

WILDFIRE CRISIS IN BRITISH COLUMBIA

A system analysis of the economic, environmental, and socio-cultural impacts of wildfires.

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INTRO TO WILDFIRES

A wildfire is a large, destructive fire that spreads quickly over woodland or brush.

A wildfire requires **fuel, oxygen, and heat** in order to ignite. The intensity of the wildfire depends on three factors: **fuel, topography, and weather.**

In 2017, 57.1% of the fires were started by lightning and 40.8% were person caused, typically caused by campfires and dropping burning substances.

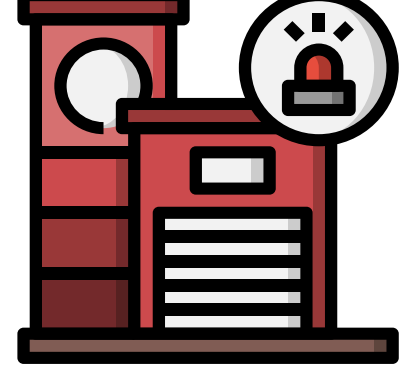
Climate change is a key contributing factor to the increase of extreme wildfires in British Columbia (BC).

The average mean temperature has increased by 1.7°C from 1948 to 2016, **double the global rate.** The change in temperature and precipitation alters habitable environments that create perfect dry conditions for fires to spread.

IMPACTS OF WILDFIRES

ECONOMIC

In 2017....



\$568 million was spent on fire suppression



More than **\$127 million** was lost in insured damages

Many of BC's core industries were negatively impacted:

- The forest industry
- The tourism industry
- The hydroelectric dams
- The transportation industry

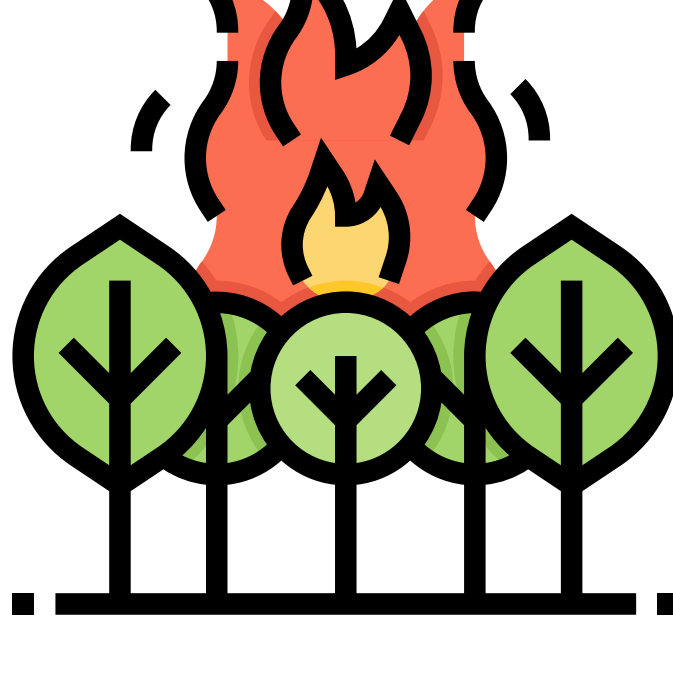
Local businesses were forced to shut down due to little insurance coverage.

Lost jobs during and after the wildfires pushed people to leave their community.

ENVIRONMENTAL

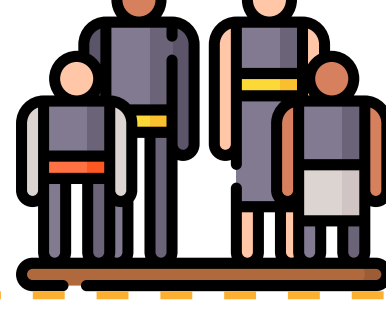
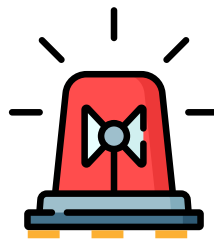
In 2017, 1.2 million hectares of land was burned.

