe[1] • Snoqualmie Indian Tribe[1] • Spokane Tribe of Indians[1] • Squaxin Island Tribe • Stillaguamish Tribe of Indians • Suquamish Tribe • Tulalip Tribes • Upper Skagit Indian Tribe[1]	N=21	N=14	N=7
Multi-Jurisdictional HMP	• Clallam County[2] • Lewis County • King County • Pend Oreille County • Skagit County	N=5	N=5	None
Tribal Annex	• Cowlitz Indian Tribe (Lewis County) [3] • Jamestown S'Klallam Tribe (Clallam County) [2] • Lower Elwha Klallam Tribe (Clallam County) [2] • Kalispel Tribe of Indians (Pend Oreille County) • Muckleshoot Indian Tribe (King County) • Swinomish Indian Tribal Community (Skagit County)	N=6	N=5	N=1

Notes: *Table 5 details the population of HMPs of interest for our analysis and the available sample analyzed.*
[1] These plans exist but we were unable to locate them for inclusion in our analysis.
[2] Six Tribes have adopted multi-jurisdictional HMPs but the population size is 5 because the Jamestown S'Klallam Tribe and the Lower Elwha Tribe are covered by the same multi-jurisdictional HMP (Clallam County).
[3] The Cowlitz Tribe is covered by a multi-jurisdictional HMPs but does not have a publicly available annex.

3.3.4 Codebook Development

After collecting findable Tribal HMPs, multi-jurisdictional HMPs, and Tribal annexes, our team developed a codebook to analyze our final sample of plans in three phases: initial review, framework sourcing, and codebook testing.

Initial Review of Plans

In the preliminary phase of codebook development, our team reviewed the three different types of HMPs in our sample: Tribal HMPs, multi-jurisdictional HMPs, and Tribal annexes. We used this review to note surface-level differences between plans including structure and length. Our preliminary review revealed that plan structure and length were correlated with the use of consultants. Notably, nine plans were written by the same consulting group, with all corresponding plans revealing similar, if not identical, content and structures. Most HMPs are organized into four sections: planning process, risk assessment, mitigation strategy, and post-maintenance process. Plans range in size: annexes are generally the shortest and multi-jurisdictional HMPs are the longest.

Framework Sourcing

Because federal regulations mandate much of plan content and structure (See Chapter 2 and Appendix 3), it can be difficult to differentiate between content that represents a Tribe's true priorities from those listed purely because they are eligible for FEMA funding. Nevertheless, it became clear during our initial review of plans that many Tribes included supplementary material in their HMPs that was explicitly not required to be eligible for FEMA funding, but nonetheless important to the Tribe. Accordingly, we opted to assess Indigenous worldviews and Tribal priorities by comparing differences in expected content across Tribal HMPs, multi-jurisdictional HMPs, and Tribal annexes (in alignment with federal regulations) and capturing supplementary information beyond that required for plan approval. To bolster the validity of our research, we grounded our comparative analysis in the existing framework from Lyles, Berke, and Smith (2014) described in Chapter 2.

Adapting the established framework proposed by Lyles, Berke, and Smith offers several advantages. First, this framework has proven to be a reliable tool for the comparative analysis of both local and state mitigation plans. Its credibility is reinforced by its foundation in literature from various planning scholars. Second, a grounded framework helps us discern if plan content sits within predefined categories or not. This is advantageous in that Indigenous worldviews and Tribal priorities may align with or transcend predefined categories that were developed in a Western planning framework. To supplement our comparative analysis, we also evaluated HMPs for alignment with the Tribal Climate Change Principles as described in Chapter 2. This supplementary analysis provides our client and readers with important context on how Tribes access FEMA programs and funding compared to counties in Washington. Considering the Tribal Climate Change Principles were not authored specifically for the context of hazard mitigation planning, we crosswalk five of eight

Table 6 summarizes our codebook, sourcing all seven principles from Lyles, Berke, and Smith and all five of eight Tribal Climate Change Principles. We report on the full codebook including principles, definitions, codes, and coding instructions in Appendix 4.

Table 6 – Codebook Snapshot

HMP Section	Corresponding Principles	Codes Subcodes
Planning Process	LBS Principle 4: Participation	**Outreach Activities** Community Events HMP Survey Online Resources Tribal Council Meetings Update Methods
	TCCP Principle 1	**Survey Response Rate** More than 100 respondents Less than 100 respondents Unknown number of respondents No Survey **Defines Public**[1] **Definition of Public**[1] Tribe Only Tribe and Non-Tribe Non-Human Life
	TCCP Principle 2	**Tribal Partners on Planning Committee**[2]
	TCCP Principle 4	**Utilization of Federal Funds for Planning** FEMA Funding Any Federal Funding No Mention of Federal Funding
	TCCP Principle 5	**Plan Status** Approved Expired Pending Adoption Revisions Never Adopted an HMP
Risk Assessment	LBS Principle 1: Fact Base	**Number of Hazards** **Hazard Types** **Vulnerability Categories** Population Property Critical Facilities and Infrastructure Economy Environment Climate Change **Hazards with Dollar Loss Estimates** **Risk Ranking System**

		CPRI Ranking System Other Ranking System No Ranking System **CPRI Score by Hazard**
	LBS Principle 2: Goals	**Improve Coordination** Increase Information Availability Local-Local Coordination State-Local Coordination **Decrease Hazard Losses** Distributes Hazards Management Costs Equitably Minimize Fiscal Impacts of Disasters Protect Public Safety Reduce Damage to Private Property Reduce Damage to Property in General Reduce Damage to Public Property Reduce Impacts on Environment and Natural Areas **Overarching Vision** Increase Resilience Promote Sustainability **Other** Protect Tribal Cultural Assets and Sovereignty[3] Promote Equity[3]
Mitigation Strategy	LBS Principle 3: Actions (Policies)[4]	**Mitigation Action (Policy) Categories** Emergency Services Preventative Land Use Property Protection Protection of Natural Mitigation Features Public Information & Awareness Structural Controls Internal Capability & Coordination[5] External Partnerships & Coordination[5]
	LBS Principle 5: Implementation	**Implementation Ratio**
	TCCP Principle 6	**Future Funding Sources** Federal State Local Non-Governmental Organization (NGO) **FEMA Funding Sources**[6]
Plan Maintenance Process	LBS Principle 6: Inter-Organizational Coordination	**Local Comprehensive Plan** **Other Planning Processes**
	LBS Principle 7: Monitoring	**Implementation Obstacles** **Post-Disaster Event and/or Losses Tracking** **Identification of Parties Involved in Future Planning**

		Monitoring Indicators **Ongoing Public Engagement Intentions**

***Notes**: Table 6 summarizes the codes and subcodes used to analyze plans. "LBS Principles" and codes were borrowed and adapted from Lyles, Berke, and Smith (2014). TCCP Principles were borrowed from the Tribal Climate Change Principles by Gruenig, Lynn, Voggesser, and Whyte (2015). Our team developed specific codes for each relevant TCCP principle, relevant to the context of hazard mitigation planning. Our team did not develop codes for TCCP Principle 3, Principle 7, or Principle 8 at these principles could not be easily adapted to the content of HMPs.*
[1] Federal regulations only require Tribal HMPs to define the public, thus we only applied these codes to Tribal HMPs and Tribal annexes.
[2] We only applied this code to multi-jurisdictional HMPs. All Tribal HMPs and Tribal annexes inherently include Tribal staff on the planning committee.
[3] These subcodes did not originate from the Lyles, Berke, and Smith (2014) framework, but were used to differentiate mitigation goals that did not fit within the original framework.
[4] Instead of analyzing the entire section for presence of these mitigation action (policy) categories, each mitigation action listed by a jurisdiction was sorted into one or multiple mitigation action categories.
[5] These subcodes did not originate from the Lyles, Berke, and Smith (2014) framework, but were added because many mitigation actions did not fit within the original framework. These additions reflect changes to FEMA guidance over the mitigation strategy since 2014 when the original framework was developed.

3.3.5 Codebook Overview and Testing

After finalizing our coding framework, we uploaded our codes, coding instructions, and HMP PDFs to Dedoose, a web-based software for qualitative and mixed-methods content analysis. We chose Dedoose because it contains robust features that enhance analysis and intercoder reliability. Moreover, this software allows multiple coders to communicate, collaborate, and code in real-time.

We pilot-coded seven of the 26 hazard mitigation plans and annexes in our sample. This pilot coding period allowed us to formulate a preliminary analysis plan and identify additional areas of interest important to our analysis. We also utilized this period to refine codes and coding instructions.

Throughout early April 2024, we coded all 24 HMPs and annexes in our sample. To strengthen the consistency and reliability of the coding application, each of the four sections — Planning Process, Risk Assessment, Mitigation Strategy, and Plan Maintenance Process — within each HMP was assigned to two coders. After the first coder applied their respective codes to a section, the second coder reviewed the applied codes and applied a second set of codes based on their interpretation of the text. Notably, this was not a fully independent process, as the second coder had access and knowledge to how text had been previously coded (see Limitations). In cases where discrepancies arose in code application, coding teams collaborated and resolved inconsistencies. This process also allowed us to refine our master codebook and add important examples to ensure further consistency in coding applications.

3.3.6 Limitations

Limited Engagement with Tribes
We did not engage with most of the Tribes whose plans we analyzed during the research process. Consequently, the themes we identified do not fully encompass the interests and priorities of these Tribes in hazard mitigation planning.

Missing Hazard Mitigation Plans
The absence of eight HMPs means that our sample is not perfectly representative and may limit the depth of our analysis. This gap could affect the accuracy of our findings. Appendix 2 summarizes missing and obtained HMPs and their respective years of adoption.

Conformity Bias
Although two sets of coders coded each section, this was not a fully independent process. We acknowledge that the codes applied by the first coder could have been upheld by the second coder due to conformity bias. This is a limitation of our analysis that we would have resolved had we had more time.

Intercoder Reliability
Despite our efforts to ensure consistency between coders, all coders are human, and intercoder reliability might therefore vary. This variability could influence the interpretation and consistency of data analysis, thus warranting some caution in drawing conclusions. We also acknowledge that some sets of codes are far more subjective than others. For example, applying codes to future-oriented mitigation actions is much more subjective than applying codes for what types of hazards a jurisdiction identifies and profiles. As such, we posit that the reliability across sections and sets of codes varies.

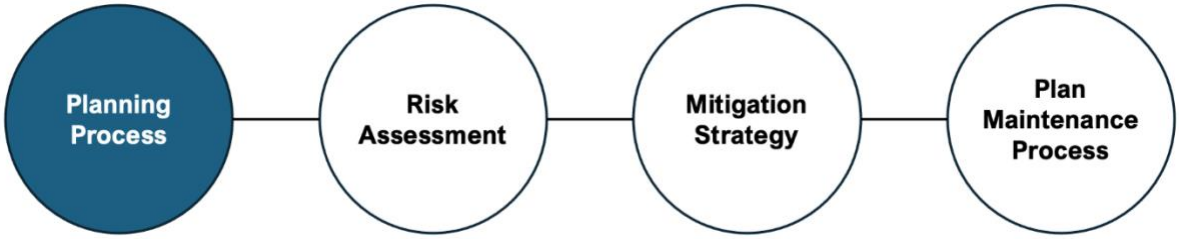
Challenges in Coding
The coding process for HMPs is inherently difficult, even with well-defined codes. Determining whether to apply a specific code to certain sections of the plans requires subjective judgment, as the contents may not clearly align with the code definitions. This subjectivity could lead to inconsistencies in coding and potentially affect the reliability of results. While each plan section was double-coded, these iterations were not coded completely independently. Inconsistencies in code application were resolved amongst coding pairs.

Chapter 4 – Findings & Analysis

In this chapter, we present the findings from our content analysis of hazard mitigation plans (Chapter 3). These findings stem from our thorough examination of 12 principles including seven from Lyles, Berke, & Smith (2014) and five Tribal Climate Change Principles (Gruenig et al., 2015). We apply codes and subcodes for each of the 12 principles across 15 Tribal HMPs, six multi-jurisdictional HMPs, and five Tribal annexes.

We organize each principle by the section of hazard mitigation plans it applies to: Planning Process, Risk Assessment, Mitigation Strategy, and Plan Maintenance Process. For each principle, we present the key questions that guided our analysis, corresponding with codes and subcodes for each principle. For the Tribal Climate Change Principles, we also provide a summary or "crosswalk" of how we applied the principle to the context of hazard mitigation planning. Finally, we end the chapter with a synthesis of findings by framework: Lyles, Berke, & Smith (2014) and Gruenig et al. (2015).

4.1 Planning Process



The Planning Process aims to construct a lead planning team and develop a planning framework for stakeholders and public involvement. From our sample of Tribal HMPs, multi-jurisdictional HMPs, and Tribal annexes, we observed differences in methods of public outreach, definitions of "public", the decision to include an external consultant, the number of Tribal representatives in multi-jurisdictional HMP planning processes, and the types of funding sources used for implementing the planning process. In this section, we present findings from five pertinent principles:

- LBS Principle 4 – Participation[11]
- TCCP Principle 1[12]
- TCCP Principle 2
- TCCP Principle 4
- TCCP Principle 5

[11] LBS Principle refers to the hazard mitigation evaluation principles from Lyles, Berke, and Smith (2014).
[12] TCCP refers to the Tribal Climate Change Principles from Gruenig et al. (2015).

4.1.1 LBS Principle 4 – Participation

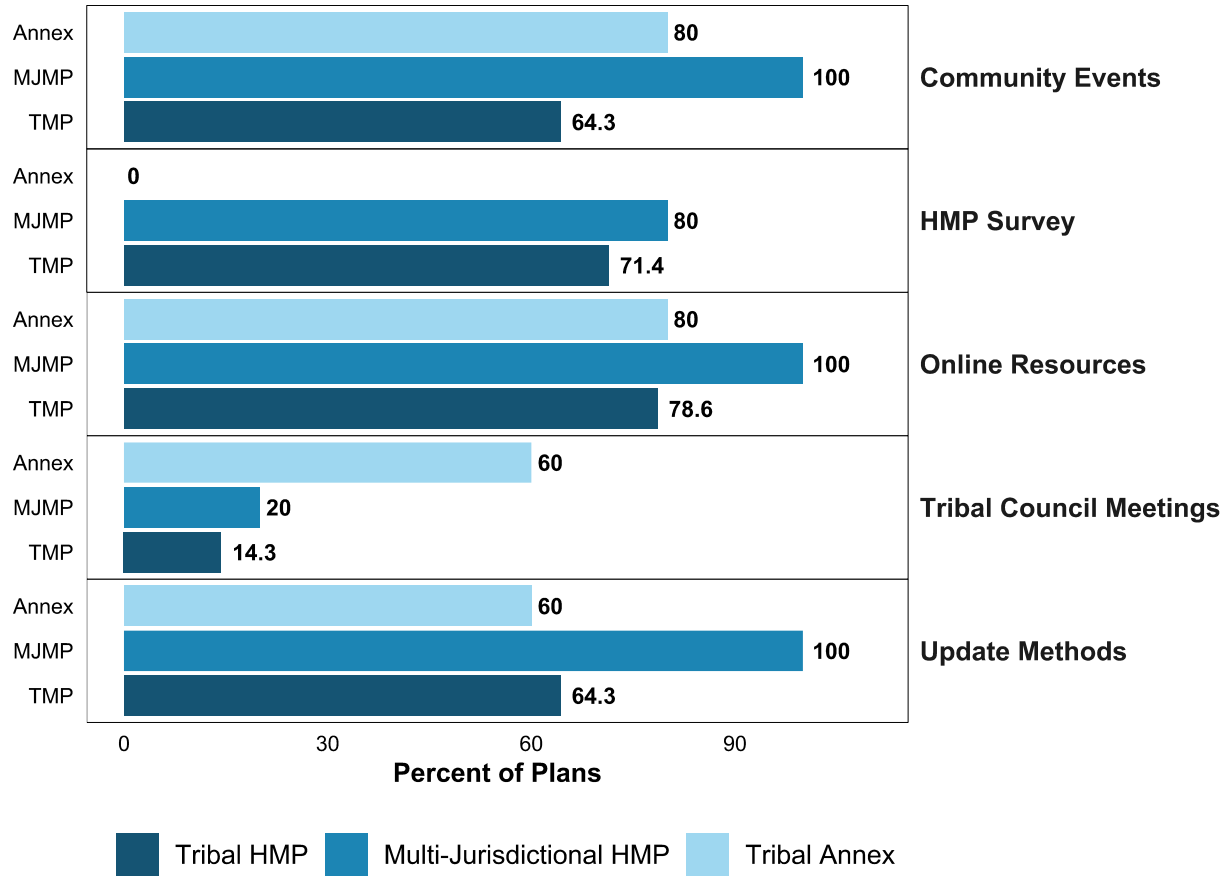
Key Questions

- How do plans include formal and informal actors?
- Do these choices differ across plan types?

While all plans relied on a planning committee, the levels of internal and external coordination varied across the three plan types. For instance, some jurisdictions established both planning teams and committees to perform different tasks or meet specific objectives, and others relied on a single department or group to complete the planning process.

Public outreach was the primary tactic used across all plans to incorporate community and external stakeholder input in the planning process. Additionally, the implementation of public outreach activities helped jurisdictions meet FEMA requirements. Figure PP.1 displays the different public outreach activities used by plan type. They are categorized as follows:

Figure PP.1 — Presence of Outreach Activities



Notes: *Figure PP.1 displays the presence of outreach activities by plan type. Within each plan, we coded whether a jurisdiction administered a public outreach activity within each category at least once. We then averaged the presence of these activities across plan type.*

- **Community Events**: workshops, outreach events, training programs, or open houses
- **HMP Survey**: a single outreach activity of implementing an HMP public survey across the covered jurisdiction(s)
- **Online Resources**: social media or website outreach activities
- **Tribal Council Meetings**: a singular outreach activity of presenting at Tribal Council meetings for both Tribal Council and Tribal member input.
- **Update Methods**: newsletters, news articles, email updates, or flyer distribution activities

All five multi-jurisdictional HMPs used community events, online resources, and update methods. However, only two counties–Clallam and Pend Oreille–directly mentioned Tribal involvement in their public outreach activities. For instance, Clallam County received public input from at least one member of the Jamestown S'Klallam Tribe during its initial public comment period. Pend Oreille County partnered with the Kalispel Tribal Council to initiate six Tribal affiliated outreach activities, including involvement in a Tribal Council meeting.

For Tribal HMPs, 64-79 percent of plans used community events, HMP surveys, online resources, and update methods. For Tribal annexes, 60-80 percent of plans used community events, online resources, Tribal council meetings, and update methods. More specifically:

- Nine of 14 Tribal HMPs implemented community events and four of five Tribal annexes implemented community events. Within this category, Tribal HMPs and Tribal annexes utilized more educational programs and workshops than multi-jurisdictional HMPs.
- Eleven of 14 Tribal HMPs and four of five Tribal annexes implemented online resources. Most plans utilized social media and other online resources, and there was little variation between plan types.
- Nine of 14 Tribal HMPs and three of five Tribal annexes implemented update methods. A portion of Tribal HMPs specifically mentioned notifying Tribal business committees, but no multi-jurisdictional HMPs did so.

Two Tribal HMPs and three Tribal annexes reported utilizing Tribal Council meetings as public outreach activities. However, Tribal Council frameworks and protocols were not the same across all Tribal Nations, and a Tribal Council's role in public outreach was unique to each Tribe. Additionally, Tribes could have utilized Tribal Council meetings as a public outreach activity but did not report this activity in the plan.

4.1.2 TCCP Principle 1

Crosswalk

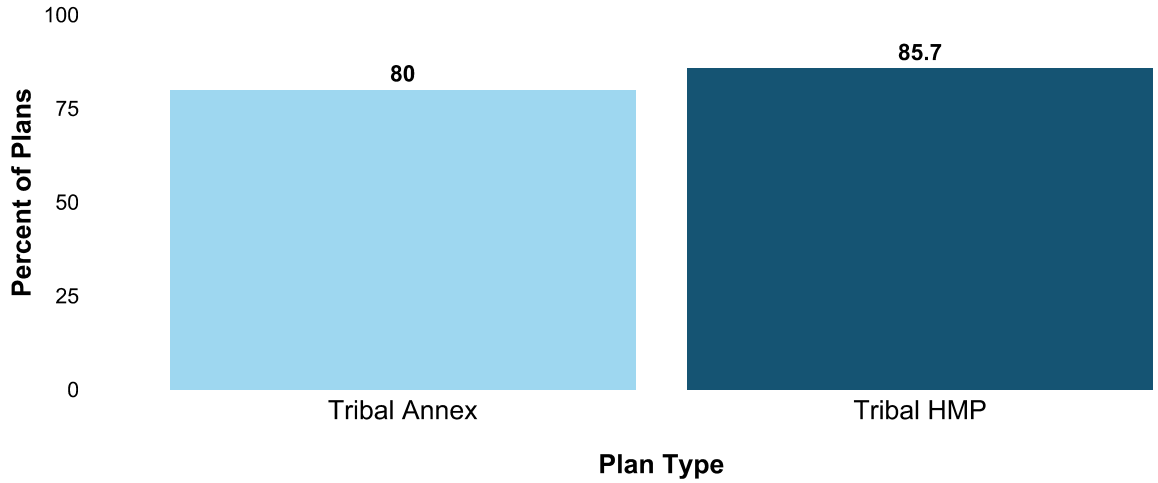
Principle 1 of the Tribal Climate Change Principles states, “Federally recognized Tribes and other Indigenous Peoples and Indigenous communities must be partners with full and effective participation in assessing and addressing the problems of climate change at the local, regional, national, and international levels and must be accorded at least the status and rights recognized in the U.N. Declaration on the Rights of Indigenous Peoples and other international standards relevant to Indigenous Peoples.” We applied this principle to the context of hazard mitigation planning by first assessing how Tribal HMPs defined the “public”, as required by Title 44 CFR section 201.7.

Key Questions

- Do plans define the public?
- How do plans define the public?

Unlike multi-jurisdictional HMPs, Tribal HMPs are required by FEMA to define the “public.” We assessed whether plans defined the “public” and found that 12 of 14 Tribal HMPs, four of six Tribal annexes, and no multi-jurisdictional HMPs did so (Figure PP.2). While most Tribal annexes defined the public, it is unclear whether regulations in Title 44 CFR Section 201.7 apply to Tribal annexes as they do to Tribal HMPs. These findings highlight opacity in federal regulations and inconsistencies between the regulations for Tribal HMPs and local HMPs.

Figure PP.2 — Presence of Any Definition of "Public"



Notes: *Title 44 CFR Section 201.7 requires that Tribal mitigation plans define the “public.” Figure PP.2 displays the percent of Tribal HMPs and Tribal annexes that defined the public in our sample of plans. For example, 85.7 percent of Tribal HMPs defined the “public”. No multi-jurisdictional HMPs defined the “public”, presumably because regulations do not require them to do so.*

While most of our coding scheme was deductive, we sorted definitions of the "public" into one of three inductive categories: **Tribe Only** definitions listed Tribal members and staff. **Tribe and Non-Tribe** definitions listed Tribal members, Tribal staff, and the greater community. **Non-Human Life** was one definition that uniquely listed all humans and all living things within the ecosystem. Table PP.1 provides several examples of how our team coded the various definitions of "public" found in our sample to provide additional transparency of the inductive categories. We provide additional examples in Appendix 4.

