

FROM RESPONSE TO RESILIENCE: COMMUNITY WILDFIRE ACTIONS IN US CALIFORNIA AND SOUTH KOREA

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Introduction

Wildfires are becoming more frequent and destructive due to climate change and human activity. California and South Korea face similar wildfire risks, but their **governance systems** differ significantly.

The U.S. uses a **decentralized** system across federal, state, and local levels, while South Korea relies on **centralized** control. Each system presents different strengths and limitations in coordination and response.

This study asks how **community-level wildfire resilience strategies** compare between the U.S. and South Korea, and how governance structures shape these differences. It examines two case studies, the 2020 North Complex Fire in California and the 2025 Yeongnam wildfires in South Korea.



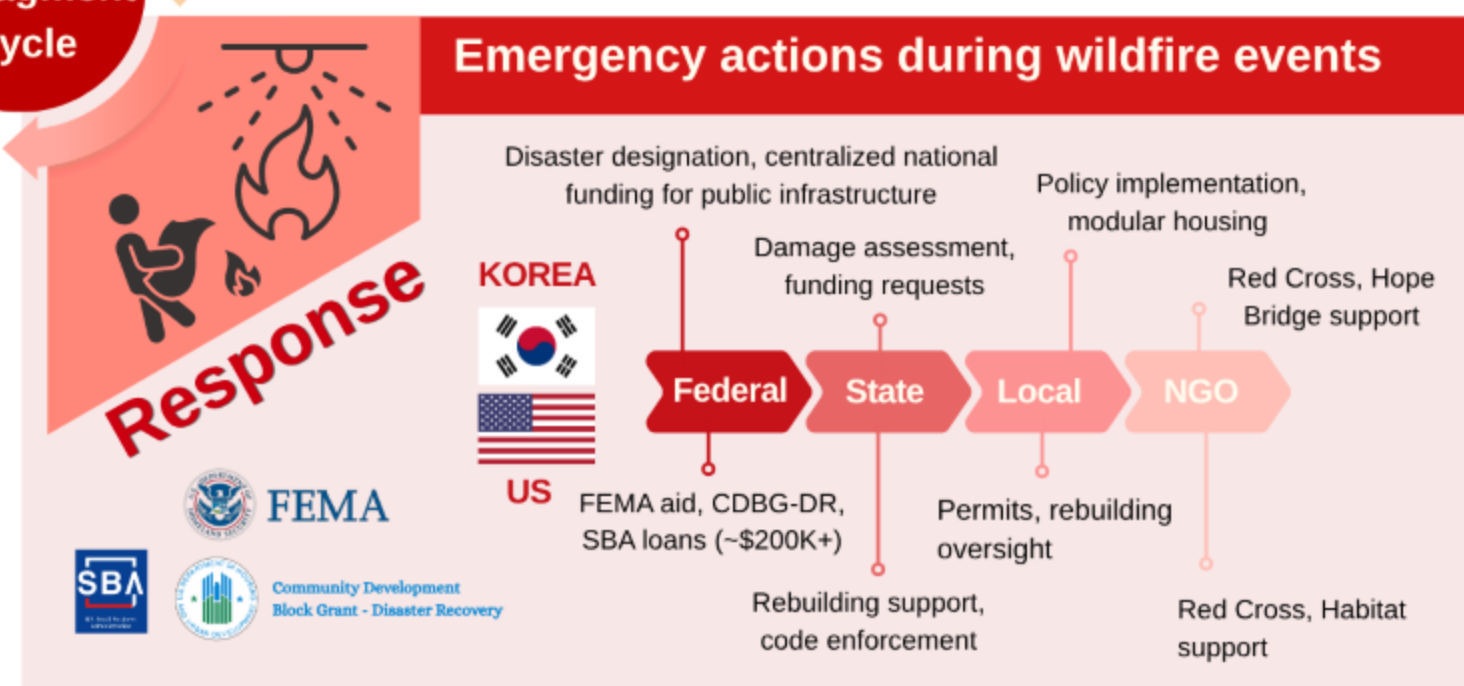
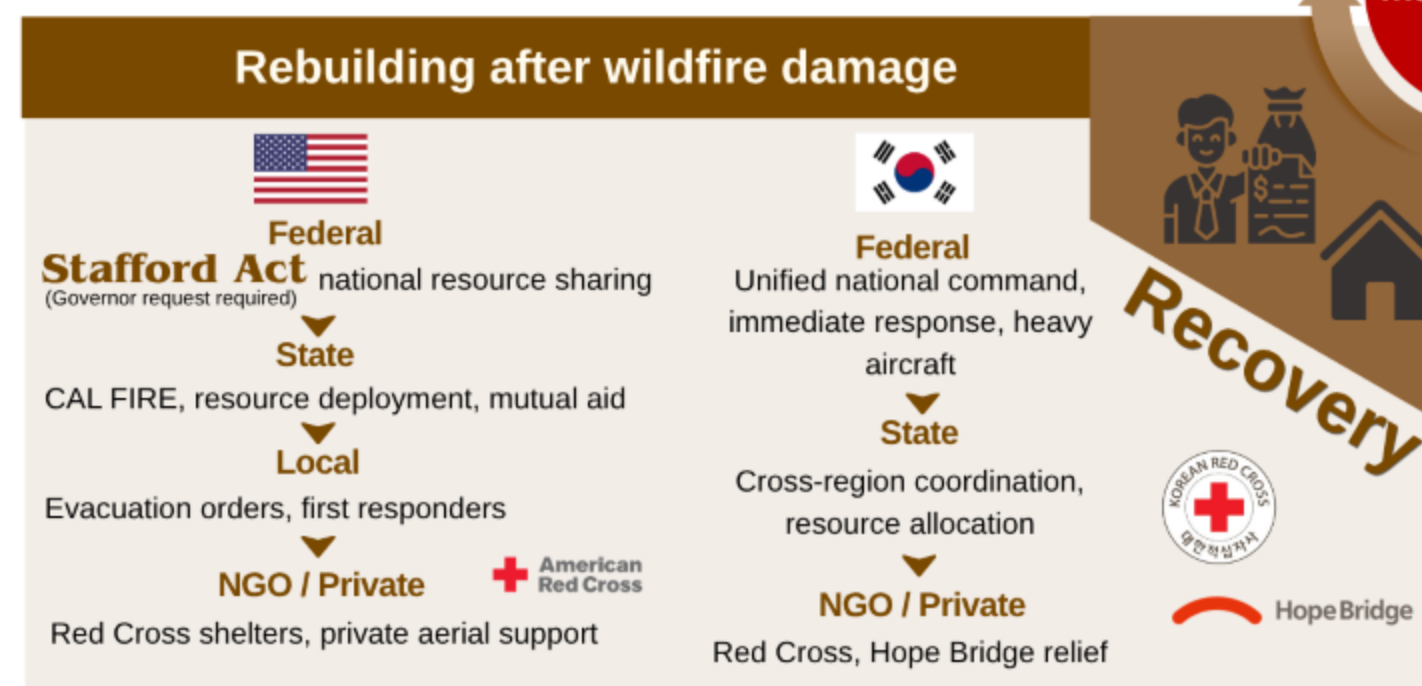
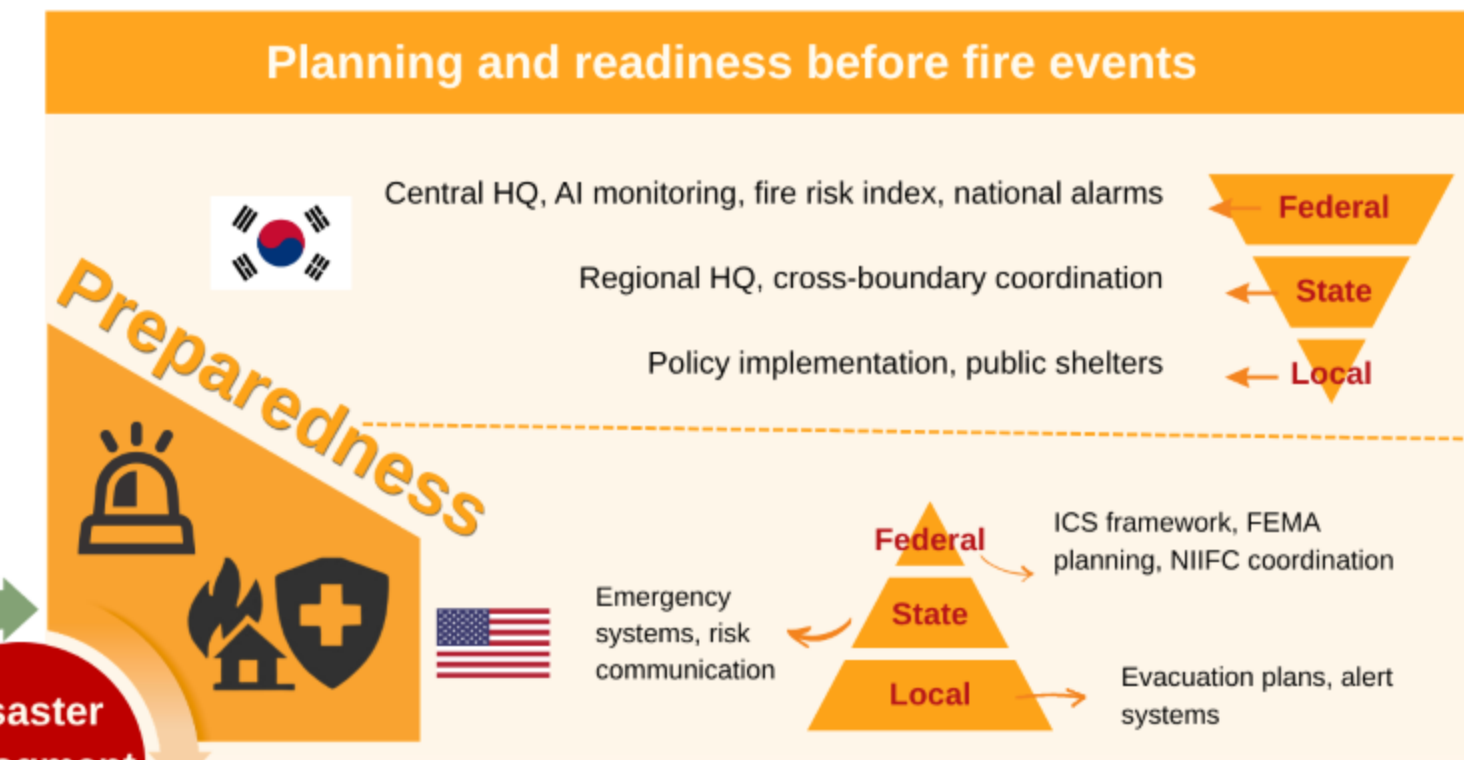
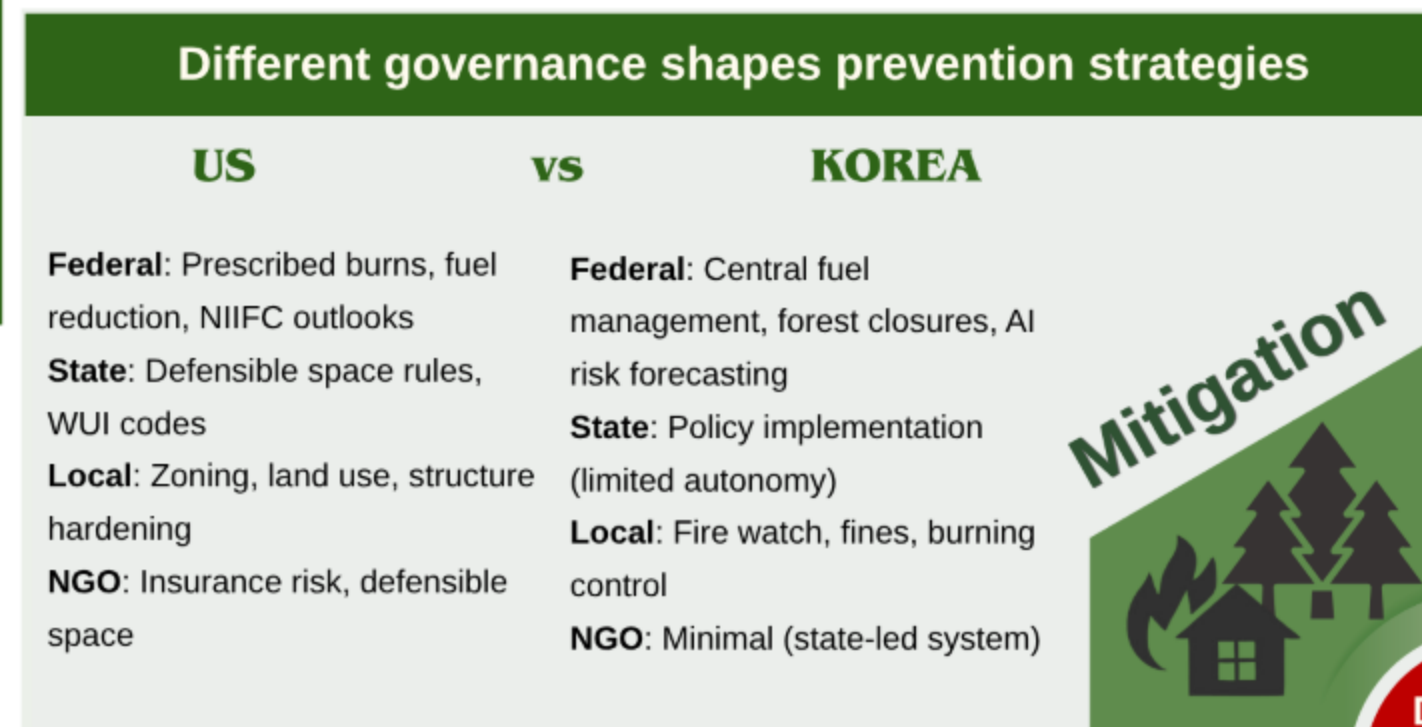
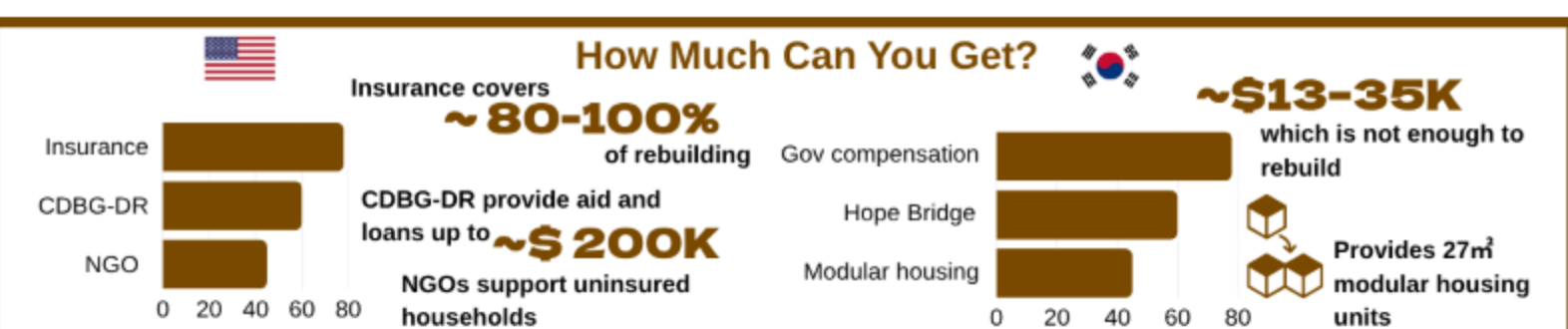
Top: 2025 YoungNam Wildfire in South Korea Bottom: 2020 north complex fire in California