Wildfires scorch soil layers, producing a hydrophobic layer that makes areas susceptible to erosion and flooding.



Smoke released from fires can significantly increase the concentration of particles in the atmosphere for weeks or months, negatively affecting human health.

SOCIO-CULTURAL



The 2017 Wildfire displaced over 65,000 people and prompted the longest Provincial State of Emergency since 2003.

Wildfires significantly impact the mental health of communities.

Residents all over BC face long periods of **poor air quality**, causing people to feel a loss of control. They cannot manage their anxiety with breathing exercises because they are worried about what they are breathing in.



“ [Evacuations are] one of the most stressful events that people can experience. ”

First Nations (FN) communities have a

33x



greater chance of being evacuated.

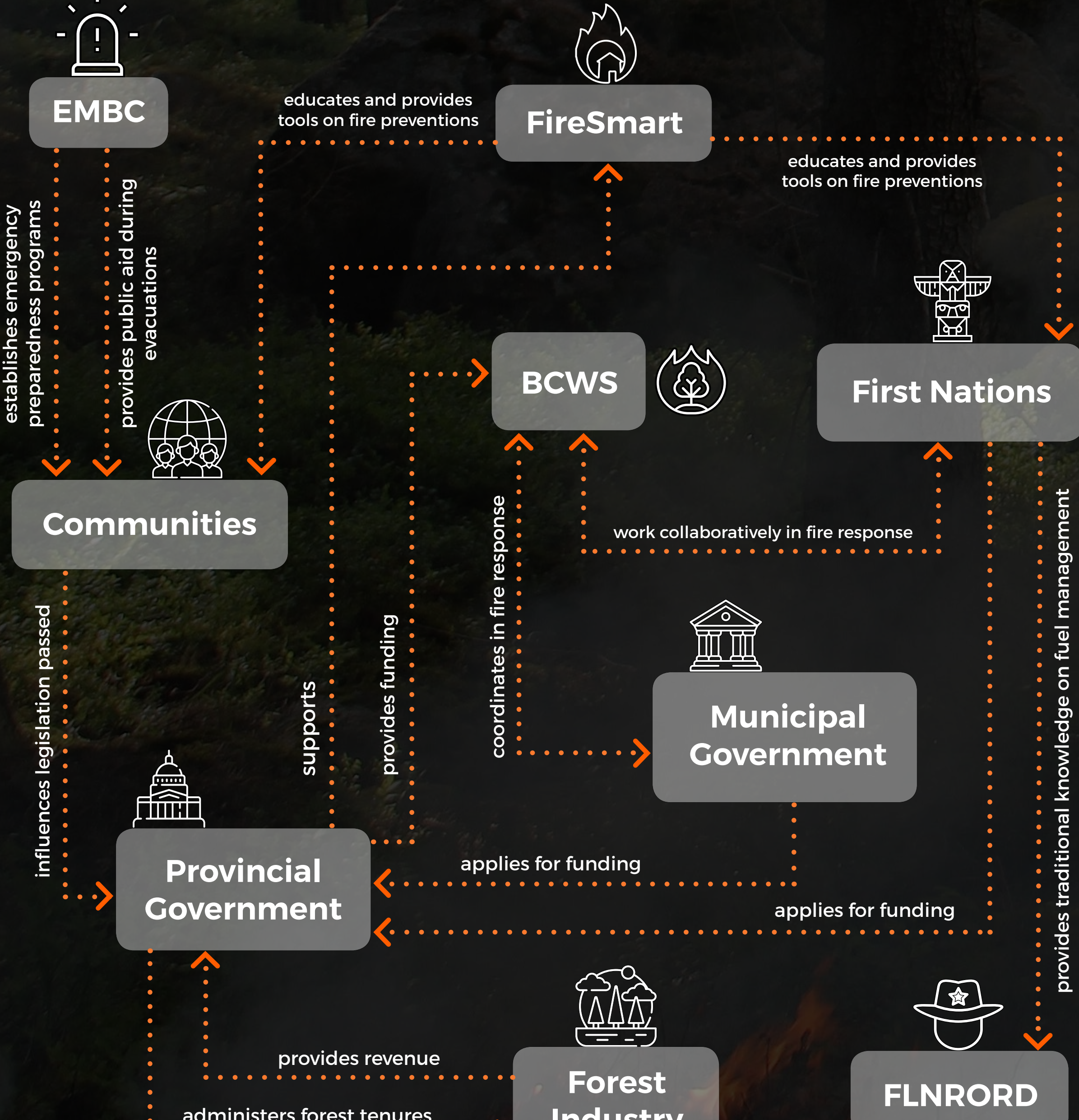
Evacuations force FN to relocate to urban areas for school and employment, making it **hard to rebuild and retain cultural activities.** Long term displacement has negative consequences to community cohesion, mental health and psychosocial well-being.