Table PP.1 – Definitions of "Public" Across Tribal HMPs and Tribal Annexes

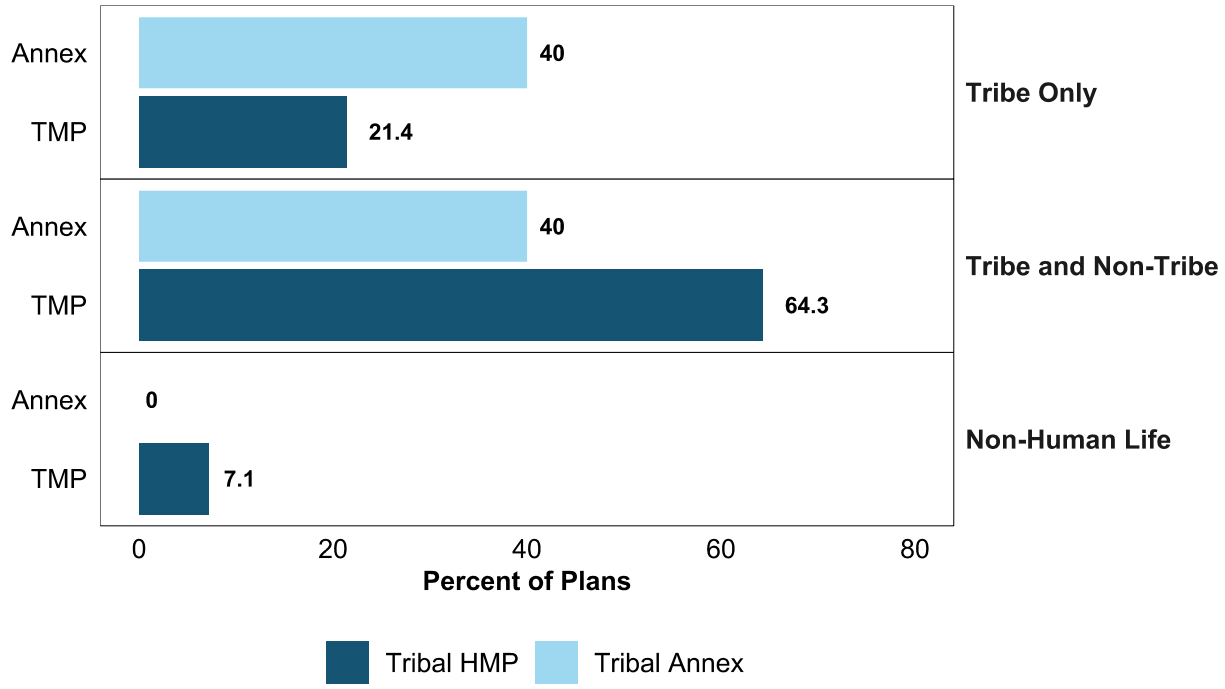
Definition of "Public"	Tribal HMPs	Tribal Annexes
Tribe Only	"The public as defined for this HMP is primarily Tribal Members living on the Quileute Indian Reservation." **(Quileute)**	"For the purposes of the HMP, 'public' is defined as Tribal Citizens and employees" **(Jamestown S'Klallam)**
Tribe and Non-Tribe	"The Shoalwater Bay Tribe defines 'public' as its Tribal Membership, Tribal Government and employees, the surrounding local communities and districts as well as County, State and Federal agencies and relevant non-government organizations." **(Shoalwater Bay)**	"For this initial plan annex process, the Tribe defined public as its Tribal membership and staff, as well as neighboring communities. " **(Muckleshoot)**

Notes: *Table PP.1 displays examples of how our team coded various definitions of "public" into inductive categories.*

Figure PP.3 displays how Tribal HMPs and Tribal annexes defined the "public" in aggregate. For Tribal HMPs, nine plans used a broad definition that included both Tribal and non-Tribal members, eight of which were drafted with the support of external consulting. Of these eight Tribal HMPs, six utilized the same consulting firm, Bridgeview Consulting, LLC. Contrarily, the three Tribal HMPs that defined the "public" more narrowly to *only* Tribal staff and members did not utilize external consulting. Finally, the Squaxin Island Tribe singularly defined "the public" as "all human beings, all living things within the ecosystem." This Tribal HMP was drafted in consultation with Kiksapa Consulting, LLC–an Indigenous-owned consulting firm. These findings collectively suggest that the use and choice of external consultant correlate highly with how a Tribe defined the term "public" in their plan.

How a Tribe defines the "public" may also stem from confidentiality considerations for cultural resources, particularly for Tribes that annex into multi-jurisdictional HMPs. For instance, the relationship a Tribe has with a county government may impact what a Tribe feels comfortable sharing with those government officials.

Figure PP.3 — Presence of "Public" Definitions by Category



Notes: *Figure PP.3 displays the percentage of Tribal HMPs and Tribal annexes that employed various definitions of "the public". For example, 40 percent of Tribal annexes defined "the public" as members of the Tribe only.*

4.1.3 TCCP Principle 2

Crosswalk

Principle 2 of the Tribal Climate Change Principles states, "Tribes must have fair and equitable representation on all federal climate committees, working groups, and initiatives in which states, local governments, and other stakeholders are represented." We applied this principle to the context of hazard mitigation planning by assessing whether the multi-jurisdictional HMPs in our sample included representatives from Tribal governments on the planning committee.

Key Question

- Do multi-jurisdictional HMPs with Tribal annexes include partners from Tribal governments on their planning committee?

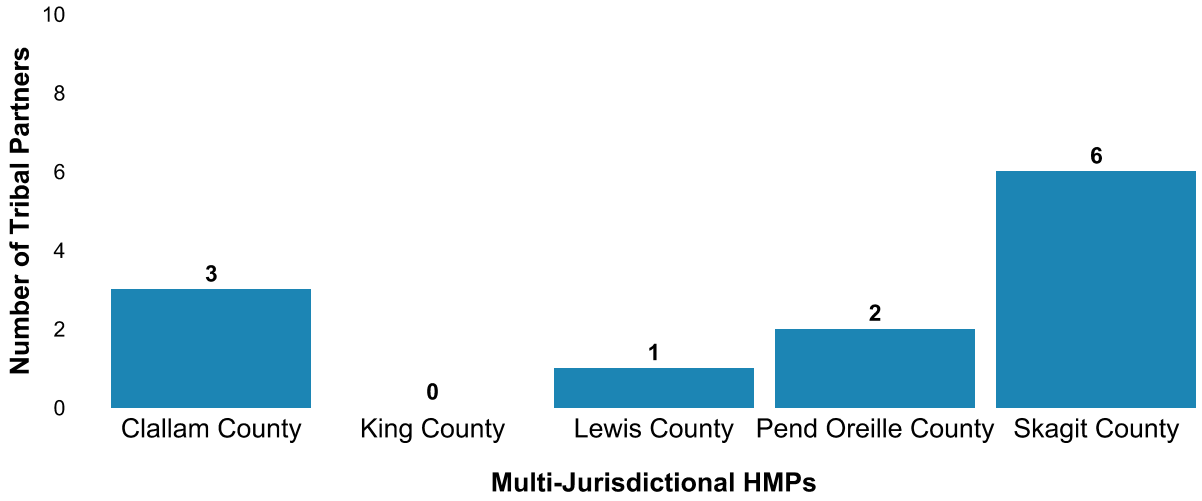
Although local HMPs are often adopted by multiple jurisdictions, including Tribes, FEMA does not require that all annexing jurisdictions be represented in a multi-jurisdictional planning committee. However, if a Tribe annexes into a multi-jurisdictional HMP, ideally, the Tribe will be represented at the onset of the planning process even if planning committee membership does not represent a Tribes' level of involvement in the planning

process overall. Moreover, the number of Tribal representatives participating in an HMP planning committee can differ based on many factors, such as capacity and past jurisdictional partnerships.

Figure PP.4 demonstrates that, in our sample, the Skagit County multi-jurisdictional HMP had the largest number of Tribal representatives involved, with one primary and one alternate representative from the Swinomish Indian Tribal Community, Sauk Suiattle Tribe, and Upper-Skagit Indian Tribe. The planning partnership worked with the primary planners and the steering committee to complete the multi-jurisdictional HMP. Although the Swinomish Indian Tribal Community was the only Tribe that has adopted the Skagit County multi-jurisdictional HMP, the county involved both the Sauk Suiattle Tribe and Upper-Skagit Indian Tribe in their planning process.

The Clallam County multi-jurisdictional HMP had the second largest number of Tribal representatives involved, with two representatives from the Jamestown S'Klallam Tribe and one Tribal representative from the Lower Elwha Klallam Tribe as part of the multi-jurisdictional HMP planning team. The Pend Oreille County multi-jurisdictional HMP had one primary and one alternate Tribal representative from the Kalispel Tribe of Indians as part of the planning partnership who worked with the primary planners and the steering committee. Finally, the Lewis County multi-jurisdictional HMP had one Cowlitz Tribal representative as part of the stakeholder committee. The stakeholder committee worked with the planning team and steering committee to complete the multi-jurisdictional HMP.

Figure PP.4 — Number of Tribal Partners on Planning Committee



Notes: *Figure PP.4 displays the number of Tribal partners on planning committees for the multi-jurisdictional HMPs analyzed in our sample. For example, Clallam County's planning committee reported three Tribal partners on their planning committee which included two members from the Jamestown S'Klallam Tribe and one member from the Lower Elwha Klallam Tribe.*

Out of the five multi-jurisdictional HMPs, King County was the only plan that did not include Tribal representatives in the planning process. While the Muckleshoot Tribe is covered by this plan, they submitted their Tribal annex for approval after the King County multi-jurisdictional HMP planning process was complete.

4.1.4 TCCP Principle 4

Crosswalk
Principle 4 of the Tribal Climate Change Principles states, "Indigenous Peoples must have direct, open access to funding, capacity-building, and other technical assistance, with their free, prior, and informed consent, to address the immediate and long-term threats from climate change." We applied this principle to the context of hazard mitigation planning by assessing the utilization of federal grant funds in the planning process, looking for discrepancies across plan types.

Key Questions
- Do jurisdictions utilize federal grants to fund the planning process?
- Does utilization differ between plan types?

Figure PP.5 demonstrates that the majority of multi-jurisdictional HMPs and Tribal annexes did not report utilizing federal funding specifically for the planning process, but the majority of Tribal HMPs did. Out of 14 Tribal HMPs, nine reported utilizing federal grant funds, seven of which reported utilizing FEMA grant funds. The planning process for the remaining two Tribal HMPs were funded by a CDC COVID-19 related grant and an EPA Performance Partnership grant.

These findings suggest that in our sample, Tribal HMPs were more likely than Tribal annexes to report utilizing federal funding to support hazard mitigation planning. It is difficult to know whether this reflects a tradeoff that Tribes face when choosing to adopt a Tribal HMP versus a Tribal annex. For instance, how does annexing into a multi-jurisdictional HMP inhibit or enhance a Tribes knowledge of or access to federal funding to support the planning process? Also, without analyzing all multi-jurisdictional HMPs in Washington (instead of just multi-jurisdictional HMPs that Tribes have annexed into), we don't know if the discrepancy between Tribal HMPs and multi-jurisdictional HMPs is true at the population level of HMPs in Washington.

4.1.2 TCCP Principle 5

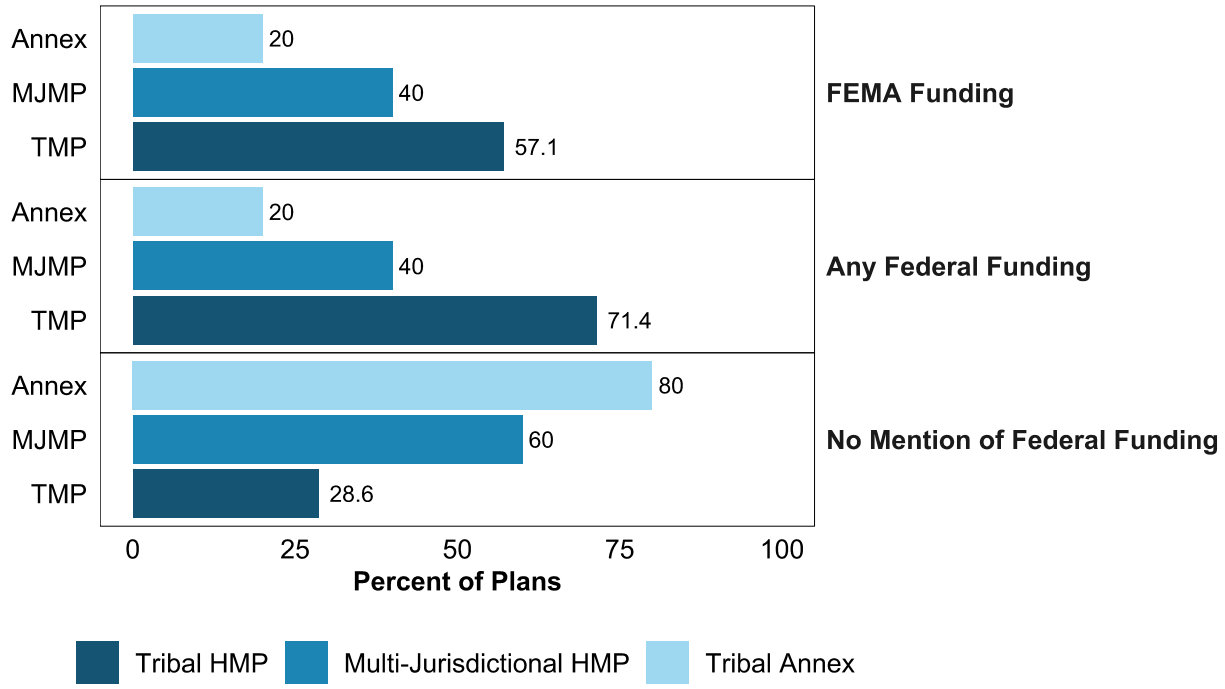
Crosswalk

Principle 5 of the Tribal Climate Change Principles states, “Tribes must have fair and equitable access to federal climate change programs.” Considering that FEMA-approved HMPs are prerequisites to hazard mitigation assistance (HMA), we applied this principle to the HMP context by assessing how plan status differs between all Tribal and county governments in Washington.

Key Question

- Do Tribes have fair and equitable access to FEMA hazard mitigation assistance (HMA)?

Figure PP.5 — Utilization of Federal Funding for HMP Planning



Notes: *Figure PP.5 displays the percent of plans that reported utilizing federal funding for the planning process. For example, 71.4 percent of Tribal HMPs reported utilizing federal grants to fund (at least part of) planning efforts. 57.1 percent of Tribal HMPs reported utilizing FEMA grants specifically to fund (at least part of) planning efforts.*

Figure PP.6 demonstrates the status of HMPs by plan type in Washington. For this principle, we analyzed data from more plans (n=68) than those in our sample (n=24) because OpenFEMA has data on plan status for all jurisdictions in all states. We restricted OpenFEMA data to all county and Tribal plans (including annexes) in Washington. We also identified counties and Tribes that were not in OpenFEMA data because they had never developed and adopted an HMP, despite being eligible to. These governments include Asotin County, the Yakama Nation, and the Nisqually Indian Tribe. We created additional observations for these jurisdictions, noting that they had never developed or adopted an HMP.

Collectively, these data help determine whether Tribes have equitable access to FEMA HMA compared to counties in Washington. While the percentage of plans approved by FEMA is relatively equal between plan types, 33.3 percent of all Tribal annexes have expired compared to 15.4 and 13.0 percent of multi-jurisdictional and Tribal HMPs, respectively. Also, 8.7 percent of federally recognized Tribes have never developed an HMP, compared to just 2.6 percent of all counties in Washington. Together, these results suggest that federally recognized Tribes do not have equitable access to HMA compared to county governments.

Finally, while non-federally recognized Tribes fall out of the scope of this analysis, we investigated how non-federally recognized Tribes would apply for HMA to fully answer whether Tribes in Washington (broadly) have fair and equitable access to HMA. Borrowed from the Hazard Mitigation Assistance Program and Policy Guide, Figure PP.7 demonstrates that non-federally recognized Tribes can apply for HMA as subapplicants of territories, federally recognized Tribes, or states (FEMA, 2023b).

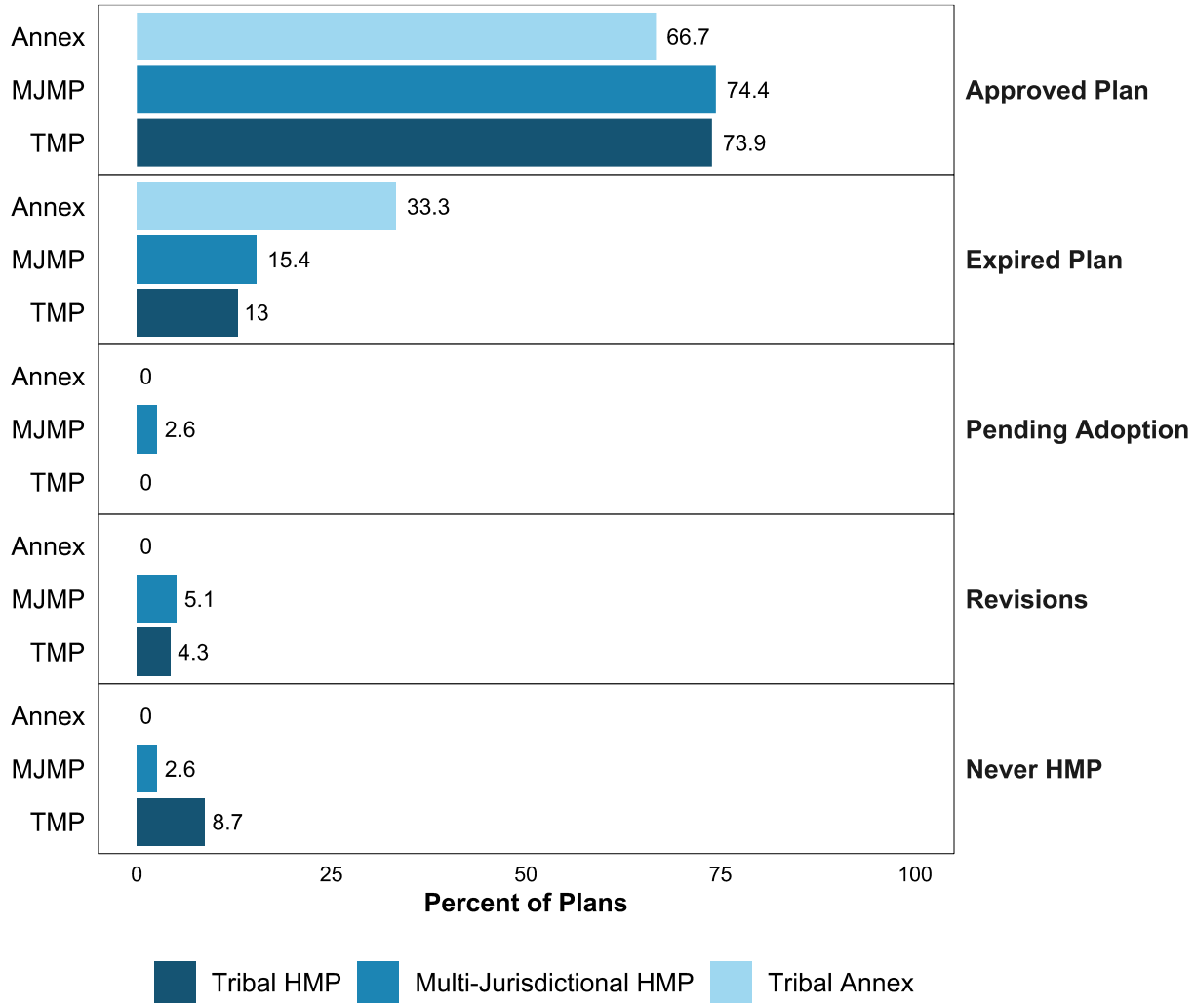
In this guide, FEMA also specifies that:

> *"If a tribal government that meets the definition of local government (such as tribal governments that are not federally recognized) applies as a subapplicant under HMGP, HMGP Post Fire, BRIC or FMA, then a mitigation plan meeting the requirements of 44 CFR § 201.6 is required as a condition of receiving assistance."*
>
> - ***Hazard Mitigation Assistance Program and Policy Guide (FEMA, 2023b)***

Accordingly, we searched OpenFEMA data for HMPs of non-federally recognized Tribes in Washington. We searched for records for the Chinook Indian Tribe, the Duwamish Tribe, the Kikiallus Indian Nation, the Snohomish Tribe of Indians, the Snoqualmoo Tribe of Indians, and the Steilacoom Indian Tribe, among several other non-federally recognized Tribes and bands in Washington. Notably, OpenFEMA data has no record of any non-federally recognized Tribes in Washington ever adopting a FEMA-approved HMP. This evidence suggests that non-federally recognized Tribes do not have fair or equitable access to hazard mitigation assistance.

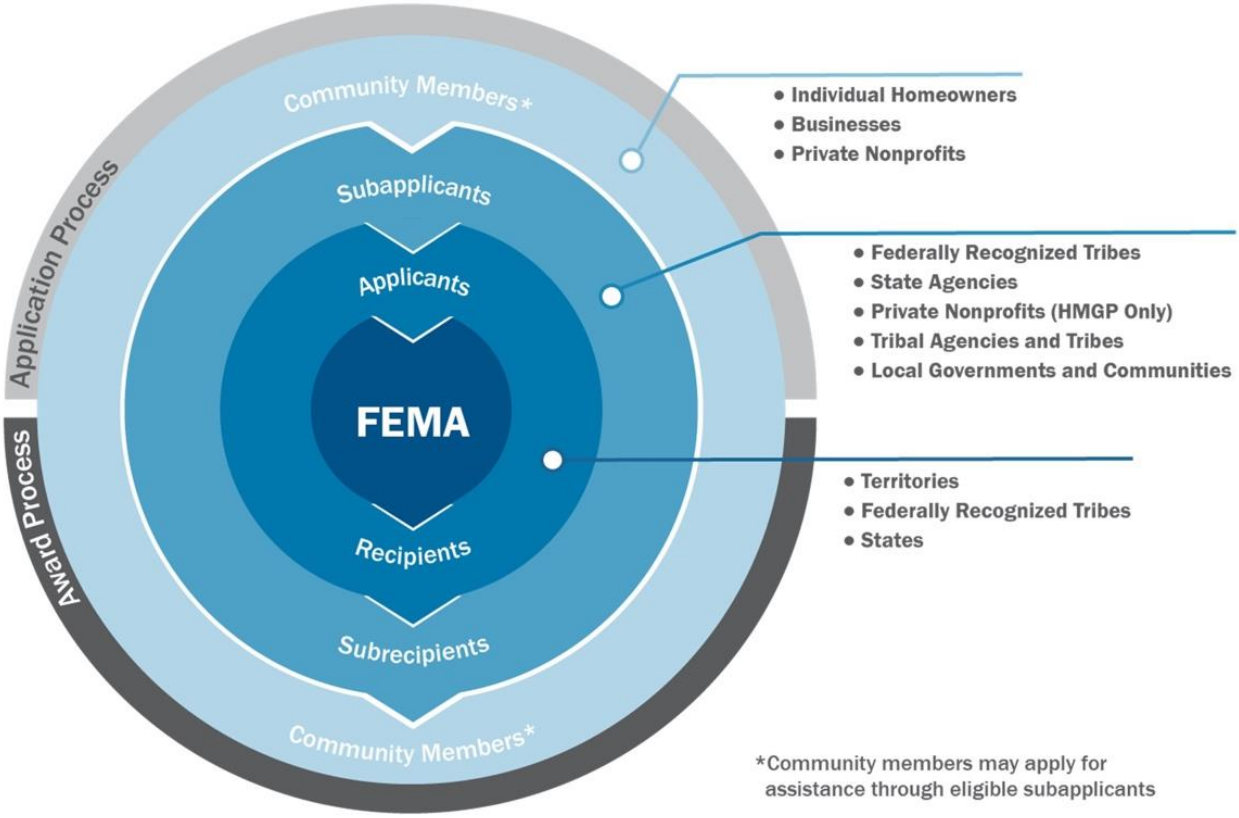
Figure PP.6 — OpenFEMA Data HMP Status

All Counties and Federally Recognized Tribes in Washington (n=68)



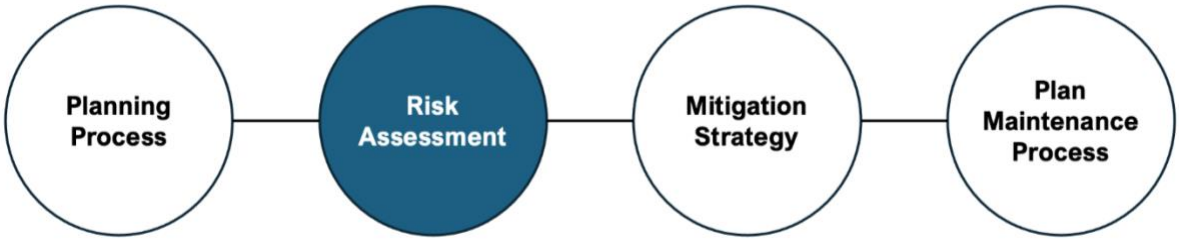
Notes: *Figure PP.6 displays the plan status for all counties and federally recognized Tribes in Washington (n=68). The number of jurisdictions analyzed in this figure is larger than our sample size because OpenFEMA had plan status data for all counties and federally recognized Tribes that had ever adopted a FEMA-approved HMP. We supplemented these data with additional data points to identify counties and federally recognized Tribes that had never adopted an HMP despite being eligible to do so. For example, 8.7 percent of all federally recognized Tribes in Washington have never adopted a Tribal HMP or Tribal annex.*