Why US and Korea?

California and South Korea provide a compelling comparative case because they experience similar wildfire hazards under fundamentally **different governance systems**. While both regions implement strategies such as **risk forecasting, fuel management, and emergency response systems**, the way these actions are organized and executed varies significantly. This contrast allows us to isolate the **role of governance** in shaping wildfire resilience, beyond environmental conditions alone.

Methodology

- **Comparative case study:** California vs South Korea (North Complex Fire, Yeongnam wildfires)
- **Framework:** 4 disaster phases (mitigation, preparedness, response, recovery)
- **Scale:** federal, state, local governance levels
- **Data:** policy reports, post disaster evaluations, wildfire risk data
- **Method:** qualitative comparison to identify patterns, similarities, and differences



Key Findings and Conclusions

FINDING 1
Fuel legacy × climate stress → catastrophic fire behavior

Same outcome, different cause: a century of fire suppression created a "debt" of accumulated fuels in California, while post-war monoculture reforestation (*Pinus densiflora*) left South Korea with highly flammable, resin-rich stands. Both exceeded suppression capacity under extreme weather. The mechanism differs, but the vulnerability is structural in both cases.

CA: suppression debt KR: monoculture fuels

FINDING 2
Governance structure → response speed vs. coordination depth

Korea's centralized command enables rapid national mobilization — KFS assumes unified control without political delays. But this same structure limits interagency coordination and public participation. California's multi-level system allows local flexibility and community engagement, but resource competition during simultaneous fires and Stafford Act procedural requirements slow federal response.

FINDING 3
WUI land use patterns → structural vulnerability

Dispersed rural settlements embedded in California's forest landscape and South Korea's densely interwoven urban-forest interface both amplify wildfire exposure — through different spatial forms, but with the same result: high structural damage when fire arrives. Spatial planning and WUI-specific land use regulation are core resilience levers, independent of governance model.

FINDING 4
Speed ≠ equity. Neither system achieves both

Korea mobilizes faster but recovers unequally — government compensation (20–52M KRW) rarely covers full rebuilding costs. California's insurance-backed system covers more, but leaves uninsured and underinsured households behind. Both systems have structural blind spots. A hybrid model — centralized trigger for speed, decentralized delivery for equity — is the practical path forward for both regions.

➡ **Resilience is a governance design problem, not just an environmental one.**