A Solution?

Talk in Tough Times was designed by the Canadian Mental Health Association for those experiencing stress and trauma by BC's 2017 wildfires. However, this program is limited in its method of communication as it is only done over the phone, removing key components of communication. With 55% of communication done through body language, patients are limited in the support that they can receive.

STAKEHOLDERS SYSTEM MAP

Relationships that maintain the status quo are examined amongst the key stakeholders within the system. However, these stakeholders are restrained from effective action within their roles due to limited resources and rules such as restrictive policies. This existing system results in significant economic, socio-cultural and environmental impacts.



LANDSCAPE SYSTEM MAPS

PROBLEM LANDSCAPE



Restrictive Policies & Legislative Structure

Since 1945, policies have emphasized suppression instead of mitigation.

BC's 4-year electoral based government stalls the legislative process.



This restrains fire prevention programs from being widely enforced throughout vulnerable communities as organizations are forced to work within a restrictive legislative framework.



BC has one of the strictest forest regulations in the world due to strong concerns from communities about extensive logging, leading from reforestation procedures and a highly dense forests.

However, dense forests result in too much fuel, causing fires to spread more rapidly when they occur.

STRICT FOREST REGULATIONS LOOP



+ AMPLIFY

- REDUCE

SOLUTION LANDSCAPE



Fuel Management

Due to the strict forest regulation policies and legislative structure, governments must work around these policies through fuel management tools:



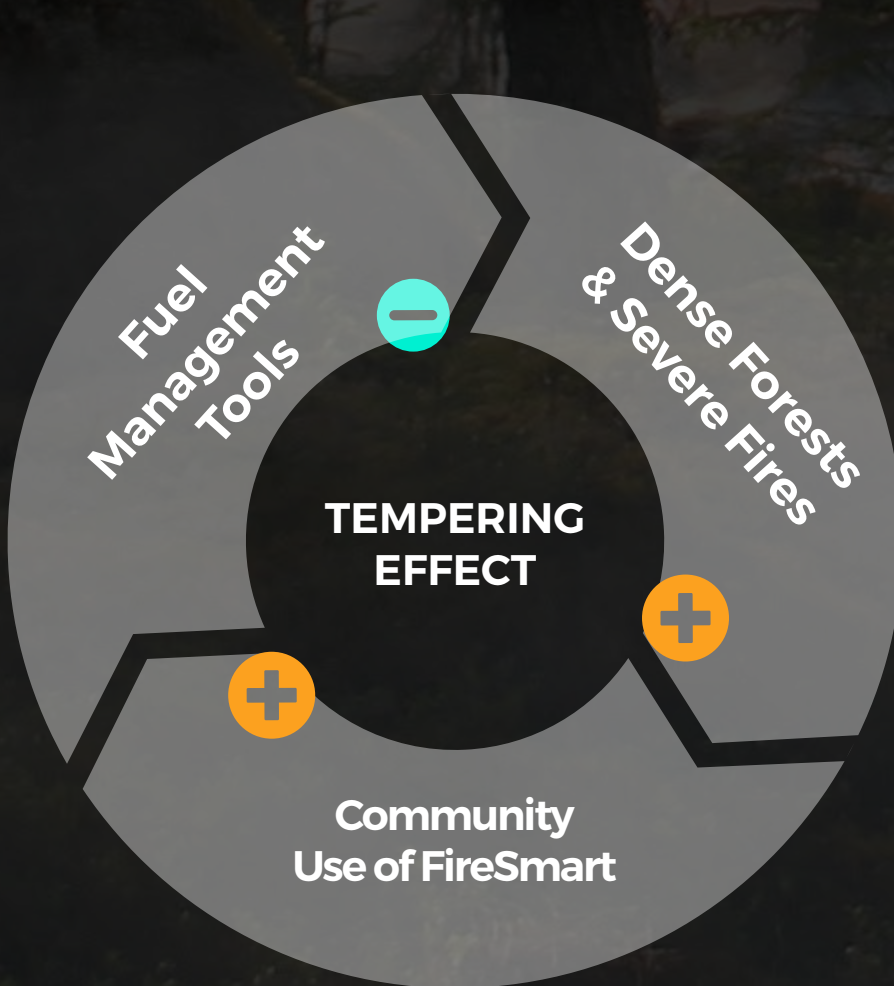
Prescribed Burning

Compared to previous decades where simple rangers were hired, BCWS is taking charge to ensure professionalism and adequate skill in prescribed burning. Prescribed burning is now taken seriously by governments and the public as an efficient fuel management tool.

Strategic Fuel Breaks

The BC government administers and encourages forest tenures to harvest or salvage dead, dry trees, especially those near communities. However, this solution has a recruitment challenge because implementing strategic fuel breaks is both mentally and physically exhausting. Another challenge is that harvesting is not always effective in reducing the intensity or severity for subsequent fires, as salvage harvesting adds fine fuels to the forest floor.

FUEL MANAGEMENT LOOP



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PROBLEM



Public Perspectives on Wildfires & Prescribed Burning

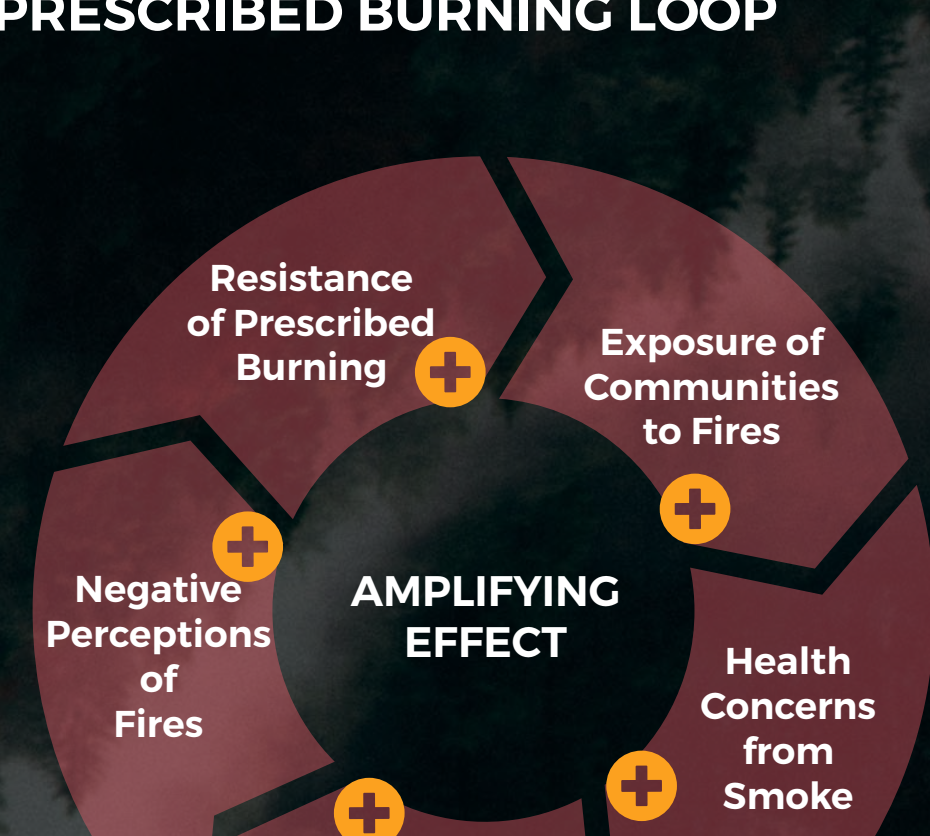
Media campaigns (like Smokey the Bear) have historically villainized fire, causing the general public to believe that all fire is bad and must be suppressed.