Figure PP.7 – Roles of State, Local, Tribal, and Territorial Entities Throughout the HMA Process



Notes: *Figure PP.7 is borrowed from the Hazard Mitigation Assistance Program and Policy Guide (FEMA, 2023b).*

4.2 Risk Assessment



The purpose of the **Risk Assessment** is to identify and prioritize the hazards that pose the greatest threats to the jurisdiction(s), and to determine which areas of the jurisdiction are most vulnerable to these hazards. The risk assessment process consists of three main phases. **Hazard Identification** involves determining the geographic extent, intensity, and probability of occurrence of potential hazards. **Vulnerability Assessment** includes identifying assets at risk for the hazards identified in the previous phase. FEMA does not mandate the inclusion of specific asset categories. However, the Local and Tribal Mitigation Planning Handbooks provide guidance on common categories where assets are typically grouped, including population, property, critical facilities and infrastructures, the economy and the environment. **Risk Analysis** involves estimating the potential damage, injuries, and costs likely to be incurred across a jurisdiction in a specified period. In this section, we present on one principle:

- LBS Principle 1 – Fact Base

4.2.1 LBS Principle 1 – Fact Base

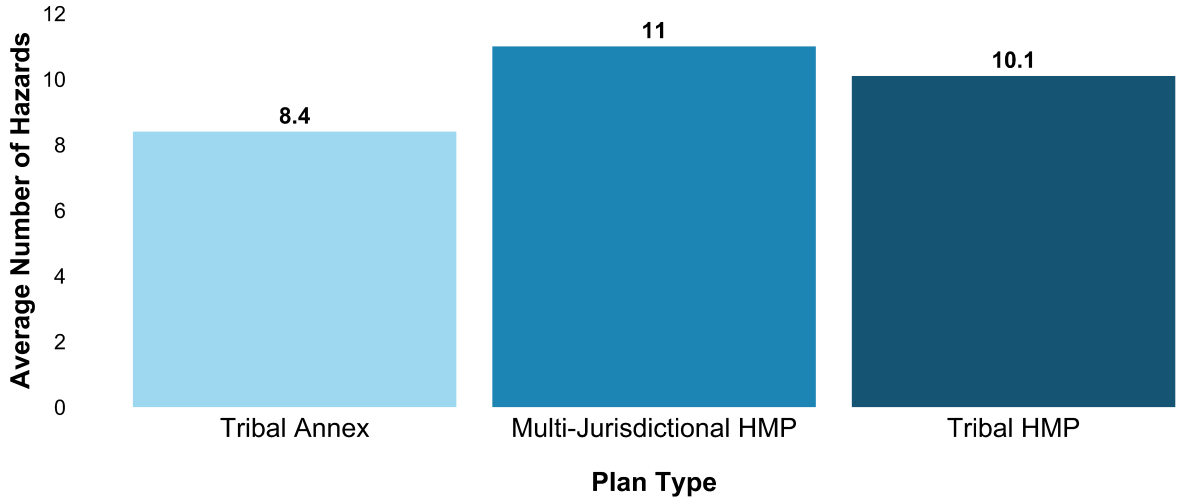
Key Questions

- Does the plan summarize existing local conditions and identify needs?
- Does this content differ between plan types?

Hazard Identification

The average number of hazards identified varied somewhat across the three types of hazard mitigation plans analyzed. Consistent with the results of Berke, Lyles and Smith (2014), all plan types identified a relatively large number of hazards. As shown in Figure RA.1, multi-jurisdictional HMPs identified the highest average number of hazards at 11, followed by Tribal HMPs at 10.1. Tribal annexes had the lowest average at 8.4 hazards per plan. However, there was considerable variation across plans. For example, among Tribal HMPs, the Puyallup Tribe of Indians identified the largest number of hazards at 19, while the Confederated Tribes of the Chehalis Reservation identified the fewest with six.

Figure RA.1 — Average Number of Hazards by Plan Type



Notes: *Figure RA.1 displays average number of hazards by plan type. For example, Tribal HMPs identified 10.1 hazards, on average.*

Table RA.1 summarizes all the hazards identified, on average, by plan type and across all 24 plans assessed. Earthquakes and severe weather were identified in every plan assessed. Wildfire, flood and dam failure, landslide, tsunami, drought and volcano were the next most commonly identified hazards. While there was some variation between plan types, these hazards were identified in between 60 percent and 96 percent of plans, on average.

The next most frequently identified hazards across all plans were hazardous materials, disease, high winds, climate change, and avalanche. Again, there was variation between plan types, but these hazards were identified in between 20 percent and 40 percent of plans, on average.

The least commonly identified hazards, present in 20 percent or fewer plans, on average, were active assailant, loss of public utilities, civil disturbance or terrorism, cyber threats, coastal erosion and storm surge.

In addition to the hazards listed above, Table RA.1 includes an "other" category that encompasses a set of hazards which appeared in only one plan. These hazards include debris flow, levee failure, extreme heat, government and regulatory issues, aircraft accidents, tornadoes, abandoned mines, energy emergencies, pipeline hazards, transportation emergencies, and radiological emergencies.

Table RA.1 – Identified Hazards

Hazard	All Plans	Tribal HMPS	Multi-Jurisdictional HMPs	Tribal Annexes
Earthquake	100%	100%	100%	100%
Severe Weather[1]	100%	100%	100%	100%
Wildfire	96%	93%	100%	100%
Flood/Dam Failure[2]	96%	100%	100%	80%
Landslide	92%	93%	100%	80%
Tsunami	71%	71%	60%	80%
Drought	67%	79%	60%	40%
Volcano	62%	57%	80%	60%
Hazardous Materials	38%	43%	40%	20%
Disease[3]	34%	36%	40%	20%
High Winds	29%	14%	40%	60%
Climate Change	25%	29%	20%	20%
Other[4]	21%	29%	20%	0%
Avalanche	21%	7%	60%	20%
Active Assailant	17%	14%	20%	20%
Loss of Public Utilities	17%	14%	20%	20%
Civil Disturbance or Terrorism	16%	21%	20%	0%
Cyber Threat	12%	14%	20%	0%
Coastal Erosion	12%	21%	0%	0%
Storm Surge	8%	0%	0%	40%

***Notes**: Table RA.1 presents all hazards identified across assessed plans and the percentage of each plan type in which they are included.*
[1]Includes plans that assess severe weather events, whether referred to as severe weather, severe winter storms, winter storms, or weather events.
[2] Includes plans that assess flooding and dam failure, either combined or separately.
[3]Includes plans that assess disease, whether referred to as disease, pandemic, epidemic, or health incident.
[4]Includes plans that assess the following (maximum of 1 plan): debris flow, levee failure, extreme heat, government and regulatory issues, tornadoes, abandoned mines, energy emergencies, pipeline hazards, transportation emergencies, and radiological emergencies.

The plan conceptualized this hazard in terms of the Tribe's dependence on federal funding, which leaves it vulnerable to changes in budget priorities, the transfer of tribal lands into private ownership, and obsolete federal land actions that continue to encumber Tribal lands. As the plan describes:

"Tribal governments in general and the Confederated Colville Tribes in particular have survived a long history of interference with, or outright attempts to destroy, the Tribal way of life. A short list includes: The taking of the North Half of the reservation by Congress, without compensation, in 1892; The opening of the reservation to "settlement" in 1916, without compensation to the Tribes; The taking of Tribal land for Grand Coulee Dam in 1934, initially without provision to pay for the seized Tribal lands; The "Termination Era", when the official policy of the United States was to terminate tribal governments, reservations, and the Tribal way of life; The decisions to build dams on the Columbia River without fish ladders, destroying a critical food source for Tribal members without compensation; And many more."

- ***Office of Public Safety, Confederated Tribes of the Colville Reservation***

The presence of identified hazards in this analysis aligns with the findings of Lyles, Berke and Smith (2014) in some area, while differing in others. For example, the high prevalence of flooding and dam failure was consistent with their findings; however, this analysis found that climate change was not one of the least commonly identified hazards. Appearing in 25 percent of all plans, climate change was identified more often in Tribal HMPs (29 percent), compared to multi-jurisdictional HMPs (20 percent) and Tribal annexes (20 percent), suggesting this is a higher priority for Tribes.

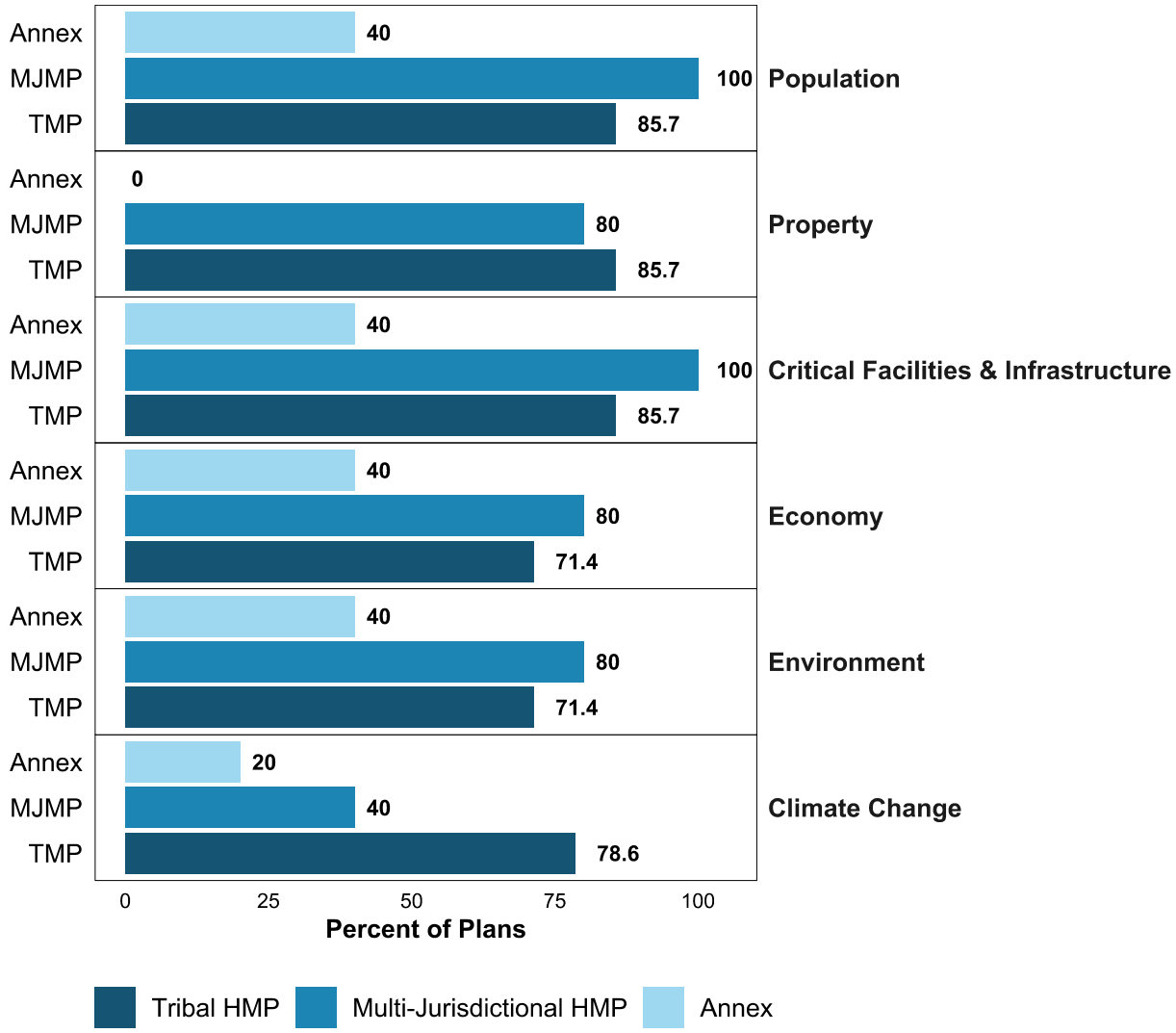
Vulnerability Assessment

While there is no mandate to include specific asset categories in the vulnerability assessment, we elected to assess the presence of categories FEMA described as most generally included (population, property, critical facilities and infrastructures, the economy and the environment). We also included a category for climate change as more than five plans noted they had recently chosen to add this category and it appeared across several plans already.

The analysis uncovered variations in how thoroughly plan types incorporate asset inventories across identified hazards. For each hazard identified in a plan, we coded whether the hazard's description contained an asset inventory or vulnerability description for each category listed above. Figure RA.2 illustrates, across each plan type, the average percentage of identified hazards that included such an inventory or description.

For most categories (population, critical facilities and infrastructure, economy, environment), multi-jurisdictional HMPs had the highest percentage of hazards with asset inventories or descriptions. Tribal HMPs had slightly lower representation across these categories (except property and climate change), while Tribal annexes had the lowest coverage across all categories.

Figure RA.2 — Presence of Asset Categories



Notes: *Figure RA.2 displays the presence of asset categories by plan type. As each jurisdictional can list multiple asset categories, this figure demonstrates the percentage plans that list each type of asset category, by plan type. For example, 40 percent of Tribal annexes report Life, Health, & Safety as an asset category.*

Notably, Tribal HMPs included climate change as an asset category across identified hazards at a much higher rate (73 percent) than multi-jurisdictional HMPs (33 percent) or Tribal annexes (20 percent). In the Suquamish Tribe's Tribal plan, climate change was included not only as an identified hazard, but was also described in relation to other identified hazards:

"The scope of climate change is broad and often interconnected to various other hazards that could impact the reservation such as; flooding, severe weather, droughts, wildfire, landslides, epidemics, and other health related impacts."

- ***Office of Emergency Management, Suquamish Tribe***

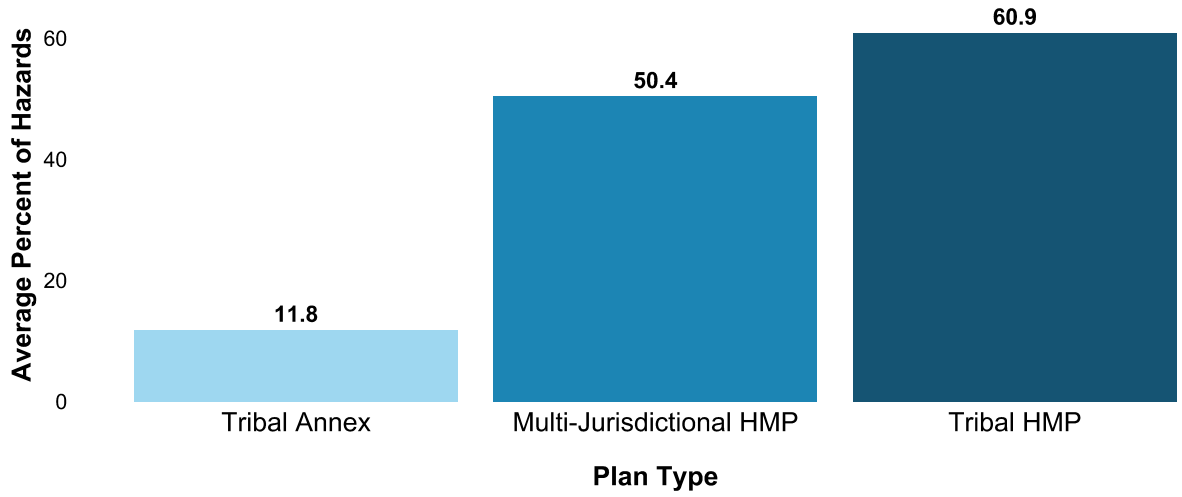
Further, the Suquamish Tribe stated that climate change bears anticipated critical impacts on the Usual and Accustomed Fishing grounds and Culturally Significant Archeological sites.

Overall, these results indicate that multi-jurisdictional HMPs and Tribal HMPs tended to assess vulnerable assets across a wider and more comprehensive set of categories than Tribal annexes did. However, there was variability in the extent to which each category was addressed, with potential for all plan types to expand their consideration of economic, environmental, and climate change vulnerabilities, in particular.

Risk Analysis

While Berke, Lyles, and Smith (2014) found that most plans do not include loss estimates for public and private structures, our analysis identified that the inclusion of loss estimates varied widely by plan type. Specifically, Tribal HMPs provided loss estimates for 60.9 percent of hazards, multi-jurisdictional HMPs for 50.4 percent and Tribal annexes for 11.8 percent, on average. The higher percentage of Tribal HMPs including loss estimates is a noteworthy finding, as it suggests that Tribes may prioritize this effort more than other jurisdictions.

Figure RA.3 — Average Percent of Identified Hazards w/ $ Loss Estimates



Notes: *Figure RA.3 displays the percentage of identified hazards with dollar loss estimates, on average, by plan type. For example, Tribal annexes provide dollar loss estimates for 11.8 percent of the identified hazards, on average.*

Beyond loss estimates, the Calculated Priority Risk Index (CPRI) is a method used to assess and prioritize the risk associated with various hazards. The CPRI score is

calculated by considering four main factors: probability, magnitude/severity, warning time, and duration. Each factor is assigned a specific weighting and is categorized on a 1-4 index value scale:

1. Probability (weighting factor: 45 percent)
    - Probability refers to the likelihood that a hazard will occur. It is weighted most heavily because the more likely a hazard is to occur, the greater the potential risk.
    - The index values for probability range from 1 (Unlikely) to 4 (Highly Likely).
2. Magnitude/Severity (weighting factor: 30 percent)
    - Magnitude/Severity assesses the potential impact and consequences of a hazard event.
    - The index values for magnitude/severity range from 1 (Negligible) to 4 (Catastrophic).
3. Warning Time (weighting factor: 15 percent)
    - Warning Time considers the amount of advance notice or lead time before a hazard event occurs.
    - The index values for warning time range from 1 (More than 24 hours) to 4 (Less than 6 hours).
4. Duration (weighting factor: 10 percent)
    - Duration refers to the length of time that a hazard event is expected to last.
    - The index values for duration range from 1 (Less than 6 hours) to 4 (More than 1 week).

To calculate the CPRI score for a specific hazard, the index values for all factors are multiplied by their respective weighting factors and summed. Thus, the formula for calculating the **CPRI score** is:

(Probability x 0.45) + (Magnitude/Severity x 0.30) + (Warning Time x 0.15) + (Duration x 0.10)

The resulting CPRI scores can range from 1 to 4, with higher scores indicating a higher risk priority. These scores allow comparison and prioritization of risks associated with different hazards, helping the jurisdiction allocate resources and develop appropriate mitigation strategies based on relative risk levels.

Nine out of the 24 plans included in this study employed the CPRI, consisting of six Tribal HMPs, two multi-jurisdictional HMPs, and one Tribal annex. Four Tribal HMPs, two multi-jurisdictional HMPs and two Tribal annexes used other ranking systems to prioritize hazards. Five Tribal HMPs, two multi-jurisdictional HMPS, and one Tribal annex did not utilize any ranking system (see Table RA.2)

Table RA.2 – Percent of Plans Using Risk Assessment Ranking Systems

Ranking System	Tribal HMPs	Multi-Jurisdictional HMPs	Tribal Annexes

CPRI Ranking System	42.9%	40%	40%[1]
Other Ranking System	21.4%	20%	40%
No Ranking System	35.7%	40%	20%

Notes: *Table RA.2 displays the percentage of plans that use risk assessment ranking systems by plan type. For example, 40 percent of multi-jurisdictional HMPs use a CPRI ranking system.*
[1] The Swinomish Indian Tribal Community's annex to the Skagit County's multi-jurisdictional HMP uses CPRI, but assigns a qualitative indicator ("Low, Medium, High") without disclosing the specific quantitative measure underlying the ranking.

The use of CPRI across nine plans allowed for a comparative analysis of the results and provided insights into how different hazard types are prioritized using this standardized risk assessment methodology. Table RA.3 displays the average CPRI rating for hazards by Tribal HMPs, multi-jurisdictional HMPs and Tribal annexes. Two additional plans in the study used the CPRI method but did not provide quantified results. As such, these two plans have been excluded from this subsection of the analysis. Notably, there is direct correlation between the use of the CPRI method and plans written by external consultants. Of the nine plans that assess risk using CPRI, all nine were written by the same consulting group (Bridgeview Consulting).

Table RA.3 – Average CPRI Rating for Hazards by Plan Type

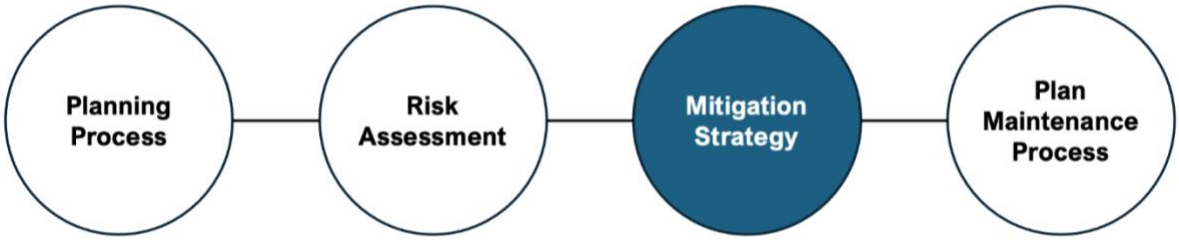
Hazard	Tribal HMPs	Multi-Jurisdictional HMPs	Tribal Annexes
n	**6**	**2**	**1**
Earthquake	3.75	2.85	2.05
Severe Weather	3.09	3.20	3.15
Flood/Dam Failure	2.72	3.00	3.35
Landslide	2.62	2.7	2.1
Drought	2.32	2.45	2.75
Wildfire / Wildland Fire	2.33	3.53	4
Tsunami	3.03	2.55	N/A
Volcano/Volcanic Eruption	1.84	1.9	1.45
Avalanche	N/A	1.95	1.95
Climate Change Effects	N/A	2.35	2.35

Notes: *Table RA.3 displays the average CPRI rating for hazards by plan type. Color denotes level of significance and concern: Extremely Low, Low, Medium, High, Extremely High. Tribal HMPs include The Confederated Tribes of the Chehalis Reservation, Sauk-Suiattle Indian Tribe, Samish Indian Nation, Hoh Tribe, Quinault Indian Nation, and Stillaguamish Tribe of Indians. Multi-Jurisdictional HMPs include Skagit County and Pend Oreille County. Tribal Annexes includes Kalispel Tribe of Indians.*

Among these plans, there was variation between rankings assigned to identified hazards. For example, all nine plans identified earthquakes as a hazard, where the average CPRI rating was 3.75 for Tribal HMPs, 2.85 for multi-jurisdictional HMPs and 2.05 for Tribal annexes. The score for Tribal HMPs means earthquakes were considered to have a high level of significance and concern, as opposed to medium, on average,

across other plan types. Likewise, wildfires, which scored a 4.0 for Tribal annexes indicated an extremely high level of significance and concern, whereas it was considered medium, on average, across Tribal HMPs (scoring 2.33) and high, on average, across multi-jurisdictional HMPS (scoring 3.53). The only hazards categorized at the same level of significance and concern across all plan types using the CPRI method were severe weather (high), landslide (medium) and drought (medium).

4.3 Mitigation Strategy



Mitigation strategies are typically comprised of mitigation **goals**, an analysis of current and future **mitigation actions** (or policies) to reduce the effects of hazards, a prioritization plan, and potential funding sources. In this section, we assess how mitigation strategies differ between Tribal HMPs, multi-jurisdictional HMPs, and Tribal annexes. We also assess how identification of future funding sources differs between plan types. We report on four pertinent principles:

- Principle 2 – Goals
- Principle 3 – Actions (Policies)
- Principle 5 – Implementation
- TCCP Principle 6

4.3.1 LBS Principle 2 – Goals

Key Questions

- Does the plan include general aspirations, problem alleviations, and needs that are premised on shared local values?
- How do goals differ between plan types?

Figure MS.1 shows that the most common goal among all plans was to 'Decrease Hazard Losses'. This goal category includes minimizing fiscal impacts, protecting public safety, reducing damage to public and private property, among others. Appendix 4 provides a full summary of subcodes constituting the goal to 'Decrease Hazard Losses'. On average, 53.2 percent of goals identified in Tribal HMPs sought to decrease hazard losses compared to 33.3 and 29.1 percent in Tribal annexes and multi-jurisdictional HMPs, respectively.

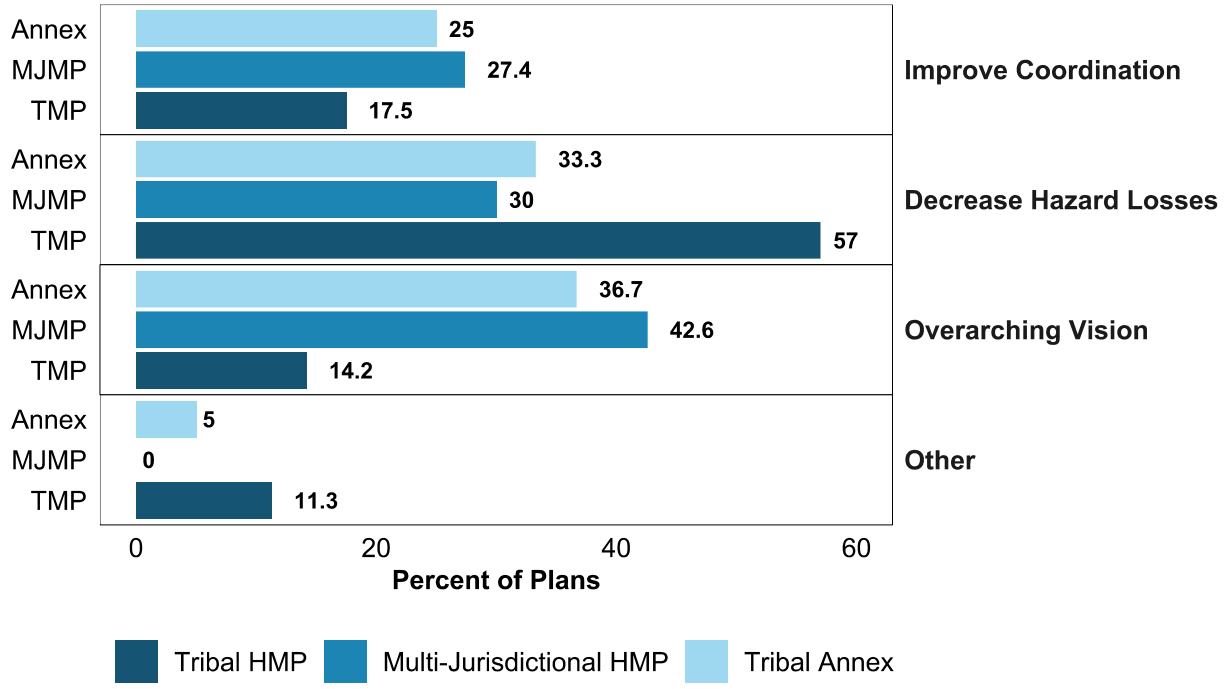
Two points are noteworthy here. First, multi-jurisdictional HMPs and Tribal annexes exhibited similar distributions of goals. In each of the four categories, both types of plan showed distributions in the mid-20 percent for 'Improve Coordination', in the 30 percent for 'Decrease Hazard Losses', in the late 30 percent for 'Overarching Vision', and 5 percent for 'Other'.

Second, goals classified under the 'Other' category displayed the highest average relative frequency from Tribal HMPs. This goal category was not part of the original

framework from Lyles, Berke, and Smith (2014), but was created inductively to categorize goals not fitting neatly into the goal categories from the original framework. ‘Other’ includes goals like promoting equity and protecting tribal cultural assets or sovereignty. These goals are distinct from the original categories from Lyles, Berke, & Smith (2014).

Finally, the goals in Tribal annexes mostly mirrored those found in the corresponding multi-jurisdictional HMPs. However, there were exceptions. For example, the Muckleshoot’s Tribal annex explicitly stated "Protect Tribal Cultural Asset and Sovereignty" as a goal.

Figure MS.1 — Average Relative Frequency of Goals



Notes: *Figure MS.1 demonstrates the average relative frequency of goals by plan type. Results are generated by dividing the number of times a particular goal appears in the plan by the total number of goals in a plan. We then averaged the relative frequency of goals by plan type. For example, 17.5 percent of the goals listed by Tribal HMPs sought to improve coordination, on average.*

Coding goals into goal categories is a more subjective process than coding something more objective like hazards. Accordingly, we provide several examples of how our team coded various goals from sample text in Table MS.1. We provide additional examples of goal excerpts in Appendix 4.

Table MS.1 – Examples Text of Goal Categories

Goal Category	Example Text from HMPs
Improve Coordination	"Goal 5—Increase public awareness and ability to respond to disasters." **(Chehalis)**
Decrease Hazard Losses	**"**Goal 1—Reduce natural hazard-related injury and loss of life.**"** **(Chehalis)** **"**Goal 2—Reduce property damage.**"** **(Chehalis)** **"**Goal 4—Maintain, enhance, and restore the natural environment's capacity to absorb and reduce the impacts of natural hazard events." **(Chehalis)**
Overarching Vision	**"**Goal 3—Promote a sustainable economy.**"** **(Chehalis)**
Other[1]	**"**Protect cultural and historic resources" **(Muckleshoot)** "Goal 2: Minimize the risk from hazards to existing and proposed development, tribal assets, culturally sensitive sites, and proactively adapt to a changing climate." **(Suquamish)**

Notes: *Table MS.1 provides examples of how our team coded various goals into coding categories.*
[1]The category 'Other' was not originally part of the Lyles, Berke, and Smith (2014) framework. We added this category inductively to encompass goals that did not fit neatly into the categories from the original framework.

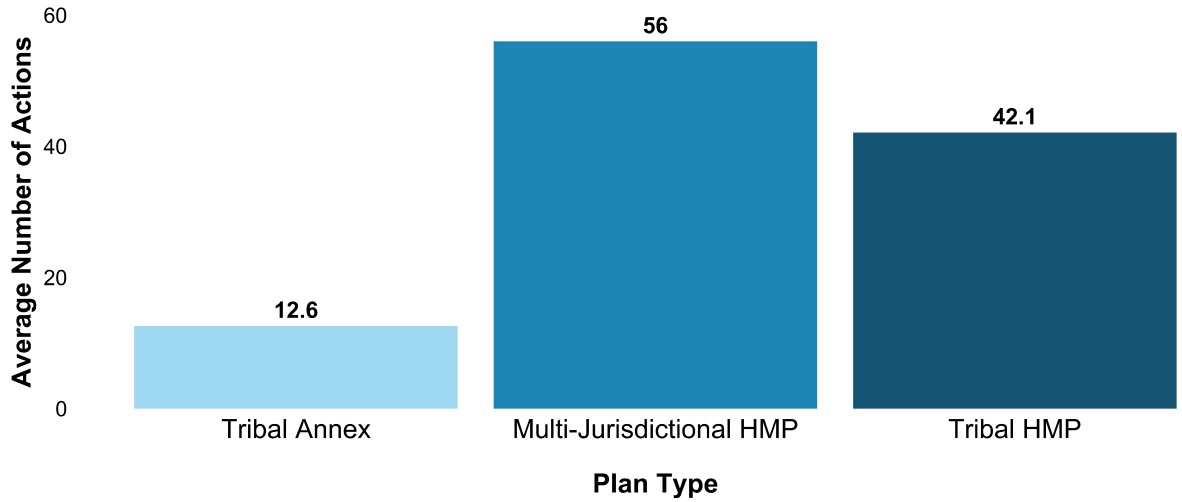
4.3.2 LBS Principle 3 – Actions (Policies)

Key Questions

- Does the plan include future-oriented mitigation actions (or policies) to ensure that plan goals are achieved?
- How do future-oriented mitigation actions differ between plan types?

Figure MS.2 highlights that on average, multi-jurisdictional HMPs listed the highest number of future-oriented mitigation actions (policies). The large discrepancy in the average number of actions listed by Tribal annexes is unsurprising. Annexes are adjunct to multi-jurisdictional HMPs and were significantly shorter in size than both multi-jurisdictional HMPs and Tribal HMPs. However, the discrepancy between Tribal HMPs and multi-jurisdictional HMPs highlights that, in our sample, counties listed more future-oriented mitigation actions than Tribes.

Figure MS.2 — Average Number of Actions by Plan Type

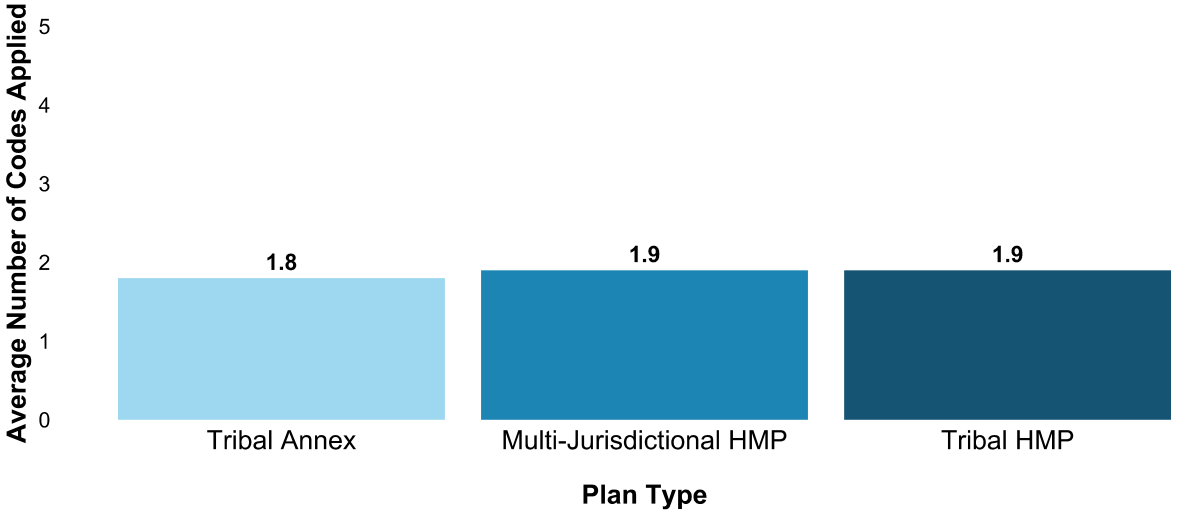


Notes: *Figure MS.2 depicts the number of future-oriented actions (policies) that jurisdictions listed in their HMP, averaged across plan types. For example, multi-jurisdictional HMPs listed 56 future-oriented actions, on average.*

It is difficult to know whether the discrepancy in the average number of future-oriented mitigation actions reflects a difference in internal capacity between Tribal and county governments. For instance, it is also possible that listing more actions, rather than grouping them, is a stylistic choice. However, one finding to suggest that this is a difference in capacity is that the average number of codes applied for each action was the same between Tribal HMPs and multi-jurisdictional HMPs (See Figure MS.3). So, Tribes listed fewer actions, and each action contained relatively the same number of objectives as multi-jurisdictional HMPs, on average.

To understand how future-oriented mitigation actions (policies) differ between plan types, we coded all mitigation actions listed by all jurisdictions into categories from Lyles, Berke, & Smith (2014). These categories include Emergency Services, Preventative Land Use (Policies), Property Protection, Protection of Natural Mitigation Features, Public Information, and Structural Controls. During the coding process, several actions listed by jurisdictions did not fit into the Lyles, Berke, & Smith (2014) mitigation action categories because they primarily focused on internal or external coordination. Accordingly, we consulted FEMA guidance in handbooks for Tribal and local jurisdictions and found that FEMA-promoted mitigation actions include increasing capabilities and encouraging partnerships (see Figure 2 in Chapter 2). As such, we adapted the framework from Lyles, Berke, & Smith (2014) to include two additional categories: Internal Coordination and External Coordination. Then, we ensured that each mitigation action was properly coded into one or multiple of the eight mitigation action categories.

Figure MS.3 — Average Number of Codes Applied Per Action (Policy) by Plan



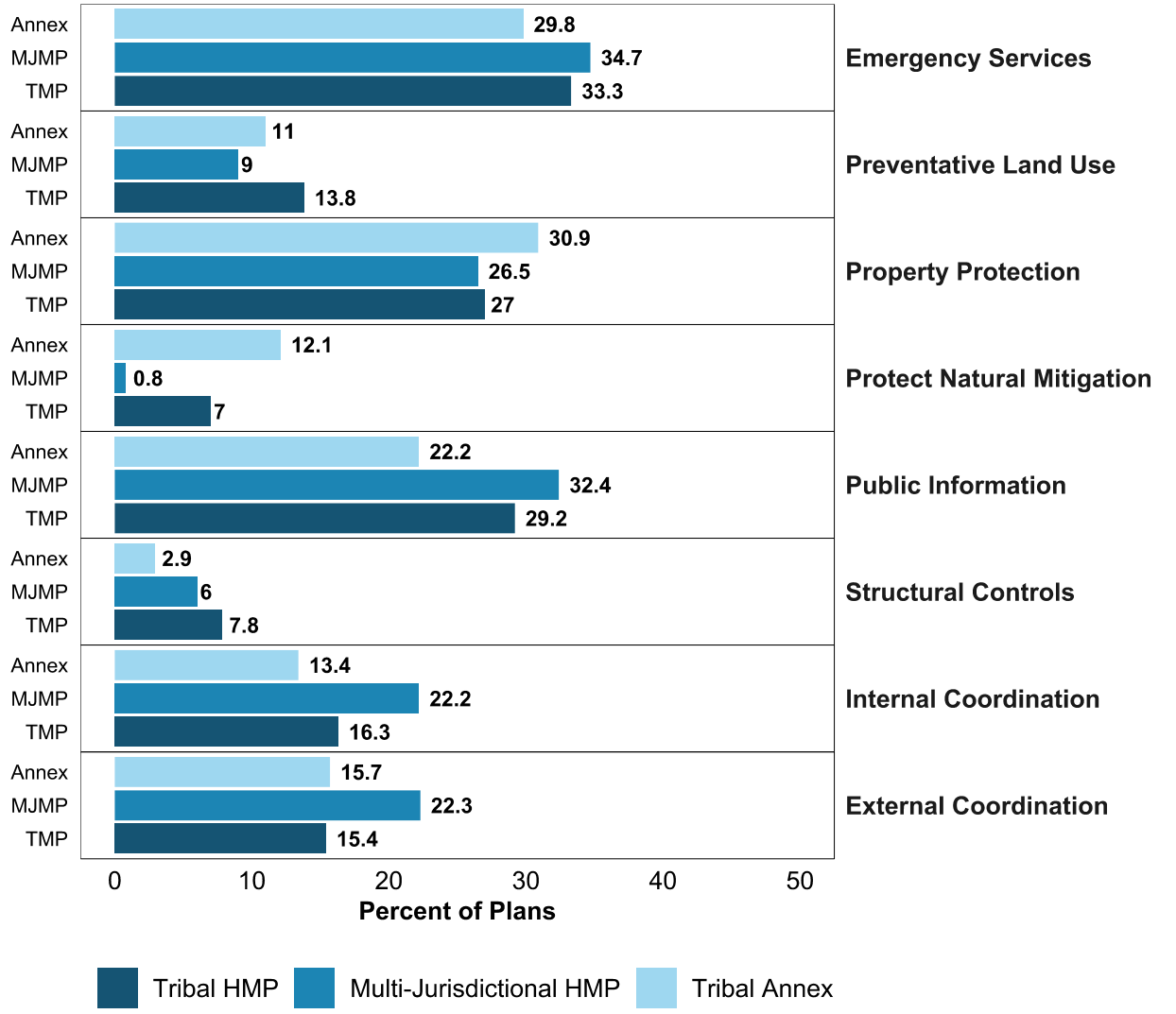
Notes: *Figure MS.3 depicts the average number of codes applied per listed future-oriented action, by plan type. For example, for every action a Tribal HMP listed, our team applied 1.5 codes, on average across eight categories: Emergency Services, Preventative Land Use, Property Protection, Protection of Natural Mitigation Features, Public Information (Including Data), Structural Controls, Internal Coordination, and External Coordination.*

Figure MS.4 displays the relative frequency of actions by category, averaged across plan types. We calculated the relative frequency of a mitigation action within each plan by summing the number of actions coded under a specific category and dividing that by the total number of mitigation actions listed by the plan. We then averaged relative frequencies within plan types to understand how mitigation priorities may differ between plans. In the first box of Figure MS.4 (Emergency Services), we interpret that to mean that within Tribal HMPs, on average, 33.3 percent of all future-oriented actions intend to improve or expand emergency services as defined by our coding scheme.

Across all plan types, the least common actions (policies) were ‘Preventative Land Use’ policies, the use of ‘Structural Controls’, and ‘Protection of Natural Mitigation Features.’ ‘Emergency Services’, ‘Property Protection’, and ‘Public Information’ were the most common actions across all plan types. These findings are consistent with those from Lyles, Berke, and Smith (2014) from which we drew our original framework.

Notably, the average relative frequency of actions by category does not vary much between plan types except for protection of natural mitigation features which occur more than seven times as often in Tribal HMPs and Tribal annexes compared to multi-jurisdictional HMPs. While there are many different definitions of “protection of natural mitigation features", we coded this activity quite broadly to include protection of watersheds, fish, wildlife, ground cover, soil, and more. We also coded activities like restoration projects and traditional burning. Even still, multi-jurisdictional HMPs included few activities that fell under this category.

Figure MS.4 — Average Relative Frequency of Future-Oriented Actions



Notes: *Figure MS.4 demonstrates the average relative frequency of future-oriented mitigation actions by plan type. Each action (policy) can fall into one or multiple categories. Results are generated by dividing the number of times a future-oriented mitigation action appears in the plan (by category) by the total number of mitigation actions. We then average the relative frequency of actions by plan type.*

Aside from 'Protection of Natural Mitigation Features', there were few notable differences in the average relative frequency of actions within each category. Still, it was clear that some Tribes approach FEMA-recognized mitigation actions differently than counties, particularly in Tribal HMPs and annexes authored by Tribes rather than consultants. These differences cannot be captured in the relative frequency of actions alone, but rather in the jurisdiction's expressed purpose and approach to a mitigation action. Accordingly, Table MS.2 summarizes examples of future-oriented mitigation actions listed in multi-jurisdictional HMPs compared to Tribal HMPs and Tribal annexes

across categories. This table further juxtaposes how Tribal priorities and Indigenous worldviews shape Tribes' approaches to FEMA-recognized mitigation strategies in a way that is distinct from local governments.

Table MS.2 – Highlighting Indigenous Worldviews and Tribal Priorities Across Mitigation Action Categories

Mitigation Action Category	Multi-Jurisdictional HMPs	Tribal HMPs or Tribal Annexes
Emergency Services	"In accordance with OSHA/WISHA requirements for all employees performing emergency response activities (post-disaster), identify and train County staff and volunteers that will be utilized for these efforts." **(Pend Oreille County)** "Coordinate among all jurisdictions to seek out and apply for grants for site hardening of facilities. This includes back-up power at county/city facilities, among others." **(Skagit County)**	"Identify and train staff, youth, and volunteers that will be utilized for emergency management efforts." **(Chehalis, Samish, Sauk-Suiattle, Stillaguamish)** "Expand the existing Public Safety Facility to include alternative power sources, such as solar power, to enable the structure to be utilized during power outages associated with several of the hazards of concern. This includes expansion of the structure to be utilized as a resilience center for not only tribal but also other citizens living or traveling through the area that become isolated." **(Hoh)**
Preventative Land Use	"Evaluate and enhance the current capital improvements program for county roads. Working with corresponding special purpose districts, include/review as necessary, drainage projects such as culverts; elevate roadways as necessary where areas are frequently flooded, blocking ingress and egress; replace small-diameter flood control devices in known flood problem areas; enhance drainage system maintenance plans and sediment and debris clearance to ensure unobstructed flow of floodwaters." **(Skagit County)** "If flood protection facilities cannot be removed, King County should consider setting the facilities back to allow floodplain storage." **(King County)** "Seek grant funding for acquisition of properties in high-hazard areas."	"Evaluate and enhance the current capital improvements program for roads and drainage projects to provide better flood control in known flood problem areas. This type of activity will help ensure the safety of elders who sometimes become landlocked during flood events." **(Sauk-Suiattle)** "Explore options for acquisition of developed areas for relocation of facilities of Tribal structures where repetitive and ongoing flooding & landslide hazards cannot be mitigated, and when opportunities and funding are available." **(Quileute)** "Continue to ensure that all the Tribe's development projects meet or exceed all applicable best practice standards and encourage nature-based solutions when possible and applicable."

	(Pend Oreille County) "Continue enforcing regulations that stop negative impacts on habitat and encourage net ecological benefit." **(King County)**	**(Suquamish)** "Consider imposing fishing restrictions to conserve limited fish stocks for the future." **(Colville)**
Property Protection	"Relocate Public Works/Roads from tsunami zone." **(Clallam County)** "Educate public about need to create buffer zones between home and timber." **(Lewis County)**	"Evaluate options to make new hotel in Port Angeles tsunami resistant." **(Lower Elwha Klallam)** "Offer vegetation management services to elderly, disabled, or low-income Tribal members who need help to remove flammable materials near their homes." **(Quileute)**
Protection of Natural Mitigation Features	"Complete restoration projects that reconnect rivers to their floodplains, remove bank armoring, create side channels, reconnect oxbows, and encourage natural features such as beaver dams and large wood in channels for increased flood storage and fish habitat." **(King County)** "Utilize bioengineering in repairs, enhancements, or temporary measures. Bioengineering incorporates live plants and large wood in an effort to reduce flood velocities while protecting aspects of flood protection facilities." **(King County)**	"Remove road embankment fill under Balch Road, which currently acts as a levee. This project would increase river conveyance during flooding and reduce upstream flood levels, while also enhancing fish spawning." **(Chehalis)** "Seek funding to research methods for mass cultivation of culturally significant plants in nurseries, for additional seed or to plant as seedlings." **(Colville)** "Identify most vulnerable infrastructure, homes, roads next to urban forest interface. Remove invasive species, thin, clear, areas in urban forest interface areas and replant fire-resistant trees or non-fuel fire ignition prone native vegetation/shrubs to keep invasive from growing back." **(Tulalip)** "Encourage native vegetation on shorelines and formation of dunes." **(Jamestown S'Klallam)**
Public Information	"Continue implementation of public information program within Pend Oreille County to inform citizens about the hazards faced and the appropriate preparedness and response measures, including, but not limited to, NFIP,	"Conduct outreach efforts to educate hunters on recognizing CWD, reporting occurrences, and avoiding potentially infective tissue." **(Colville)**

	wildfire, and landslide information and insurance." **(Pend Oreille County)** "Modify outreach efforts to mirror need so that 80% of outreach goes to the 20% of the population at highest risk." **(King County)**	"Provide awareness, training, and educational materials on basic cyber awareness and hygiene to engage the community." **(Suquamish)**
Structural Controls	"Install off-channel reservoir adjacent to Dungeness River, to store high Dungeness River flows and storm flows for release later for aquifer recharge and irrigation purposes." **(Clallam County)** "Seek steep slope stability project funding or relocation funding for county roads with histories of instability." **(Pend Oreille County)**	"Develop appropriate shoreline defense works to protect vulnerable coastlines and high erosion areas containing cultural, economic, or natural resources." **(Lummi)** "Install engineered log structures along the banks of the Quillayute River upstream of Thunder Field to mitigate flood damage and stabilize the riverbank." **(Quileute)**
Internal Coordination[1]	"Implement a recovery system to ensure maximum FEMA reimbursement for disaster response, repair, mitigation and recovery, which will capture and track emergency activities, associated expenses (mileage, supplies, expendables, outside vendors, etc.), employee time and dedicated resources." **(Pend Orielle County, Skagit County)**	"Continue to employ lobbyists to advocate for Tribal issues." **(Colville)** "Identify potential mitigation actions to reduce impact of natural hazards to inventoried cultural resources and sites, such as historic camps and villages." **(Shoalwater Bay)**
External Coordination[1]	"Develop countywide mutual aid agreements with both public and private agencies in support of preparedness and response activities." **(Pend Oreille County)** "Record community-identified mitigation and preparedness priorities and invest in them." **(King County)** "Continue participation and implementation of projects recommended by the Chehalis River Basin Flood Authority." **(Lewis County)**	"Continue rapid response to consultation notices; attend resource management plan meetings by those agencies to monitor for changes that could affect Tribal rights." **(Colville)** "Continue active Tribal representation in the relevant forums to assure the Tribe's habitat preservation interests are considered and accounted for to preserve natural aquaculture and traditional foods." **(Suquamish)** "Continue active Tribal participation in local community, county, state, and federal growth management planning efforts; the development of land use and zoning standards; the process of conducting environmental impact

		studies; and permitting processes so that the Tribe's risk management interests are addressed." **(Suquamish)**

Notes: *Table MS.2 provides examples of how our team coded various actions into coding categories. This table also juxtaposes how Tribal HMPs and annexes approached various mitigation actions compared to counties in multi-jurisdictional HMPs.*
[1]The categories 'Internal Coordination' and 'External Coordination' were not originally part of the Lyles, Berke, and Smith (2014) framework. We added this category inductively to code future-oriented mitigation actions that did not fit neatly into the categories from the original framework. These categories also align with FEMA-recommended future-oriented action categories. Appendix 4 provides more details on how we coded future-oriented mitigation actions.

4.3.3 LBS Principle 5 – Implementation

Key Questions

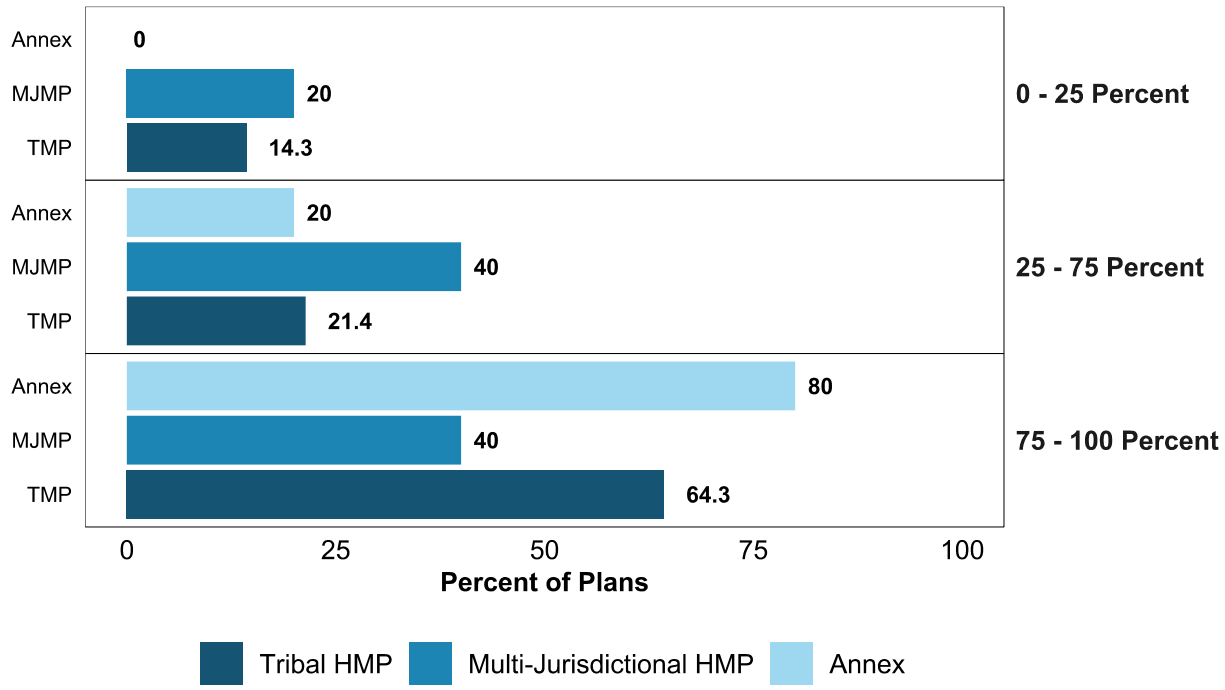
- Does the plan include organizational responsibilities and costs needed to implement proposed policies and actions?
- How does this differ between plan types?

Implementing proposed mitigation strategies depends on a jurisdiction's timeline, costs, potential funding, leadership, and prioritization, among other factors. We assessed whether jurisdictions included implementation details by calculating a ratio for how many future-oriented mitigation actions listed in a plan had corresponding implementation details such as funding sources, timeline, and responsible parties. Then, we categorized plans that had listed implementation details for 0 to 25 percent of mitigation actions (low), 25 to 75 percent of mitigation actions (medium), or 75 to 100 percent of mitigation actions (high).

Figure MS.4 displays the distribution of how much implementation information jurisdictions provided on average relative to the number of future-oriented mitigation actions listed. The majority of Tribal HMPs and Tribal annexes had implementation information for 75 to 100 percent of listed future-oriented mitigation actions. Multi-jurisdictional HMPs, on average, list fewer implementation details.

Specifically, out of 14 Tribal HMPs, we classified nine as having high implementation details (details listed for 75 to 100 percent of mitigation actions). Comparably, out of the five multi-jurisdictional HMPs, we classified two as having high implementation details. For Tribal annexes, we classified four of five as having high implementation details.

Figure MS.5 — Percent of Actions with Implementation Details



Notes: *Figure MS.5 groups plans by whether future-oriented actions contained implementation information. For example, if a plan listed 50 future-oriented actions with corresponding implementation information for each action, that plan would be group under 75-100 percent, where 100 percent of the future-oriented actions contain implementation information. 80 percent of Tribal annexes had corresponding implementation information for at least 75 percent of the listed future-oriented actions, on average.*

Some jurisdictions listed sufficient implementation details for all future-oriented mitigation actions. For example, in the Shoalwater Bay Indian Tribe's Tribal HMP, the Tribe listed a lead department, funding source, and timeline for each listed mitigation action. Based on the plan, it was clear that the Tribal Council and Tribal administrator were responsible for implementation and administration and the emergency planning committee was responsible for day-to-day program implementation. The plan identified all necessary details to describe how each future-oriented mitigation action would be implemented. Many jurisdictions listed far fewer implementation details per mitigation action. For example, many jurisdictions listed "TBD" under costs or leadership roles.

4.3.4 TCCP Principle 6

Crosswalk

Principle 6 of the Tribal Climate Change Principles states, “Tribes must be made eligible for existing and future federal natural resource funding programs for which states are eligible, but from which Tribes are currently, or might be, excluded.” We applied this principle to the context of hazard mitigation implementations by identifying the types and frequency of potential funding sources identified across plan types.

Key Question

- Do Tribes identify an equal number of potential funding sources compared to county governments?

Jurisdictions identify potential funding sources throughout the entire hazard mitigation plan based on past or future projects, agency relationships, extreme hazards, and more. Still, most potential funding sources that a jurisdiction lists are concentrated in the Mitigation Strategy, as jurisdictions identify these for future-oriented mitigation actions. Accordingly, we searched each HMP for unique funding sources, focusing most on the Mitigation Strategy sections. We developed inductive codes based on uniquely listed funding sources, classifying the funding sources by funding entity (federal, state, local, or NGO). One challenge arose in coding as abbreviations for federal and state departments and agencies were inconsistently used throughout different plan types. Accordingly, if a jurisdiction did not specify the federal or state-level in an abbreviation, we assumed that funding source would be from the federal government. For instance, if a plan listed DOT as a funding source, we categorized this as the federal Department of Transportation, unless the plan stated otherwise.

In aggregate, the range of unique funding sources listed across all Tribal HMPs was five to 26. So, the minimum number of unique funding sources that any Tribal HMP listed was five and the maximum was 26. Separately, the range of all unique funding sources listed across all multi-jurisdictional HMPs was two to 26. Tribal annexes ranged from three to 12.

Disaggregated, Figure MS.6 shows the average number of potential funding sources listed by funding entity, whether federal, state, local, or non-governmental. Notably, all plan types listed federal funding sources most frequently, with the majority of those being FEMA funding sources specifically. Other unique federal funding sources listed in at least seven plans or more include those from:

- Bureau of Indian Affairs
    - 11 Tribal HMPs, 1 multi-jurisdictional HMP, and 2 Tribal annexes
- Department of Housing and Urban Development

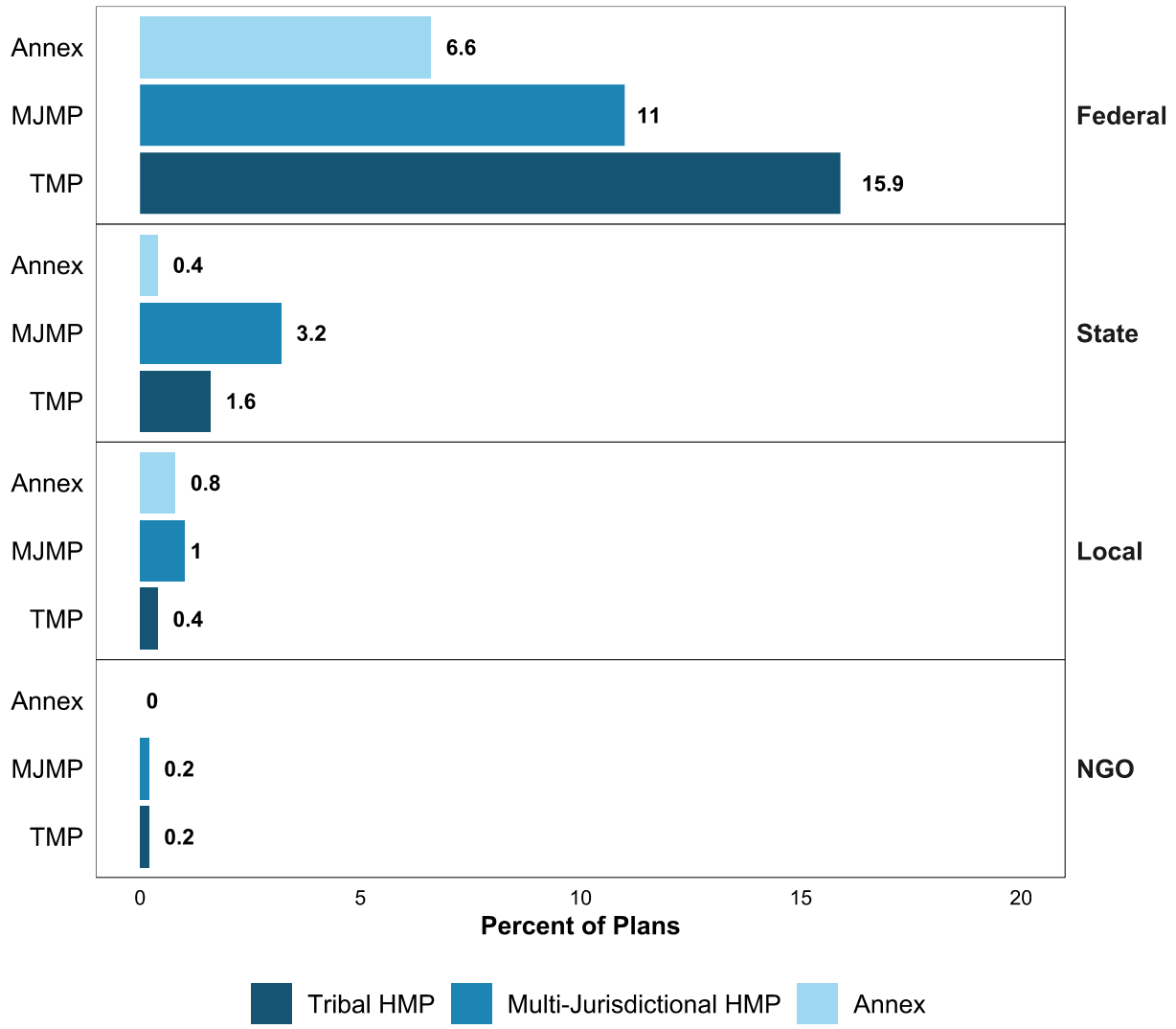
    - 10 Tribal HMPs, 4 multi-jurisdictional HMPs, and 4 Tribal annexes
- United States Department of Agriculture
    - 9 Tribal HMPs 2 multi-jurisdictional HMPs, and 2 Tribal annexes
- United States Army Corps of Engineers
    - 7 Tribal HMPs and 3 Tribal annexes
- Department of Homeland Security
    - 10 Tribal HMPs, 3 multi-jurisdictional HMPs, and 1 Tribal annex

Tribal HMPs listed the most unique potential funding sources from the federal government, with 15.9 unique sources listed, on average. Separately, multi-jurisdictional HMPs listed the most unique potential funding sources from the State of Washington, with 3.2 unique sources listed, on average. The discrepancy in identified state funding sources is not surprising based on the Tribe's relationship with the federal government (See Chapter 2). Some examples of unique state funding sources that are listed in at least seven plans or more include:

- Washington State Department of Transportation
    - 8 Tribal HMPs and 3 multi-jurisdictional HMPs
- Washington State Department of Health
    - 4 Tribal HMPs, 3 multi-jurisdictional HMPS, and 2 Tribal annexes
- Washington State Department of Ecology
    - 6 Tribal HMPs and 3 multi-jurisdictional HMPs

Few jurisdictions listed local and non-government (NGO) funding sources, where only one local funding source was mentioned in more than one plan. The City of Seattle Capital Improvement Project was mentioned across six Tribal HMPs, three multi-jurisdictional HMPs, and four Tribal annexes. For NGO funding sources, four organizations are only mentioned once across all plans. These include the National Association of County and City Health Officials/Medical Reserve Corps, the Lindbergh Foundation, the National Fish & Wildlife Foundation, and the National Rural Water Association. Both the Lindbergh Foundation and the National Fish & Wildlife Foundation are mentioned in the Squaxin Island Tribal HMP.

Figure MS.6 — Average Number of Future Funding Sources Identified



Notes: *Figure MS.6 summarizes the number of unique future funding sources plan list on average by plan type. For example, on average, Tribal HMPs list 15.9 unique federal funding sources to fund future-oriented mitigation actions.*

Narrowing specifically into FEMA funding, Figure MS.7 demonstrates the percent of plans that listed types of FEMA funding at least once. Across all plan types, the most common FEMA funding sources identified were the Hazard Mitigation Grant Program (HMGP) and the Program Delivery Manager Grant (PDMG). Most Tribal HMPs listed Flood Mitigation Assistance (FMA), where only 20 percent of multi-jurisdictional HMPs and Tribal annexes did so.

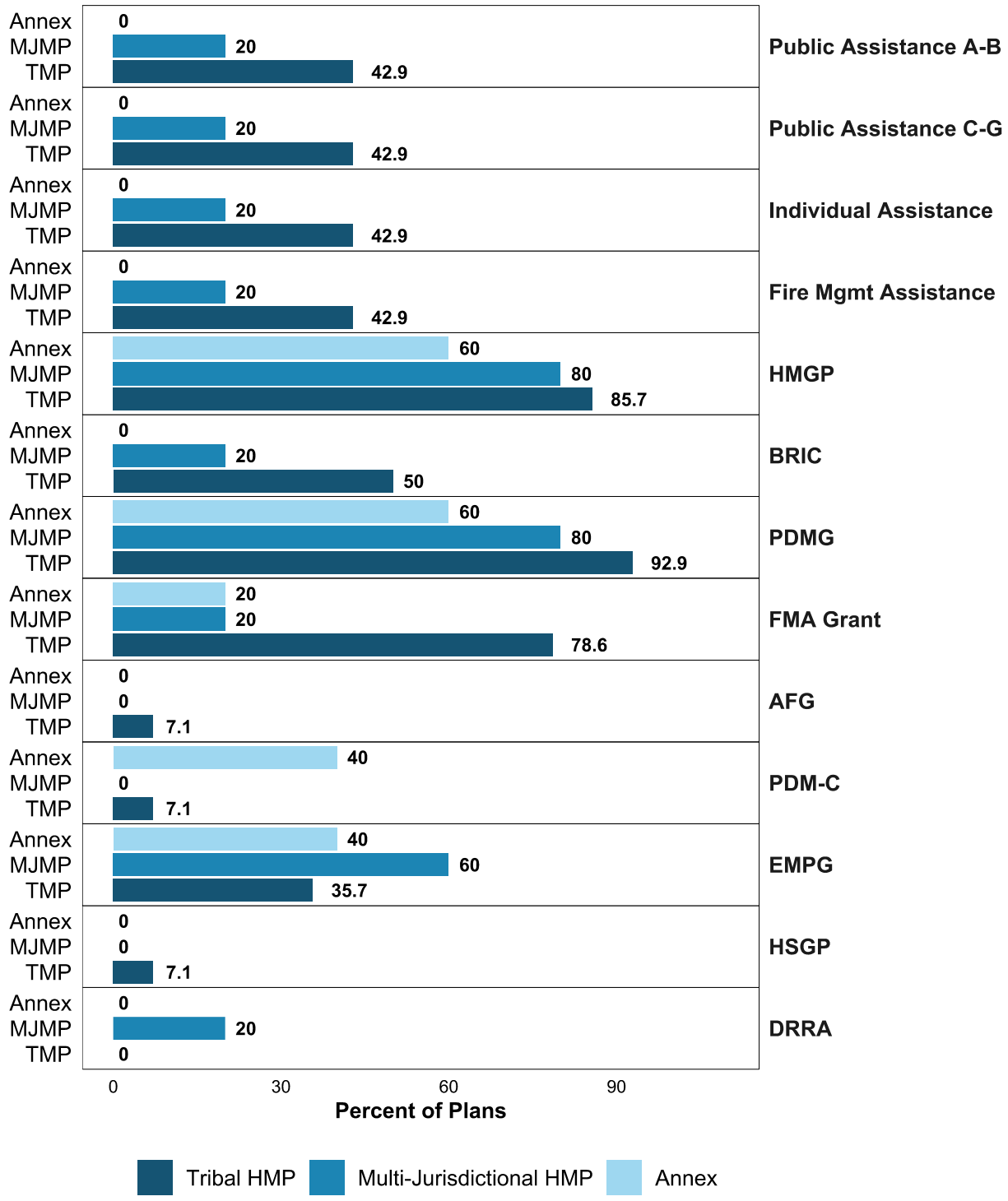
Public Assistance A-B, Public Assistance C-G, Individual Assistance, and Fire Management Assistance Grants were collectively mentioned across the same six Tribal

HMPs and one multi-jurisdictional HMP. Notably, all seven of these plans were formed with the same external consultant(s): Bridgeview Consulting.

All fourteen Tribal HMPs listed at least one FEMA funding source and one Tribal HMP listed 12 of the 13 funding sources. However, six Tribal HMPs only listed two to four FEMA funding sources, with four of six Tribal HMPs not have external consulting. These plans corresponded to the Quileute Tribe, Suquamish Tribe, Puyallup Tribe of Indians, and the Confederated Tribes of the Colville Reservation.

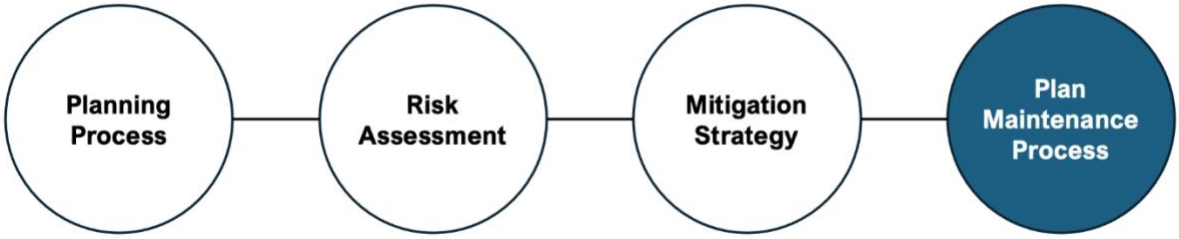
Tribal annexes only mentioned five of 13 FEMA funding sources across all plans. Both HMGP and PDMG are mentioned in the same three Tribal annexes: the Jamestown S'Klallam and Lower Elwha Klallam Tribal annexes (of the Clallam County multi-jurisdictional HMP) and the Kalispel Tribal annex (of the Pend Orielle County multi-jurisdictional HMP). Discrepancies between Tribal HMPs and Tribal annexes may relate to differences in funding eligibility for annexes or the use of consultants.

Figure MS.7 — FEMA Future Funding Sources Identified



Notes: *Figure MS.7 summarizes the percent of plans that identify FEMA funding sources to fund future-oriented mitigation actions. For example, 42.9 percent of all Tribal HMPs listed Public Assistance A-B as a future-funding source to fund future-oriented mitigation actions.*
Key: *HMGP = Hazard Mitigation Grant Program, BRIC = Building Resilient Infrastructure and Community, PDMG = Program Delivery Manager Grant, FMA Grant = Flood Mitigation Assistance Grant, AFG = Assistance to Firefighters Grant, PDM-C = Pre-Disaster Mitigation Competitive, EMPG = Emergency Management Performance Grant, HSGP = Homeland Security Grant Program, DRRA = Disaster Recovery Reform Act*

4.4 Plan Maintenance Process



4.4.1 LBS Principle 6 – Inter-Organizational Coordination

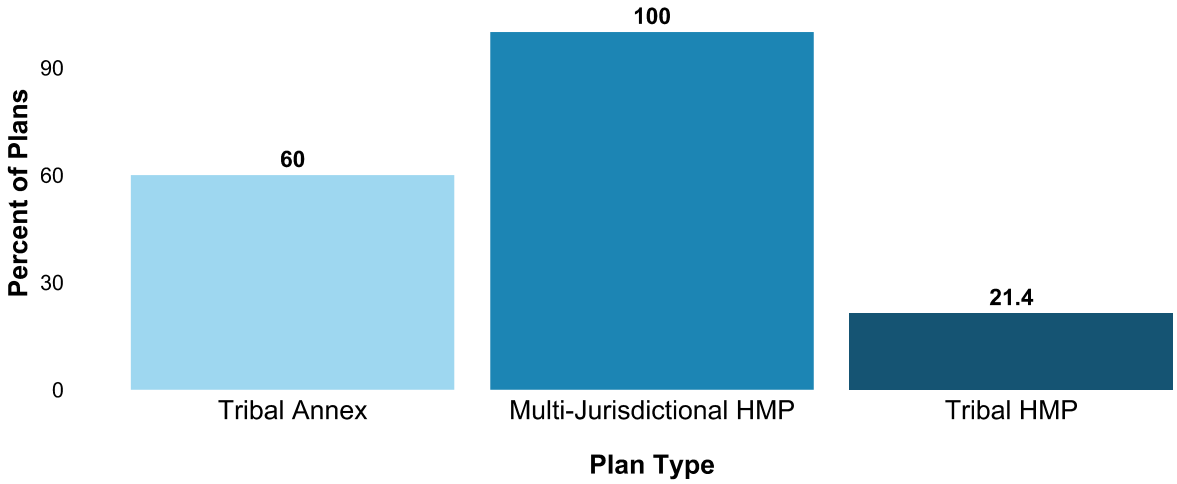
Key Questions

- Does the plan reference state and local actions that are interdependent with plan components and need to be coordinated?
- Does the plan refer specifically to a local comprehensive plan, defined as a detailed and inclusive plan that outlines future development, land use, transportation, infrastructure, and other community-related aspects within a specific jurisdiction?

Our analysis revealed that there were differences in references to existing local comprehensive plans. All multi-jurisdictional HMPs referenced existing local comprehensive plans corresponding with their respective county. Meanwhile, two Tribal HMPs referenced the local county's local comprehensive plan, while five Tribal HMPs and three Tribal annexes referenced the Tribe's specific comprehensive plan (Figure PM.1). The remaining Tribal HMPs and annexes did not reference local comprehensive plans, although many stated that more comprehensive planning efforts were underway.

Most multi-jurisdictional and Tribal HMPs had formulaic entries within the maintenance section entitled "Incorporation into Other Planning Mechanisms," and these sections generally spoke to intent to incorporate other plans in the future. Two multi-jurisdictional HMPs systematically tabulated other plans that impact hazard risk, including those counties' specific Climate Action Plan, Capital Facilities Plan, Flood Management Plan, Equity and Social Justice Strategic Plan, and more. Four Tribal HMPs detailed other unique and specific planning efforts including community economic development strategies, long-term transportation planning, climate resilience plans, and fire prevention plans. No specific details of other planning efforts were found in Tribal annexes.

Figure PM.1 — Percent of Plans that Mention Local Comprehensive Plan



Notes: *Figure PM.1 demonstrates the percent of plans that mention a local comprehensive plan in the plan maintenance process section by plan type. For example, 100 percent of the multi-jurisdictional plans in our sample referenced the county's local comprehensive plan in their plan maintenance section.*

4.4.2 LBS Principle 7 – Monitoring

Key Questions

- Does the plan track the performance of mitigation policies?
- Does performance tracking differ between plan types?
- Does the plan mention past obstacles to implementation?

Most plans describe monitoring procedures formulaically, including public engagement. Tribal HMPs and multi-jurisdictional HMPs do not significantly differ in this respect, and plans of all types list similar approaches to annual progress reporting. Notably, one Tribal HMP and one Tribal annex were missing the plan maintenance section, though the versions we analyzed were in draft form and the section may have been added to the respective final versions.

Generally, HMPs do not list implementation obstacles in a systematic way as it is not a required section. Our analysis did not reveal patterns of multi-jurisdictional HMPs identifying previous implementation barriers. However, several Tribal HMPs cited insufficient funding, limited staffing capacity, and limited land use authority as barriers to implementing proposed mitigation actions.

For example, in relation to a presidential disaster declaration in 2008, the plan for the Colville Confederated Tribes stated, "the Tribe was reimbursed for only a fraction of its losses. This is because the reservation, divided as it is between two counties, was dependent upon those counties to apply for disaster assistance. When Okanogan

County did not pursue a disaster declaration, the Tribal damage within the Okanogan County portion of the reservation could not be addressed under the Stafford Act." Similarly, the plan for the Lummi Indian Nation mentioned, "...funding has either been insufficient or unavailable to implement proposed mitigation actions," while the Shoalwater Bay Indian Tribe's challenges section lists "limited resources – financial and staffing" and "limited land use authority – only subject to trust and reservation lands." Additionally, the Hoh Indian Tribe and Quinault Indian Nation plans noted that "[annual meetings with all planning team members] did not occur due to staffing levels and workloads," and the Quileute Tribe's plan expressed, "The Tribe has limited resources to devote to mitigation planning."

Furthermore, the Jamestown S'Klallam Tribe highlighted issues with the funding mechanism provided by the Washington State Emergency Management Department in its Tribal HMP. This department allocates Emergency Management Planning Grant (EMPG) funding based on a formula tied to the percentage of an agency's operating budget. The Jamestown S'Klallam Tribe noted, "For Tribes with little or no pre-existing or established operating budget, this formula presents a disadvantage against large county and municipal public works programs. This formula was established through a change in the Washington Administrative Code without government-to-government consultation with Tribes." Additionally, the Tribe faced issues related to disaster declaration eligibility under the Stafford Act. Despite ultimately incurring $1.53 million in replacement costs for the Railroad Bridge trestle damaged in a severe weather/flood event in 2015, the Tribe was ineligible for a disaster declaration as the event did not meet the $1 million damage threshold required for Public Assistance. This disparity highlights the need for FEMA to reconsider the effectiveness of the Act for Tribal communities.

Regarding public engagement, some Tribal HMPs specify engagement with elders, but this is mainly in the implementation section, not the monitoring section. Few Tribal HMPs (and no multi-jurisdictional HMPs) explicitly mention Tribal citizens in the maintenance section, focusing instead on government staff, Tribal Councils, or the public defined more broadly.

4.5 Synthesis of Findings

Principles from Lyles, Berke & Smith (2014)

FEMA Section	Principle	Lyles, Berke, & Smith (2014) Findings	Tribal HMPs	Multi-Jurisdictional HMPs	Tribal Annexes
Planning Process	Principle 4: Participation	Most plans thoroughly described the public participation segment of the planning process, including the use of public update methods, online informational resources, and HMP public surveys. However, the specifics of community outreach events varied the most, based on capacity and jurisdiction's level of prioritization for public involvement.	Public and stakeholder participation was the primary objective in most planning processes. 64.3 percent implemented community events and update methods, 71.4 percent implemented public HMP surveys, and 78.6 percent implemented online resources – all constituting common outreach activities across plans.	The involvement of covered jurisdictions in the planning process is highly varied across plans. 100 percent of plans implemented community events, online resources and update methods, while 80 percent implemented public HMP surveys – all constituting common outreach activities across plans.	Most planning processes are led by Tribal departments and/or Councils instead of comprehensive planning teams. 80 percent of plans implemented community events and online resources, while 60 percent implemented Tribal Council meeting activities and update methods. Not all plans included county involvement.
Risk Assessment	Principle 1: Fact Base	Most plans identified a wide range of hazards, with flooding being the most commonly addressed, while climate change and sea level rise were rarely included. Plans provided the most detailed information on vulnerabilities related to critical facilities and	The number of hazards identified ranged from six to 19. Consistently high average across plans, with 71.4 percent to 85.6 percent of plans detailing information on vulnerability related to each category.	The number of hazards identified ranged from eight to 14. With the exception of climate change (40 percent of plans), high average for presence of category across plans, ranging from 80 percent to 100 percent.	The number of hazards identified ranged from seven to 11. Consistently low average across plans, with 0 percent to 40 percent of plans detailing information on vulnerability related to each category,

		infrastructure, property, and population life, health, and safety, while environmental assets and especially vulnerable populations received less attention. Most plans do not include loss estimates for public or private structures.	Significantly higher presence of climate change category included compared to other plan types. Highest average percentage of identified hazards with loss estimates provided by plan type (60.9 percent)	Average percentage of identified hazards with loss estimates provided at 50.4 percent.	Lowest average percentage of identified hazards with loss estimates provided by plan type (11.8 percent)
Mitigation Strategy	Principle 2: Goals	The most frequently stated goals in the plans were to reduce property damage, protect public safety, and increase the availability of information, while goals related to enhancing resilience and sustainability or reducing the unequal distribution of impacts were less common. Little variation was observed between jurisdictions.	Among the goals from Tribal Hazard Mitigation Plans (HMPs), 57 percent fell into the 'Decrease Hazard Losses' category, on average. Notably, Tribal HMPs had the highest relative frequency of goals categorized as 'Other' (11.3 percent on average). Most often, these goals focused on 'Protecting Tribal Cultural Assets and Sovereignty' within the 'Other' category.	Among the goals from Multi-Jurisdictional Hazard Mitigation Plans (HMPs), 42.6 percent fell into the 'Overarching Vision' category, on average. Goals from multi-jurisdictional HMPs were relatively evenly distributed across the categories of 'Improve Coordination', 'Decrease Hazard Losses', and 'Overarching Vision'.	Among goals from Tribal Annexes, 36.7 percent fell into the 'Overarching Vision' category, on average. The distribution of goals from Tribal Annexes aligns with that of multi-jurisdictional HMPs, likely because annexes are attachments to multi-jurisdictional HMPs and may follow their trends. However, some annexes diverge from multi-jurisdictional HMPs by addressing goals in the 'Other' category, particularly those focused on 'Protecting Tribal Cultural Assets and Sovereignty'.
	Principle 3: Actions (Policies)	Emergency Services approaches were the most common actions	Emergency Services were the most common future-oriented mitigation	Emergency Services were the most common future-oriented mitigation	Property protection was the most common future-oriented mitigation

		(policies) listed by local governments. Notably, FEMA considers emergency services as preparedness and response rather than mitigation activities. Property protection, public information and awareness, and structural controls were other common future-oriented mitigation approaches that local jurisdictions listed. The least common types of future-oriented actions by all local jurisdictions were preventative land use approaches and protection of natural mitigation features.	actions (policies) listed in Tribal HMPs, on average. Property protection and public information were other common future-oriented mitigation actions that Tribal governments listed. Tribal HMPs frequently listed future-oriented mitigation actions pertaining to internal and external coordination exclusively or in combination with other categories. We coded these categories even though they were not specified in the original framework. Structural controls and preventative land use were not common mitigation actions. Although protection of natural mitigation features was the least common action in Tribal HMPs (7 percent), these actions appeared much more frequently in Tribal HMPs than multi-jurisdictional HMPs.	actions (policies) listed in multi-jurisdictional HMPs, on average. Property protection and public information were other common future-oriented mitigation actions that local (county) governments listed. Multi-jurisdictional HMPs frequently listed future-oriented mitigation actions pertaining to internal and external coordination exclusively or in combination with other categories. We coded these categories even though they were not specified in the original framework. Structural controls and preventative land use were not common mitigation actions. Less than 1 percent of mitigation actions on average pertained to protection of natural mitigation features.	actions (policies) listed in Tribal annexes, on average, with Emergency Services as a close second. Public information was another common future-oriented mitigation action that Tribal governments listed. Tribal annexes frequently listed future-oriented mitigation actions pertaining to internal and external coordination exclusively or in combination with other categories. We coded these categories even though they were not specified in the original framework. Structural controls and preventative land use were not common mitigation actions. 12 percent of mitigations actions on average pertained to protection of natural mitigation features.

	Principle 4: Implementation	Overall, plans demonstrated a moderate to high level of inclusion of information about lead responsibility, timelines, prioritization, and cost for actions proposed in mitigation strategies. This finding varied widely across plans. Almost all plans identify the agency with lead responsibility for monitoring the plan and indicate that the public will be involved in future monitoring and updating of the plan. However, plan implementation sections do not require or often include indicators for tracking progress or identifying obstacles. The FEMA required formal benefit-cost analysis of strategies which proved difficult for both Tribes and counties, as most plans did not implement the formal approach.	Lead responsibility, timelines and prioritization were the most included information segments across plans' implementation sections. Plans with the same external consultant used the same prioritization approach across their mitigation strategies. 64.3 percent of plans were grouped under 75 – 100 completion, 21.4 percent grouped under 25 – 75 completion, and 14.3 percent grouped under 0 – 25 percent completion. The primary missing information across plans was associated costs. However, most plans had at least one segment of information that was mentioned but did not have sufficient detail to be considered a complete segment.	Timelines, lead responsibility and costs were the most included information segments across plans' implementation sections. Most plans did not include covered jurisdictions in their mitigation strategies and implementation. 40 percent of plans were grouped under 75 – 100 completion, 40 percent grouped under 25 – 75 completion, and 20 percent grouped under 0 – 25 percent completion. The primary missing information across plans was prioritization and associated costs.	Lead responsibility, timelines and prioritization were the most included information segments across plans' implementation sections. 80 percent of plans were grouped under 75 – 100 completion and 20 percent grouped under 25 – 75 completion. The primary missing information across plans was associated costs.
Plan Maintenance Process	Principle 6: Inter-Organizational Coordination	Although most plans outlined a general process for integrating the mitigation plan with	Two Tribal HMPs referenced the county's comprehensive plan, while five Tribal HMPs	All multi-jurisdictional HMPs mentioned their county's local comprehensive plan. Two	Three Tribal annexes referenced their Tribe's local comprehensive plan. All annexes

	other planning efforts and referenced the local comprehensive plan, few mentioned specific components of the comprehensive plan relevant to mitigation or other relevant planning initiatives such as disaster recovery plans, climate change planning, and hazard mitigation planning in adjacent jurisdictions.	mentioned the Tribe's specific comprehensive plan. Many plans described future efforts to develop comprehensive plans. Four Tribal HMPs detailed other unique and specific planning efforts; remaining plans had formulaic entries for this section.	plans systematically tabulated other plans impacting hazard risk; the remaining plans described intent to incorporate other plans in the future.	described an intent to incorporate other plans in the future.
	Principle 7: Monitoring	Most plans identified the responsible agency or role for monitoring progress and involving the public in future updates. Past obstacles to implementation and specific indicators for tracking progress were not present in most plans.	All Tribal HMPs except one had a plan maintenance section that outlined the responsible agency or role for monitoring progress and engaging the public. Many Tribal HMPs listed implementation obstacles, though this was not always in the maintenance section.	All multi-jurisdictional HMPs had a plan maintenance section that outlined the responsible agency or role for monitoring progress and engaging the public. Most plans did not list any obstacles to implementation. Most plans described a generic annual review process, without specific indicators for tracking progress.	One annex described past obstacles to implementation. One annex does not have a maintenance section; the remaining annexes all identified the responsible role for monitoring progress and engaging the public.

Tribal Climate Change Principles

FEMA Section	Principles	Principle Definition	Findings	Tribal HMPs	Multi-Jurisdictional HMPs	Tribal Annexes

Planning Process	Principle 1	Federally recognized Tribes and other Indigenous Peoples and Indigenous communities must be partners with full and effective participation in assessing and addressing the problems of climate change at the local, regional, national, and international levels and must be accorded at least the status and rights recognized in the U.N. Declaration on the Rights of Indigenous Peoples and other international standards relevant to Indigenous Peoples.	How Tribes define the "public" in their plans is correlated with whether they use a consultant and which consultant they use. Importantly, most plans authored by Tribes defined the "public" as employees and members of the Tribe only. One plan written in consultation with an Indigenous consultant defined the "public" as all humans and all living things within the ecosystem.	64.3 percent of plans defined "public" as including non-Tribal members, with most additionally including an external consultant	N/A	40 percent of plans defined "public" as including non-Tribal members while 40 percent of plans defined "public" as Tribal only. No plans included an external consultant.
	Principle 2	Tribes must have fair and equitable representation on all federal climate committees, working groups, and initiatives in which states, local governments, and other stakeholders are represented.	Overall, 80 percent of multi-jurisdictional HMPs had Tribal representation as part of at least one planning process activity and/or team. However, the level of involvement and current Tribal relationships varied across plans. The	N/A	The number of Tribal representatives engaged in planning processes ranged from zero to 6 individuals. Additionally, the methods of Tribal involvement in planning processes differed based on plans' inclusion of	N/A

			equitable representation of Tribes is unclear based on extreme variation and minimal detail.		a steering committee.	
	Principle 4	Indigenous Peoples must have direct, open access to funding, capacity-building, and other technical assistance, with their free, prior and informed consent, to address the immediate and long-term threats from climate change.	Federal funding, specifically from FEMA, is the most accessible funding source for HMP planning processes. Tribal HMPs are the only plan type with most planning processes being federally funded.	71.4 percent of Tribal HMPs were federally funded, with 57.1 percent being FEMA funded specifically.	40 percent of multi-jurisdictional HMPs were federally funded, which were all from FEMA.	20 percent of Tribal annexes were federally funded, which were all from FEMA. Direct and open access to funding is minimal for Tribal annexes.
	Principle 5	Tribes must have fair and equitable access to federal climate change programs.	Two federally recognized Tribes in Washington (~8 percent) have never adopted a FEMA-approved HMP and have never had access to HMA compared to one county (~ 2 percent). Non-federally recognized Tribes can receive HMA as a subapplicant of Tribes, states, or territories but	73.9 percent of Tribal HMPs are actively approved by FEMA, giving most Tribes with Tribal HMPs in Washington access to HMA.	74.4 percent of multi-jurisdictional HMPs are actively approved by FEMA, giving most Tribes in Washington access to HMA.	66.7 percent of Tribal annexes are actively approved by FEMA. 33.3 percent of Tribal annexes are expired with FEMA.

			must have a FEMA-approved HMP. OpenFEMA data indicate that no non-federally recognized Tribes in Washington are eligible for HMA as none have FEMA-approved HMPs.			
Mitigation Strategy	Principle 6	Tribes must be made eligible for existing and future federal natural resource funding programs for which states are eligible, but from which Tribes are currently, or might be, excluded.	On average, Tribal plans are eligible for federal funding and/or programs that local government is eligible for. Tribal HMPs had the most future funding sources mentioned. However, this is because most of the accessible funding is from federal sources. Beyond the federal level, both state and local funding sources were more often mentioned in multi-jurisdictional HMPs than Tribal HMPs or annexes.	The average number of federal funding sources or programs mentioned in Tribal HMPs is 15.9. The average number of state funding sources or programs mentioned in Tribal HMPs is 1.6. The average number of local funding sources or programs mentioned in Tribal HMPs is 0.4. Lastly, the average number of NGO funding	The average number of federal funding sources or programs mentioned in multi-jurisdictional HMPs is 11. The average number of state funding sources or programs mentioned in multi-jurisdictional HMPs is 3.2. The average number of local funding sources or programs mentioned in multi-jurisdictional HMPs is 1. Lastly, the average number of NGO funding	The average number of federal funding sources or programs mentioned in Tribal annexes is 6.6. The average number of state funding sources or programs mentioned in Tribal annexes is 0.4. The average number of local funding sources or programs mentioned in Tribal annexes is 0.8. Lastly, the average number of NGO funding

			NGO funding sources were minimal across all plan types.	sources or programs mentioned in Tribal HMPs is 0.2.	sources or programs mentioned in multi-jurisdictional HMPs is 0.2.	sources or programs mentioned in Tribal annexes is 0.

Chapter 5 – Recommendations

In this chapter, we discuss recommendations based on our findings and analyses in Chapter 4. We have grouped our recommendations into two main categories: recommendations for FEMA policies and regulations and areas for future research. These recommendations are intended to improve the incorporation of Indigenous worldviews and Tribal priorities into hazard mitigation planning.

5.1 Recommendations for FEMA Policy/Practice

5.1.1 Formalize the Annex Processes

We recommend that FEMA implement regulations for county governments to formalize their annex processes with individual jurisdictions. The current approach to hazard mitigation planning often, but not always, involves Tribes (and cities and other jurisdictions) participating in multi-jurisdictional plans by attaching annexes to base plans.

These annexes can be authored by the Tribe, a consultant hired by the Tribe, or even by the County. However, this decentralized approach can lead to undue complexity for Tribal governments in accessing Hazard Mitigation Grant Program (HMGP) funds: the lack of standardized procedures means the path to securing funding after completing an annex is inconsistent and unclear. Secondly, without clear guidelines and formalized processes, Tribes may face difficulties in meeting the eligibility criteria set forth by FEMA, depending on how much capacity the parent jurisdiction must support the development of the annex plan. The decentralized approach may also limit the capacity of Tribal governments to effectively coordinate with other jurisdictions, resulting in fragmented hazard mitigation efforts and potentially reduced resilience to natural disasters. We recommend formalizing the annex process to streamline the process and ensure more effective collaboration.

A formalized annex process could entail counties incorporating cities and Tribes into their plans in specific ways, rather than allowing each jurisdiction to simply append to the base plan. This structured approach could involve establishing standardized procedures for developing city and Tribal government annexes to be incorporated into the base plan. A structured approach could clearly delineate the roles and responsibilities of each jurisdiction and establish mechanisms for coordination and integration of annexes into the overarching hazard mitigation plan.

Specific incorporation could involve integrating city and Tribal annexes into the base plan in a way that ensures seamless alignment with the overarching hazard mitigation strategy. This could include defining the scope of annexes, clarifying the roles and responsibilities of each jurisdiction, and establishing mechanisms for coordination and integration into the plan. For example, some but not all parent jurisdictions indicated that they supplied each individual jurisdiction with an annex template and other resources to support their planning processes.

By formalizing the annex process, counties can ensure greater consistency and coherence in hazard mitigation planning efforts, enhance coordination between jurisdictions, and facilitate more efficient access to HMGP funds. Additionally, a formalized process can help to promote meaningful collaboration and engagement with Tribes, cities, and other stakeholders, ultimately leading to more effective and resilient hazard mitigation strategies.

5.1.2 Enhanced Tribal Plans

Enhanced state and Tribal plans are eligible for 5 percent more funding than a typical plan, but our research did not uncover how many Tribes are actually able to access this planning process. FEMA should write regulations for enhanced plans in partnership with Tribes and improve guidance for enhanced Tribal HMPs access to increased funding.

FEMA currently offers comprehensive guidelines and regulations for state-enhanced hazard mitigation plans (HMPs) but lacks explicit definitions and robust guidance for Tribal enhanced HMPs. This discrepancy is evident in FEMA's Tribal Mitigation Planning Handbook, which discusses the concept of enhanced Tribal plans but does not provide the detailed framework or regulatory backing found in the Code of Federal Regulations (CFR) for state plans. This gap highlights an area where improved federal guidance and further research are needed.

While state-enhanced HMPs are clearly defined and described in the CFR, Tribal enhanced HMPs are not. This regulatory gap can lead to inconsistencies in how Tribal enhanced plans are developed and evaluated, potentially impacting the quality and effectiveness of these plans. Furthermore, the guidelines provided in the Tribal Mitigation Planning Handbook are not as robust as those for state-enhanced plans. This lack of detailed guidance can hinder Tribal government's ability to develop plans that meet FEMA's enhanced plan criteria, creating a barrier to achieving enhanced status and more funding support. This may result in Tribal governments missing out on increased funding opportunities that are available to their state counterparts, though we also want to note this is an important area for further research.

To address these issues, FEMA should develop and codify specific regulations for Tribal enhanced HMPs within the CFR. These regulations should parallel those for state-enhanced plans, providing clear criteria and requirements. By doing so, FEMA can ensure that Tribal governments have a clear and consistent framework to follow, which will help them to develop more effective and comprehensive enhanced HMPs.

Additionally, the guidance for Tribal enhanced plans should be made more robust. This could involve expanding the content of the Tribal Mitigation Planning Handbook to include detailed instructions, best practices, and examples of successful Tribal enhanced HMPs. By providing more comprehensive guidance, FEMA can support Tribal

governments in meeting the enhanced plan criteria and accessing the increased funding available for such plans.

By developing explicit regulations and enhancing guidance for Tribal enhanced HMPs, FEMA can help ensure that Tribal governments have the tools and support they need to develop effective mitigation plans. This will not only improve the resilience of Tribal communities but also promote equitable access to disaster assistance funding.

5.2 Recommendations for Future Research

5.2.1 Planning Processes for Multi-Jurisdictional HMPs

We recommend that future research undertake a comprehensive analysis of the hazard mitigation planning process to enhance the incorporation of Indigenous planning principles. While our research has provided insights into the descriptions of planning processes outlined in multi-jurisdictional Hazard Mitigation Plans (HMPs), there remains an opportunity for further investigation into the representation of sovereign Tribal governments within hazard mitigation planning committees.

The Cascadia CoPes Hub could delve into the composition of planning committees across various jurisdictions, focusing particularly on the extent to which Tribal governments are invited to participate, included in decision-making, and how their voices are integrated throughout the planning process. By examining these aspects of representation and engagement, researchers can gain valuable insights into the effectiveness of current planning practices in incorporating Indigenous perspectives and priorities.

Furthermore, future research could aim to uncover the underlying reasons behind the varying approaches counties take in involving Tribal governments in planning efforts. Qualitative investigations, such as interviews or focus groups with key stakeholders engaged in hazard mitigation planning, could help identify the factors influencing decision-making processes and planning strategies. These interviews could involve Tribal leaders, county officials, emergency managers, and representatives from other relevant agencies.

The Cascadia CoPes Hub can contribute significant insights into the challenges and opportunities associated with integrating Indigenous planning principles into hazard mitigation planning processes by conducting further research in these areas. This research can potentially inform the development of more inclusive, collaborative, and culturally responsive approaches to hazard mitigation planning.

Moreover, understanding the unique perspectives, needs, and priorities of Tribal communities is essential for effective hazard mitigation planning. By enhancing the representation and engagement of Tribal governments in the planning process, counties can develop more robust and resilient hazard mitigation strategies that better serve all

community members. Ultimately, this enhanced understanding can bolster the resilience of Tribal communities and promote more equitable disaster preparedness efforts.

5.2.2 Tribal HMP Contents and Federal Support

We recommend that future research further parse out the correlation between the contents of HMPs and federal support. The Cascadia CoPes Hub could analyze the relationship by comparing the status of federal support that Tribal governments or local governments received to the status of including certain contents in HMPs. Our research has revealed that certain Tribal governments explicitly indicate mitigation goals of promoting Tribal cultural assets or sovereignty. By further examining whether these priorities are adequately addressed by federal support, the Cascadia CoPes Hub can provide valuable insights into how the federal government views and supports Tribal priorities. This deeper analysis could reveal how well the federal government aligns with Tribal goals and priorities and enhance federal support for local and Tribal governments with Tribal-specific objectives in their HMPs. By advancing equitable access to resources, this research can contribute significantly to improving the resilience of Tribal communities and fostering more inclusive hazard mitigation strategies.

5.2.3 Pursue Partnerships with Tribes

Recognizing the importance of the Cascadia CoPes Hub's original project proposal regarding Indigenous worldviews in hazard mitigation planning, we propose further steps to enhance the inclusivity and effectiveness of future research efforts. Specifically, we recommend that future researchers actively pursue reciprocal partnerships and relationships with Tribal communities and Indigenous scholars to ensure that future research is culturally responsive, equitable, and grounded in Indigenous knowledge systems.

Collaborating with Tribes and Indigenous scholars offers numerous benefits. Indigenous communities possess invaluable traditional knowledge, cultural practices, and historical insights that are essential for understanding local hazards and developing effective mitigation strategies. By engaging with Tribal communities and Indigenous scholars, the Cascadia CoPes Hub can ensure that future research efforts are grounded in Indigenous knowledge systems and principles.

Partnerships with Tribes and Indigenous scholars can involve co-designing research projects that prioritize Indigenous perspectives and priorities. This collaborative approach ensures that research questions are relevant and meaningful to Tribal communities, leading to more impactful and culturally sensitive outcomes. Incorporating Indigenous methodologies into research practices is another critical aspect of partnership. Indigenous methodologies prioritize community engagement, holistic approaches, and respect for Indigenous ways of knowing. By integrating Indigenous methodologies into research processes, the Cascadia CoPes Hub can further strengthen the cultural responsiveness of all its research.

Partnerships with Tribes and Indigenous scholars also provide an opportunity to build trust, foster meaningful relationships, and promote mutual learning and understanding. Building strong relationships based on trust and respect is essential for effective collaboration and ensures that research efforts are community-driven and responsive to the needs of Tribal communities. Some of our informal interviews gave us some preliminary firsthand knowledge about trust building between certain County governments and Tribal governments, and it is evident that those governments that had more intentional relationships also demonstrated more robust hazard mitigation planning partnerships.

Furthermore, research partnerships with Tribes and Indigenous scholars facilitate the dissemination of research findings to Tribal communities. By working closely with Tribal partners, the Cascadia CoPes Hub can ensure that research findings are accessible and beneficial to those most affected by hazards and disasters. This ensures that the knowledge generated through research is shared in a culturally appropriate and meaningful way.

By prioritizing partnerships with Tribes and Indigenous scholars, the Cascadia CoPes Hub can enhance the relevance, effectiveness, and cultural responsiveness of its research efforts. These partnerships contribute to more equitable and resilient hazard mitigation strategies, ultimately benefiting Tribal communities and promoting greater disaster resilience for all.

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Appendices

Appendix 1: Interview Script

"Hello, my name is _____ and I represent a group of Master of Public Administration (MPA) students from the Evans School who are collaborating with the Cascadia Coastlines and Peoples Hazard Research Hub (Cascadia CoPes Hub) on a capstone project focused on analyzing Hazard Mitigation Plans (HMPs). The information you provide during this interview will help to form research being conducted by the University of Washington on this subject. We will ask questions about Tribal hazard mitigation plans and planning, and are seeking insight on these subjects based on your professional knowledge and lived experiences. [Only read if applicable: We are offering an honorarium for your time and expertise during this interview.] With your permission, this interview will be recorded to ensure accurate representation of your responses throughout our project. This recording will be kept securely, with identifiers, and will be destroyed when this project culminates in May 2024. We would also like to request your consent to use anonymized quotes from this interview in our final research report which will become publicly available online in June 2024. If you agree to be anonymously quoted, we will ensure that the content accurately reflects your perspectives and will provide you with an opportunity to verify it before the final report is published. Your participation in this interview and the knowledge you provide is greatly appreciated. Please feel free to ask questions or ask to stop the interview at any time. We have 5-6 questions for this 1-hour interview. Unless you have any questions or concerns now, may we begin?"

Sample Interview Questions

1. Given your [POSITION], how familiar are you with the contents of Hazard Mitigation Plans in WA, particularly tribal and multi-jurisdictional plans that include tribes?
2. How have you seen an HMP successfully incorporate a Tribe's worldviews or priorities?
3. How/why might HMPs be unsuccessful in their incorporation of tribal worldviews or priorities?
4. Are there barriers that Tribes may face in ensuring their priorities are holistically represented in HMPs?

Clarifying Questions

5. Can you tell me more about that?
6. Can you tell me more about what you mean by [INSERT WORD OR PHRASE]?
7. Why do you feel that way?

Appendix 2: List of Obtained and Missing HMPs

OBTAINED

Tribe	Type	Status	Year approved
Chehalis	Tribal	Approved	2021
Colville	Tribal	Expired	2018
Hoh	Tribal	Approved	2022
Lummi	Tribal	Approved	2020
Puyallup	Tribal	Approved	2023
Quileute	Tribal	Expired	2015
Quinault	Tribal	Approved	2023
Samish	Tribal	Approved	2021
Sauk-Suiattle	Tribal	Approved	2020
Shoalwater Bay	Tribal	Approved	2020
Squaxin Island	Tribal	Approved	2019
Stillaguamish	Tribal	Approved	2020
Suquamish	Tribal	Approved	2023
Tulalip	Tribal	Approved	2021
Cowlitz	MJ	Expired	2016
Jamestown S'Klallam	MJ+Annex	Approved	2020
Kalispel	MJ+Annex	Approved	2019
Lower Elwha Klallam	MJ+Annex	Approved	2020
Muckleshoot	MJ+Annex	Approved	2020
Swinomish	MJ+Annex	Approved	2020

MISSING

Tribe	Type	Status	Year approved
Makah	Tribal	Approved	2023
Nooksack	Tribal	Expired	2012
Port Gamble S'Klallam	Tribal	Approved	2022
Skokomish	Tribal	Expired	2018
Snoqualmie	Tribal	Expired	2011
Spokane	Tribal	Approved	2020
Upper Skagit	Tribal	Approved	2020

Tribes not mentioned in FEMA data/presumably never had an HMP

Nisqually
Yakama

Appendix 3: Regulations for Local and Tribal Mitigation Plans

201.6 Local Mitigation Plans

The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding.

(a) ***Plan requirements.***

(1) A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. A local government must have a mitigation plan approved pursuant to this section in order to apply for and receive mitigation project grants under all other mitigation grant programs.

(2) Plans prepared for the FMA program, described at part 77 of this chapter, need only address these requirements as they relate to flood hazards in order to be eligible for FMA project grants. However, these plans must be clearly identified as being flood mitigation plans, and they will not meet the eligibility criteria for other mitigation grant programs, unless flooding is the only natural hazard the jurisdiction faces.

(3) Regional Administrators may grant an exception to the plan requirement in extraordinary circumstances, such as in a small and impoverished community, when justification is provided. In these cases, a plan will be completed within 12 months of

the award of the project grant. If a plan is not provided within this timeframe, the project grant will be terminated, and any costs incurred after notice of grant's termination will not be reimbursed by FEMA.

(4) Multi-jurisdictional plans (*e.g.,* watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan. State-wide plans will not be accepted as multi-jurisdictional plans.

(b) ***Planning process.*** An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process must include:

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and nonprofit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

(c) ***Plan content.*** The plan must include the following:

(1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

(2) A *risk assessment* that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment must include:

(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan must include information on previous occurrences of hazard events and on the probability of future hazard events.

(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description must include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

(3) A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section must include:

(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization will include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

(4) A *plan maintenance process* that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

(iii) Discussion on how the community will continue public participation in the plan maintenance process.

(5) ***Documentation*** that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (*e.g.,* City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

(d) ***Plan review.***

(1) Plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. Where the State point of contact for the FMA program is different from the SHMO, the SHMO will be responsible for coordinating the local plan reviews between the FMA point of contact and FEMA.

(2) The Regional review will be completed within 45 days after receipt from the State, whenever possible.

(3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

(4) Managing States that have been approved under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c) will be delegated approval authority for local mitigation plans, and the review will be based on the criteria in this part. Managing States will review the plans within 45 days of receipt of the plans, whenever possible, and provide a copy of the approved plans to the Regional Office.

[67 FR 8848, Feb. 26, 2002, as amended at 67 FR 61515, Oct. 1, 2002; 68 FR 61370, Oct. 28, 2003; 69 FR 55096, Sept. 13, 2004; 72 FR 61748, Oct. 31, 2007 ; 74 FR 47482, Sept. 16, 2009; 86 FR 50674, Sept. 10, 2021]

201.7 Tribal Mitigation Plans.

The Indian Tribal Mitigation Plan is the representation of the Indian tribal government's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards.

(a) ***Plan requirement.***

(1) Indian Tribal governments applying to FEMA as a recipient must have an approved Tribal Mitigation Plan meeting the requirements of this section as a condition of receiving non-emergency Stafford Act assistance and FEMA mitigation grants. Emergency assistance provided under 42 U.S.C. 5170a, 5170b, 5173, 5174, 5177, 5179, 5180, 5182, 5183, 5184, 5192 will not be affected. Mitigation planning grants provided through the PDM program, authorized under section 203 of the Stafford Act, 42 U.S.C. 5133, will also continue to be available.

(2) Indian Tribal governments applying through the State as a subrecipient must have an approved Tribal Mitigation Plan meeting the requirements of this section in order to receive HMGP project grants. A Tribe must have an approved Tribal Mitigation Plan in order to apply for and receive FEMA mitigation project grants, under all other mitigation grant programs. The provisions in § 201.6(a)(3) are available to Tribes applying as subrecipients.

(3) Multi-jurisdictional plans (*e.g.,* county-wide or watershed plans) may be accepted, as appropriate, as long as the Indian Tribal government has participated in the process and has officially adopted the plan. Indian Tribal governments must address all the elements identified in this section to ensure eligibility as a recipient or as a subrecipient.

(b) An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other tribal agencies, appropriate Federal agencies, adjacent jurisdictions, interested groups, and be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA mitigation programs and initiatives.

(c) ***Plan content.*** The plan must include the following:

(1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved. This must include:

(i) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval, including a description of how the Indian Tribal government defined “public;”

(ii) As appropriate, an opportunity for neighboring communities, Tribal and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process;

(iii) Review and incorporation, if appropriate, of existing plans, studies, and reports; and

(iv) Be integrated to the extent possible with other ongoing Tribal planning efforts as well as other FEMA programs and initiatives.

(2) A *risk assessment* that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Tribal risk assessments must provide sufficient information to enable the Indian Tribal government to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment must include:

(i) A description of the type, location, and extent of all natural hazards that can affect the Tribal planning area. The plan must include information on previous occurrences of hazard events and on the probability of future hazard events.

(ii) A description of the Indian Tribal government's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description must include an overall summary of each hazard and its impact on the Tribe. The plan should describe vulnerability in terms of:

(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

(C) A general description of land uses and development trends within the Tribal planning area so that mitigation options can be considered in future land use decisions; and

(D) Cultural and sacred sites that are significant, even if they cannot be valued in monetary terms.

(3) A *mitigation strategy* that provides the Indian Tribal government's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section must include:

(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the Indian Tribal government.

(iv) A discussion of the Indian Tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of Tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; and a discussion of Tribal funding capabilities for hazard mitigation projects.

(v) Identification of current and potential sources of Federal, Tribal, or private funding to implement mitigation activities.

(vi) In accordance with § 77.6(b) of this chapter, applicants and subapplicants for FMA project grants must have a FEMA-approved mitigation plan that addresses identified flood hazards and provides for reduction of flood losses to structures for which NFIP coverage is available.

(4) A *plan maintenance process* that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan.

(ii) A system for monitoring implementation of mitigation measures and project closeouts.

(iii) A process by which the Indian Tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.

(iv) Discussion on how the Indian Tribal government will continue public participation in the plan maintenance process.

(v) A system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.

(5) The plan must be formally adopted by the governing body of the Indian Tribal government prior to submittal to FEMA for final review and approval.

(6) The plan must include assurances that the Indian Tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR parts 200 and 3002. The Indian Tribal government will amend its plan whenever necessary to reflect changes in Tribal or Federal laws and statutes.

(d) ***Plan review and updates.***

(1) Plans must be submitted to the appropriate FEMA Regional Office for formal review and approval. Indian Tribal governments who would like the option of being a subrecipient under the State must also submit their plan to the State Hazard Mitigation Officer for review and coordination.

(2) The Regional review will be completed within 45 days after receipt from the Indian Tribal government, whenever possible.

(3) Indian Tribal governments must review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for non-emergency Stafford Act assistance and FEMA mitigation grant funding.

[72 FR 61749, Oct. 31, 2007, as amended at 74 FR 47482, Sept. 16, 2009; 79 FR 76085, Dec. 19, 2014; 80 FR 59551, Oct. 2, 2015; 86 FR 50675, Sept. 10, 2021]

Appendix 4: Full Codebook

Code Subcodes	**Coding Instructions**	**Example from Text**
Planning Process		
LBS Principle 4: Participation		
Outreach Activities	Refers to outreach activities if utilized as a technique for public engagement. See subcodes below.	
Community Events	Code 1 if plan describes engaging the public through community events such as annual gatherings, workshops, open houses, community fairs, etc. Code 0 otherwise.	"... held one public meeting during the Annual Benefits Fair in August 2016 to present the Tribe's Draft All Hazard Mitigation Plan to the Tribal Membership and Community workforce employed by the Puyallup Tribe. Hazard maps displayed on easels accompanied the All Hazard Mitigation Plan along with preparedness information. The hazard maps drew immediate attention and with many comments centering on a lack of awareness to the many hazards the Tribe is vulnerable to. The Benefits Fair is an annual event and wonderful opportunity to educate many tribal members at large, tribal and non-tribal employees in preparedness to the hazards they are at risk for and engage them with the All Hazards Mitigation Plan." **(Puyallup Tribal HMP, p.10)**
HMP Survey	Code 1 if plan describes engaging the public through an online or in-person survey. Code 0 otherwise.	"An online survey was developed to learn more about the public's initial concerns prior to plan development. The initial online survey was socialized through social media (e.g., Facebook, Next Door, etc.) beginning on December 6, 2018. Over the course of two months, over 550 individuals had responded to the survey and provided their feedback. The following figures indicate some of the key findings of the initial survey ..." **(Clallam Multi-Jurisdictional HMP, p.30)**
Online Resources	Code 1 if plan describes engaging the public through online resources like a website or social media. Does not include online surveys. Code 0 otherwise.	"... the Planning Committee's strategies for integrating public input include: ... 5. Providing periodic public information media releases throughout the process. 6. Posting applicable planning documents on the Tribe's website." **(Suquamish Tribal HMP, p.12)**
Tribal Council Meetings	Code 1 if plan describes engaging the public through Tribal Council Meetings. Code 0 otherwise.	"Our community is not necessarily locally-based, so our outreach for planning and implementation purposes does not always consist of face-to-face interaction via traditional "public involvement" meetings. We exchange information at General Citizen meetings, attended by approximately 50 individuals, and at Tribal Council meetings ..." **(Jamestown S'Klallam Tribal Annex, p.189)**

Update Methods	Code 1 if plan describes engaging the public through the implementation of public informational updates such as newsletters, news media, flyers, etc. Code 0 otherwise.	"The Tribe's Newsletter, which is distributed electronically and hardcopy to Tribal Citizens, was also utilized during this process to regularly to provide information concerning ongoing efforts with respect to the survey, and on-going planning effort. By engaging the public through the public involvement strategy, the concept of mitigation was introduced to the public, and the Planning Team received feedback that was used in developing the components of the plan." **(Chehalis Tribal HMP, p.41)**
Tribal Climate Change Principle 1: Federally recognized Tribes and other Indigenous Peoples and Indigenous communities must be partners with full and effective participation in assessing and addressing the problems of climate change at the local, regional, national, and international levels and must be accorded at least the status and rights recognized in the U.N. Declaration on the Rights of Indigenous Peoples and other international standards relevant to Indigenous Peoples. **Crosswalk:** How do Tribal hazard mitigation plans define the public?		
Survey Response	Refers to the number of people that completed a survey, if administered. See subcodes below.	
More than 100 respondents	Code 1 if the planning team administered a public survey and received 100 or more survey responses. Code 0 otherwise.	"An online survey was developed to learn more about the Tribes' initial concerns prior to plan development ... beginning on June 13th, 2019. Over the course of three months, 115 individuals responded to the survey and provided their feedback. Full survey questions and results are in Appendix B." **(Tulalip Tribal HMP, p. 28)**
Less than 100 respondents	Code 1 if the planning team administered a public survey and received less than 100 survey responses. Code 0 otherwise.	"A Hazard Mitigation Survey was developed by the Planning Team Members. The survey was designed to help identify vulnerable areas; to gauge household preparedness, and to identify the level of knowledge of tools and techniques that assist in reducing risk and loss from hazards. The answers helped guide the Planning Team in selecting goals, objectives, and mitigation strategies. The survey was disseminated throughout the planning area by multiple means, including hard-copy distribution and web-based ... Response to the survey indicate a total of 62 responses were received. The primary age group of respondents were 51-60 (35 percent) and 31-40 (24 percent)." **(Samish Tribal HMP, p. 34 – 35)**
Unknown number of respondents	Code 1 if the planning team administered a public survey but did not report number of survey responses.	"The survey, as well as the public outreach efforts, also provided an opportunity for citizens to provide comments during the entire process, from the initial drafting stages when the survey was deployed, until the draft plan was available for review. Comments received, which were relevant to the planning process and provided applicable information to the various sections of the plan were incorporated as appropriate ... With respect to the survey responses as they relate to the hazards of concern, the responses closely match the hazards of greatest concern as identified through the Planning Team's risk ranking." **(Skagit County Multi-Jurisdictional HMP, p. 34 – 35)**

No survey	Code 1 if the plan did not mention a survey as a public engagement technique. Code 0 otherwise.	Not applicable
Defines Public[1]	**Code ONLY Tribal HMPs and Tribal annexes:** Code 1 if plan provides a definition of the public. Code 0 otherwise.	See examples from Definition of Public subcodes below.
Definition of Public[1]	**Code ONLY Tribal HMPs and Tribal annexes:** See subcodes below.	
Tribe Only	**Code ONLY Tribal HMPs and Tribal annexes:** Code 1 if plan provides a definition of the public that is restricted to only the Tribe. Code 0 otherwise.	"The public as defined for this HMP is primarily Tribal Members living on the Quileute Indian Reservation." **(Quileute Tribal HMP, p. 24)**
Tribe and Non-Tribe	**Code ONLY Tribal HMPs and Tribal Annexes:** Code 1 if plan provides a definition of public that includes individuals outside of the Tribe. Code 0 otherwise.	"For these planning purposes only, as the SITC was part of the Skagit County multi-jurisdictional plan, the SITC elected to define "public" as being inclusive of all planning partners, the surrounding local communities, local tribes, Washington State and Federal agencies, and relevant non-governmental organizations; however, discussions concerning culturally significant locations and structures remained confidential, occurring only within the identified internal planning team members made up of Tribal membership, Tribal government, and Tribal employees." **(Swinomish Tribal Annex, p. 285)**
Non-Human Life	**Code ONLY Tribal HMPs and Tribal Annexes:** Code 1 if plan provides a definition of public that includes both human and non-human life. Code 0 otherwise.	"The public of the Squaxin Island Tribe, is defined as 'all human beings' along with 'all living things within the ecosystem'." **(Squaxin Island Tribal HMP, p. 17)**
Tribal Climate Change Principle 2: Tribes must have fair and equitable representation on all federal climate committees, working groups, and initiatives in which states, local governments, and other stakeholders are represented. **Crosswalk:** How many Tribal staff are members of multi-jurisdictional hazard mitigation planning committees?		

Tribal Partners on Planning Committee[2]	**Code ONLY multi-jurisdictional HMPs:** Count the number of staff of Tribal governments who are active members of a planning committee.	"Each jurisdiction wishing to join the planning partnership was asked to provide an executed Letter of Intent to Participate. That letter designated a point of contact for the jurisdiction and confirmed the jurisdiction's commitment to the process and understanding of expectations. Table 2-1 summarizes the received Letters of Intent to participate by the planning partners, as well as the level of participation and involvement throughout the planning process." *Table 2-1 lists the Kalispel Tribe of Indians representatives: (primary) Ray Entz, and (alternative) Chief Corrie Johnson, which is coded as 2.* **(Pend Oreille County Multi-Jurisdictional HMP, p. 27)**
Tribal Climate Change Principle 4: Indigenous Peoples must have direct, open access to funding, capacity-building, and other technical assistance, with their free, prior and informed consent, to address the immediate and long-term threats from climate change. **Crosswalk:** How does utilization of federal funding (for planning effort) differ between plan types?		
Utilization of Federal Funds for Planning	Refers to plans listing federal funds as having supported the development of the plan in part or in full. See subcodes below.	
FEMA Funding	Code 1 if the HMP listed a FEMA funding source as having supported the development of the plan. Code 0 otherwise.	"This planning effort was supplemented by a grant from the Federal Emergency Management Agency (FEMA). The Tribe applied for a grant in 2018, and funding was appropriated. The grant provided funding for 75 percent of the cost associated with development of the Hazard Mitigation Plan, with the Tribe providing 25 percent through in-kind contributions." **(Sauk-Suiattle Tribal HMP, p. 31)**
Any Federal Funding	Code 1 if the HMP listed any federal funding source (including FEMA) as having supported the development of the plan. Code 0 otherwise.	**"**Funded By: U.S. Environmental Protection Agency Performance Partnership Grant (Grant No. BG-01J57901-0)" **(Lummi Tribal HMP, p. 1)**
No Mention of Federal Funding	Code 1 if the HMP does not report any federal funding sources as having supported the development of the plan. Code 0 otherwise.	Not applicable
Tribal Climate Change Principle 5: Tribes must have fair and equitable access to federal climate change programs. **Crosswalk:** As having a FEMA-approved HMP is a prerequisite to accessing FEMA hazard mitigation funds, how does plan status differ between Tribes and counties in Washington?		

Plan Status	Refers to the plan status of all federally recognized Tribes and counties in Washington according to OpenFEMA downloaded May 1st, 2024. See subcodes below.	
Approved	Code 1 if OpenFEMA data indicates that a plan is approved and active. Code 0 otherwise.	Not applicable – based on OpenFEMA data
Expired	Code 1 if OpenFEMA data indicates that a plan is expired. Code 0 otherwise.	Not applicable – based on OpenFEMA data
Pending Adoption	Code 1 if OpenFEMA data indicates that a plan is approved pending adoption by the jurisdiction. Code 0 otherwise.	Not applicable – based on OpenFEMA data
Revisions	Code 1 of OpenFEMA data indicates that a plan is awaiting revisions from the jurisdiction. Code 0 otherwise.	Not applicable – based on OpenFEMA data
Never Adopted an HMP	Code 1 for all counties and federally recognized Tribes in Washington that have never passed an HMP (not in OpenFEMA data). Assumes Tribes would have passed a Tribal HMP and counties a multi-jurisdictional HMP for classification purposes. Code 0 otherwise.	Not applicable – based on OpenFEMA data
Risk Assessment		
LBS Principle 1: Fact Base		
Hazard Types	*Coded inductively.* Code 1 for each hazard a plan identifies and profiles (e.g. likelihood, magnitude, and other characteristics). Code 0 otherwise.	**"**Based on the review, the Planning Team, at its kick-off meeting, identified the following natural hazards that this plan addresses as the hazards of concern: • Climate Change (not as a separate hazard, but incorporated into other hazards of concern)[13] • Drought • Earthquake • Flood • Landslide • Severe Weather • Tsunami • Wildfire." **(Quinault Tribal HMP, p.91)**

[13] Climate Change not included as an identified hazard based on this language – instead, coded as a vulnerability category.

Number of Hazards	Sum the total number of hazards identified and profiled (e.g. likelihood, magnitude, and other characteristics) by a plan.	Not applicable
Vulnerability Categories	Refers to…See subcodes below.	
Population	Code 1 for each identified hazard if plan includes section on population vulnerabilities. Code 0 if not included. Then calculate as a percentage of total number of identified hazards across each plan.	"The entire population of the planning area is exposed to direct and indirect impacts from earthquakes. This would include residents, visitors, and employees of the Samish Indian Nation. This would also include individuals seeking services or referrals for health, etc., which the Nation provides." **(Samish Tribal HMP, p.121)**
Property	Code 1 for each identified hazard if plan includes section on property vulnerabilities. Code 0 if not included. Then calculate as a percentage of total number of identified hazards across each plan.	"Loss estimations for severe weather hazards are not based on modeling utilizing damage functions, as no such functions have been generated. For planning purposes, all properties and buildings within the planning area are considered to be exposed to the severe weather hazard, but structures in poor condition or in particularly vulnerable locations (hilltops or exposed open areas, or low-lying coastal areas) may be at risk for the most damage. Potential loss estimation for the Samish Indian Nation for structure value is $15.7 million." **(Samish Tribal HMP, p.193)**
Critical Facilities and Infrastructure	Code 1 for each identified hazard if plan includes section on critical facilities and infrastructure vulnerabilities. Code 0 if not included. Then calculate as a percentage of total number of identified hazards across each plan.	"Two structures identified as critical facilities are exposed in the FEMA 100- and 500-year flood hazard areas. Those include a facilities' building and a hatchery, with a building and content value at risk of $1.14 million combined." **(Stillaguamish Tribal HMP, p.141)**
Economy	Code 1 for each identified hazard if plan includes section on economic vulnerabilities. Code 0 if not included. Then calculate as a percentage of total number of identified hazards across each plan.	"As indicated above, economic impact from a drought is associated with different aspects, including, among others, the potential loss of agri- and aqua-cultural production and, of importance within the tribal planning area, tourism associated with recreational fishing services provided by some tribal members. If the fishing industry is negatively impacted, the sale of fish may also be impacted." **(Hoh Tribal HMP, p.100)**

<table>
<tr><td>Environment</td><td>Code 1 for each identified hazard if plan includes section on environmental vulnerabilities. Code 0 if not included. Then calculate as a percentage of total number of identified hazards across each plan.</td><td>“Environmental problems as a result of mass movements can be numerous. Landslides that fall into streams may significantly impact fish and wildlife habitat, as well as affecting water quality. Hillsides that provide wildlife habitat can be lost for prolonged periods due to landslides. The Tribe currently has several hatcheries, from which they release well in excess of ~2.4 million fry per year. Due to the lifecycle of salmon, impact in any given year from a landslide could have long-reaching impact to the Tribe.”
(Quinault Tribal HMP, p.197)</td></tr>
<tr><td>Climate Change</td><td>Code 1 for each identified hazard if plan includes section on climate change vulnerabilities. Code 0 if not included. Then calculate as a percentage of total number of identified hazards across each plan.</td><td>“Mass earth movement events are expected to increase globally because of climate change (McGuire, 2010). Within the Tulalip Reservation in particular, this is expected due to increased slope destabilization from a growing number of wildfires and more extreme precipitation events (University of Washington, 2015; Mauger, Lee, & Won, 2018 citation).”
(Tulalip Tribal HMP, p.82)</td></tr>
<tr><td>Ratio of Hazards with Dollar Loss Estimates</td><td>For each identified hazard, code 1 if the plan provides a dollar loss estimate to public and private property. Divide the number of identified hazards with dollar loss estimates by the total number of identified hazards</td><td><table><tr><td>Number of Structures</td><td>Structure Losses</td><td>Content Losses</td><td>Total Wildfire Losses</td></tr><tr><td>2,386</td><td>$320,267,584</td><td>$91,639,899</td><td>$411,907,483</td></tr></table>(Lummi Tribal HMP, p.149)</td></tr>
<tr><td>Risk Ranking System</td><td>Refers to a systematic way of ranking hazards of concern, if utilized. See subcodes below.</td><td></td></tr>
<tr><td>CPRI Ranking System</td><td>Code 1 if plan provides CPRI scores.[14] Code 0 otherwise.</td><td>“Table 3-7 presents the ranking of the hazards of concern based on their CPRI score.”
(Kalispel Tribal Annex, p.55)</td></tr>
<tr><td>Other Ranking System</td><td>Code 1 if plan provides alternative method for ranking identified hazards (not CPRI). Code 0 otherwise.</td><td>“The hazards identified in the HMP were initially ranked based on MPT feedback during MPT Meeting #1 and #2. The previous Jamestown S’Klallam Hazard Mitigation Plan (2015) was consulted as well to ensure continuity of Tribal priorities. Following the individual hazard ranking activity, the results were added up and aggregated to show an average score for both Tribal MPT members and are available in Figure 3-1.”
(Jamestown S’Klallam Tribal Annex, p.199)</td></tr>
</table>

[14] In all cases, either all identified hazards were assessed using CPRI, or none were.

<table>
<tr><td>No ranking system</td><td>Code 1 if a plan did not rank identified hazards. Code 0 otherwise.</td><td>Not applicable</td></tr>
<tr><td>CPRI Score by Hazard</td><td>Code according to specific CPRI scores provided.</td><td>
<table>
<tr><td colspan="3">Hazard Ranking</td></tr>
<tr><td>Hazard in Ranked Order</td><td>CPRI Score</td><td>Level of Concern and Significance</td></tr>
<tr><td>Earthquake</td><td>3.65</td><td>High</td></tr>
<tr><td>Severe Weather</td><td>3.05</td><td>High</td></tr>
<tr><td>Flood</td><td>2.25</td><td>Medium</td></tr>
<tr><td>Drought</td><td>2.15</td><td>Medium</td></tr>
<tr><td>Landslide</td><td>2.1</td><td>Medium</td></tr>
<tr><td>Wildfire</td><td>2.05</td><td>Medium</td></tr>
<tr><td>Volcano</td><td>1.9</td><td>Medium</td></tr>
</table>
(Stillaguamish Tribal HMP, p.221)</td></tr>
<tr><td colspan="3">Mitigation Strategy</td></tr>
<tr><td colspan="3">LBS Principle 2: Goals</td></tr>
<tr><td>Goal Categories</td><td>Refers to the goals a plan uses to guide future-oriented mitigation actions. Plans list differ numbers of goals. Code each goal individually. Each goal falls under <u>one</u> subcode. See subcodes below.</td><td></td></tr>
<tr><td>Improve Coordination</td><td>For each goal: Code 1 if the goal intends to improve coordination through:
• Increasing Information Availability
• Local-Local Coordination
• State-Local Coordination
Code 0 otherwise.</td><td>“Increase Public Awareness #2”
(Swinomish Tribal Annex, p.297)

“Encourage Partnerships #3”
(Swinomish Tribal Annex, p.297)</td></tr>
</table>

Decrease Hazard Losses	**For each goal:** Code 1 if the goal intends to decrease hazard losses through: • Distributing Hazards Management Costs Equitably • Minimizing Fiscal Impacts of Disasters • Protecting Public Safety • Reducing Damage to Private Property • Reducing Damage to Property in General • Reducing Damage to Public Property • Reducing Impacts on Environment and Natural Areas Code 0 otherwise.	"Reduce the possibility of damages and losses from seismic hazards, including ground shaking, ground movement, and tsunami." **(Quileute Tribal HMP, p.82)** "Goal 2—Reduce property damage." **(Chehalis Tribal HMP, p.245)**
Overarching Vision	**For each goal:** Code 1 if the goal intends to improve the jurisdictions' overarching vision through: • Increasing Resilience • Promoting Sustainability	"Promote disaster-resistant development." **(Quileute Tribal HMP, p.82)** "Build and support local capacity to enable the Quileute Tribe to prepare for, respond to, and recover from disasters." **(Quileute Tribal HMP, p.82)**
Other	**For each goal:** Code 1 if the goal intends to achieve other goals not included in the Lyles, Berke, & Smith (2014) framework. Categories inductively found: • Protect Tribal Cultural Assets and Sovereignty[3] • Promote Equity[3]	"Goal 3: Promote and protect Tribal sovereignty and identity." **(Samish TMP, p. 241)**

LBS Principle 3: Policies (Actions)		
Mitigation Action (Policy) Categories	Refers to future-oriented mitigation actions. Plans list differ numbers of mitigation actions. Code each action individually. Each action can fall under <u>one or multiple</u> subcodes. See subcodes below.	
Emergency Services	**For each action:** Code 1 if future-oriented action involves: • Disaster Warning • Communications and Utilities • Emergency Plans • Emergency Response • Capability • Evacuation • Sheltering Code 0 otherwise.	"Identify and train staff, youth, and volunteers that will be utilized for emergency management efforts." **(Chehalis Tribal HMP, p. 251)** "Identify and purchase emergency supplies and equipment, based on needs of community." **(Muckleshoot Tribal Annex, p. 26)** "Improve NOAA radio coverage for East County." **(Lewis County Multi-Jurisdictional Plan, p. 122)** "Expand the existing Public Safety Facility to include alternative power sources, such as solar power, to enable the structure to be utilized during power outages associated with several of the hazards of concern. This includes expansion of the structure to be utilized as a resilience center." **(Quinault Tribal HMP, p. 294)**
Preventative Land Use	**For each action:** Code 1 if future-oriented action involves: • Land Acquisition • Structure Acquisition • Density Bonuses • Tax Abatement • Cluster Development • Density of Land Use • Density Transfer Provision • Hazards	"Require new power lines to be underground." **(Colville Tribal HMP, p. 84)** "Strictly enforce burning restrictions." **(Colville Tribal HMP, p. 65)** "Accelerate coastal floodplain acquisitions." **(King County Multi-Jurisdictional HMP, p. 243)** "Develop a buyout program for homes in landslide hazard zones." **(Lummi Tribal HMP, p. 223)**

	included in Land Suitability Analysis • Permitted Land Use • Setbacks or Buffer Zones • Site Review • Special Study/ Impact Fees Assessment • Subdivision Regulation • Zoning Overlays • Site Public Facilities • Development Moratorium • Land Use Change • Post-Disaster Capital Improvements Adjustments. Code 0 otherwise.	
Property Protection	**For each action:** Code 1 if future-oriented action involves: • Elevation of Structures • Building Standards • Freeboard Requirement • Adjust Public Infrastructure • Retrofit Existing Public Facilities • Building Design Change • Retrofitting of Private Structures Code 0 otherwise.	"Consider building codes that would harden new and existing structures from the potential impacts of earthquakes." **(Hoh Tribal HMP, p. 259)** "Consider enhanced building codes and structural retrofit projects that would harden new and existing structures from potential impacts and hazards of concern." **(Quinault Tribal HMP, p. 289)**
Protection of Natural Mitigation Features	**For each action:** Code 1 if future-oriented action involves: • Protection of watersheds • Protection of fish & wildlife • Protection of soil or groundcover	"Continue to actively promote reforestation practices following logging and land clearing to minimize landslides, mudslides, and erosion vulnerability." **(Suquamish Tribal HMP, p. 178)** "Consider active intervention to move anadromous fish upriver if low water blocks spawning or traps fish." **(Colville Tribal HMP, p. 64)**

	• Nature-based solutions • Flame resistant native vegetation • Traditional burning • Restoration projects and removal of structural controls Code 0 otherwise.	"Restore coastal shorelines by removing bulkheads wherever possible, creating pocket estuary habitations, and allowing erosion to nourish beaches." **(King County Multi-Jurisdictional HMP, p. 245)**
Public Information & Awareness	**For each action:** Code 1 if future-oriented action involves: • Assessment Tools • Develop or Update Data (monitoring, assessment, and research) • Educational Awareness • Encourage Insurance Purchase • Post Signs Indicating Hazardous Areas • Tech Assistance for Developers/Public • Voluntary Real Estate Hazard Disclosure • Mandatory Real Estate Hazard Disclosure Code 0 otherwise.	"Conduct severe weather awareness activities." **(Jamestown S'Klallam Tribal Annex, p. 113)** "Wildfire Safety Outreach Resources." **(Squaxin Island Tribal HMP, p. 129)** "Conduct public outreach on risk-reduction techniques for all hazards through public education campaigns which increase awareness of healthy behaviors, including during times when shelters are established." **(Samish Tribal HMP, p. 246)**
Structural Controls	**For each action:** Code 1 if future-oriented action involves: • Levee and dike installations • Culvert projects and other drainage systems • Seawalls and tide gates • Retaining walls • Improving slope stability	"Construct and/or enhance where feasible, the Tribe's ongoing flood mitigation efforts such as levees and drainage system maintenance programs to reduce or minimize the impacts from flooding within the Reservation." **(Quinault Tribal HMP, p. 289-290)** "An emphasis on upgrading stormwater facilities." **(Tulalip Tribal HMP, p. 123)** "Inspect/repair any leaking water mains or fire hydrants." **(Colville Tribal HMP, p. 64-65)**

	• Dams and off-channel reservoirs • Fire hydrants • Air filters Code 0 otherwise.	
Internal Capability & Coordination[5]	**For each action:** Code 1 if future-oriented action involves: • Planning • Seeking funding • Ensuring linkage between documents • Improving records maintenance and security of government data • Hiring additional staff • Coordinating efforts between internal departments Code 0 otherwise.	"Adopt the Hoh Indian Tribe Hazard Mitigation Plan as an element of any comprehensive plan that the Tribe will create to ensure linkage between documents." **(Hoh Tribal HMP, p. 257)** "Consider purchasing "iron key" or similar encrypted devices to protect data." **(Colville Tribal HMP, p. 45)** "Prepare funding strategy." **(King County Multi-Jurisdictional HMP, p. 226)** "Develop a Post-Disaster Management Plan." **(Lummi Tribal HMP, p. 192)** "Develop climate change goals and policies." **(Tulalip Tribal HMP, p. 129)**
External Partnerships & Coordination[5]	**For each action:** Code 1 if future-oriented action involves: • Coordinating with private industry or other governments on projects, councils, etc. • Stakeholder engagement including round tables and feedback sessions Code 0 otherwise.	"Complete mutual aid agreements with surrounding jurisdictions." **(Colville Tribal HMP, p. 97)** "Continue to develop partnerships and MOUs with local, state and federal partners." **(Muckleshoot Tribal Annex, p. 26)**
LBS Principle 5: Implementation		

Implementation Ratio	Refers to an implementation description (e.g. cost, timeline, lead, priority) being included for each future-oriented mitigation action.	
0 - 25	Code 1 if plan provides implementation information for 0 to 25 percent of its future-oriented mitigation actions. Code 0 otherwise.	"The project was initially managed out of the Tribe's Emergency Management Services/Fire/Rescue Department. Project leadership was provided from the Office of Public Safety." *The plan does not mention or list cost, timeline, prioritization, or specifics of lead responsibility for each listed mitigation strategy.* **(Colville Tribal HMP, p. 9)**
25-75	Code 1 if plan provides implementation information for 25 to 75 percent of its future-oriented mitigation actions. Code 0 otherwise.	"STAPLEE criteria were used to evaluate the potential benefits of the each participant's listing of mitigation alternatives or actions. The STAPLEE evaluation includes consideration of the social, technical, administrative, political, legal, economic and environmental benefits of the mitigation actions ... The projects with the greatest benefits and lowest relative costs as determined by the STAPLEE criteria were assigned a high priority, while alternatives with lower benefits and relatively higher costs were assigned a low priority. Other strategies with varying degrees of benefits and costs were assigned a medium priority." *"Participants" refers to jurisdictions participating and being covered under the county plan.* **(Lewis County Multi-Jurisdictional HMP, p. 119 – 120)**
75-100	Code 1 if plan provides implementation information for 75 to 100 percent of its future-oriented mitigation actions. Code 0 otherwise.	**"**The framework established by this plan prioritizes actions where the benefits exceed the cost as informed by the Steering Committee. The Steering Committee developed this plan with extensive input from Tulalip citizens and community members of the reservation, their support implementing the actions identified in this plan will help to ensure the HMP's success." **(Tulalip Tribal HMP, p.19)** "The following table includes hazard mitigation actions for Tulalip Tribes as informed by the risk and capability assessments, including prioritization for implementation and funding mechanisms." *Table mentioned in quote refers to "Table 36 – Tulalip Tribes Mitigation Actions" with each action listing: Lead Entity, Support Entity, Implementation Timeline + Anticipated Cost + Funding Source, STAPLEE + Mitigation Effectiveness Score, and Priority (High, Med, Low)* **(Tulalip Tribal HMP, p.123)**

Tribal Climate Change Principle 6: Tribes must be made eligible for existing and future federal natural resource funding programs for which states are eligible, but from which Tribes are currently, or might be, excluded.

Crosswalk: How does identification of future-funding sources differ between plan types?

Future Funding Sources

Refers to uniquely identified potential funding sources that a plan identifies. Code each plan inductively for all unique potential funding sources. Specify whether each unique funding source is federal (and FEMA if so), state, local, or NGO-based.

Table 4-3 Fiscal Capabilities lists the US Department of Housing and Urban Development – Community Development Block Grant as an accessible financial resource
(Quinault Tribal HMP, p. 82)

"[1] Rural Community Assistance Corporation [2] Water, wastewater, stormwater, and solid waste planning; environmental work; to assist in developing an application for infrastructure improvements for small, rural communities. [3] Planning, feasibility studies" *From the Table of "Potential Sources of Hazard Mitigation Funding", listing the [1] funding source, [2] funding program description, [3] and project types. The Washington state Department of Commerce facilitates the Rural Community Assistance Corporation.*
(King County Multi-Jurisdictional HMP, p. 40)

Mitigation Action Description	Action Status	Timeframe	Funding Source	Hazards Addressed
Setback of USACE dike located in lower reach of Dungeness River.	2010 Action – Ongoing, funds procured	Ongoing over 5 years+	Puget Sound Acquisition and Restoration Fund	Flooding

From "Table 6-5 2019-2025 Mitigation Implementation Plan", listing the Puget Sound Partnership administered Puget Sound Acquisition and Restoration Fund as an accessible funding source for mitigation strategy CC11.
(Clallam County Multi-Jurisdictional HMP, p.115)

"[1] Lindbergh Grants Program, [2] Annual grant program that provides $10,580.00 per project to balance the advance of technology and the preservation of natural/human environment. Can be used for conservation of natural resources (i.e. sustainable development codes) and public outreach projects." *From the Table*

		"Other Financial Resources for Hazard Mitigation" listing the [1] funding source, and [2] effect on hazard mitigation. **(Squaxin Island Tribal HMP, p. 122)**
Federal	Sum the number of unique federal funding sources listed per plan.	**Tribal HMPs –** 222 potential federal funding sources mentioned **Multi-Jurisdictional HMPs –** 55 potential funding sources mentioned **Tribal Annexes –** 33 potential funding sources mentioned
State	Sum the number of unique state funding sources listed per plan.	**Tribal HMPs –** 22 potential funding sources mentioned **Multi-Jurisdictional HMPs –** 16 potential funding sources mentioned **Tribal Annexes –** 2 potential funding sources mentioned
Local	Sum the number of unique local funding sources listed per plan.	**Tribal HMPs -** 6 potential funding sources mentioned **Multi-Jurisdictional HMPs –** 5 potential funding sources mentioned **Tribal Annexes –** 4 potential funding sources mentioned
Non-Governmental Organization (NGO)	Sum the number of unique NGO funding sources listed per plan.	**Tribal HMPs -** 3 potential funding sources mentioned **Multi-Jurisdictional HMPs –** 1 potential funding sources mentioned **Tribal Annexes –** No potential funding sources mentioned
FEMA Funding Sources[6]	Refers to uniquely identified future FEMA funding sources that a plan lists to fund future-orientation mitigation actions. Code each plan inductively for all unique future FEMA funding sources.	**17 FEMA programs and grants are mentioned across all plan types** **Summaries:** **Tribal HMPs –** 103 potential FEMA funding mentioned **Multi-Jurisdictional HMPs –** 22 potential FEMA funding mentioned **Tribal Annexes –** 16 potential FEMA funding mentioned Ex: *Table 5-3 titled "Fiscal Capabilities", lists FEMA's Tribal Homeland Security Grants as accessible* **(Stillaguamish Tribal HMP, p. 67)**
Plan Maintenance Process		
LBS Principle 6: Inter-Organizational Coordination		

Local Comprehensive Plan	Code local comprehensive plan reference if HMP refers to local comprehensive plan.	"The MHMP works in concert with other plans, regulations, and management programs. One such measure is the Land Use, Zoning, and Development Code (LCL Title 15). Title 15 reduces hazards by ensuring that all proposed development on the Reservation is first evaluated for potential environmental impacts before being authorized. The Lummi Nation Flood Damage Prevention Code (LCL Title 15A) further addresses flood hazards on the Reservation, as does the Lummi Nation Flood Damage Reduction Plan (LWRD 2001a). **(Lummi Tribal HMP, p. 254)**
Other Planning Processes	Code other planning initiatives reference if HMP refers to other planning initiatives relevant to mitigation (e.g. disaster recovery plans, climate change plan, HMP in an adjacent jurisdiction, flood mitigation plan, emergency operations plan)	"The Tribe is integrating hazard mitigation into other planning efforts. The Tribe is nearing completion of a draft Community Economic Development Strategy (CEDS). Any work towards creating a more robust local economy will increase the resilience of the Tribe and its members in the face of disaster, enabling a faster recovery. After meeting with the CEDS planning team leader, the Tribe's current THIRA and 2012 HIVA were provided to the CEDS team for partial incorporation into the CEDS. The intent is to identify areas where economic development grants can also serve mitigation strategies." (**Colville Tribal HMP, p. 27)**
LBS Principle 7: Monitoring		
Implementation Obstacles	Code implementation obstacles if HMP identifies (past) obstacles faced in implementation	"During this period MHMP priorities and objectives were re-affirmed, and the progress on tribal mitigation projects addressed--funding has either been insufficient or unavailable to implement proposed mitigation actions; efforts to secure funding to implement the mitigation projects previously identified will continue." **(Lummi Tribal HMP, p. 248)**
Post-Disaster Event and/or Losses Tracking	Code post-disaster events tracking if HMP tracks losses post-disaster events	Several plans feature "Major Past Hazard Events" tables.

Identification of Parties Involved in Future Planning	Code identification of parties if HMP identifies parties involved in future	Most plans describe an Emergency Management Director or Department responsible for plan maintenance.
Monitoring Indicators	Code monitor indicators if HMP includes indicators for monitoring	"Mitigation projects and project closeouts will be monitored and updated through the use of the quarterly reporting forms for FEMA-funded projects, provided by the State and/or FEMA, or through the use of a Mitigation Project Progress Report. The Mitigation Project Process Report will be requested annually by the Planning Director to monitor progress made to-date and/or final closeout. The report will address the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them. " **(Quileute Tribal HMP, p. 98)**
Ongoing Public Engagement Intentions	Code public engagement intention if HMP intends to include public in updates and monitoring	"Tulalip citizens and community members of the reservation will be regularly updated on the status of hazard mitigation actions through social media, such as Tulalip News, and events like National Night Out. Copies of the HMP annual progress reports will be distributed to stakeholders and the media, where appropriate, and hard copies of the Tulalip Tribes 2021 HMP will be available to Tulalip citizens and community members of the reservation. **(Tulalip Tribal HMP, p. 122)**

***Notes**: Appendix 4 summarizes the codes and subcodes used to analyze plans. "LBS Principles" and codes were borrowed and adapted from Lyles, Berke, and Smith (2014). TCCP Principles were borrowed from the Tribal Climate Change Principles by Gruenig, Lynn, Voggesser, and Whyte (2015). Our team developed specific codes for each relevant TCCP principle relevant to the context of hazard mitigation planning. Our team did not develop codes for TCCP Principle 3, Principle 7, or Principle 8 as these principles could not be easily adapted to the content of HMPs.*

[1] Federal regulations only require Tribal HMPs to define the public, thus we only applied these codes to Tribal HMPs and Tribal annexes.

[2] We only applied this code to multi-jurisdictional HMPs. All Tribal HMPs and Tribal annexes inherently include Tribal staff on the planning committee.

[3] These subcodes did not originate from the Lyles, Berke, and Smith (2014) framework but were used to differentiate mitigation goals that did not fit within the original framework

***Key:** Section of HMP, Principle, Code with corresponding subcodes*