This has created a cultural belief that fails to recognize that forests are dynamic and that fire is a natural regenerative tool for forests to maintain themselves.

Due to anti-fire culture, prescribed burning has become a contentious solution to wildfires, even though it can significantly reduce wildfire intensity. This divide in opinion has affected all stakeholders, leading to suboptimal approaches to fire management.

NEGATIVE PUBLIC PERSPECTIVES OF PRESCRIBED BURNING LOOP



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- REDUCE

SOLUTION



Education & Awareness



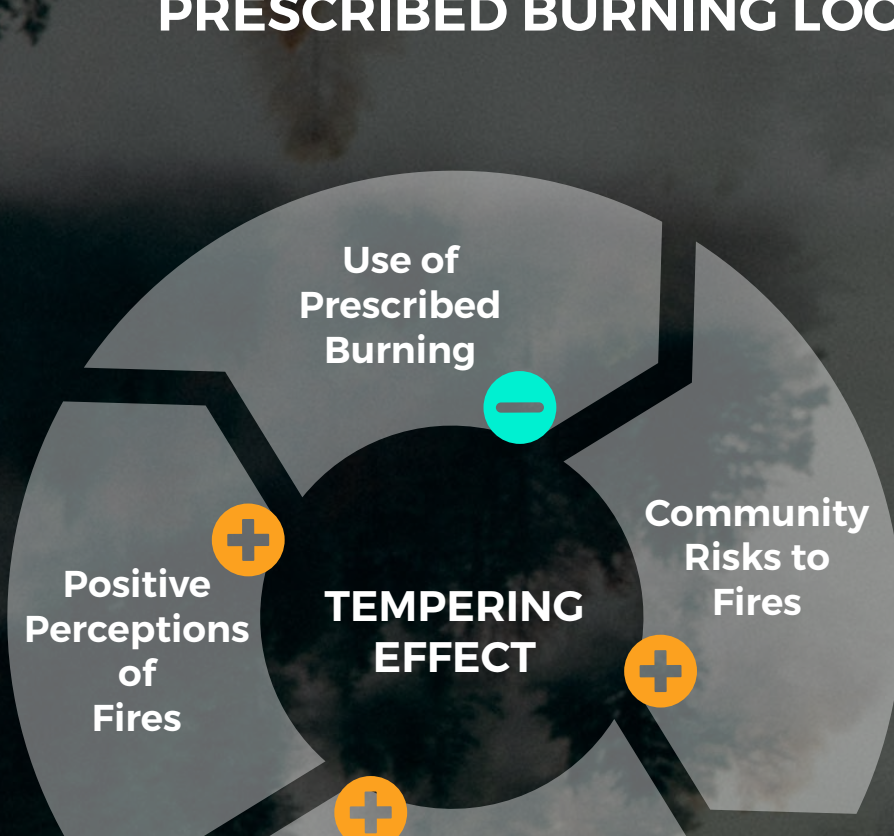
Communities are provided education and awareness programs like FireSmart, to aid in household emergency preparedness. With communities more educated and knowledgeable about their personal risks and potential fire-caused damages, they are more willing to plan, prepare and minimize the amount of fuels around their yards.

FireSmart



HOME PARTNERS PROGRAM

POSITIVE PUBLIC PERSPECTIVES OF PRESCRIBED BURNING LOOP



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- REDUCE

PROBLEM



Lack of Funding & Resources

In 2017, BC budgeted \$64 million to fire management.

\$649.5 million was the real total spent on fire management in 2017.

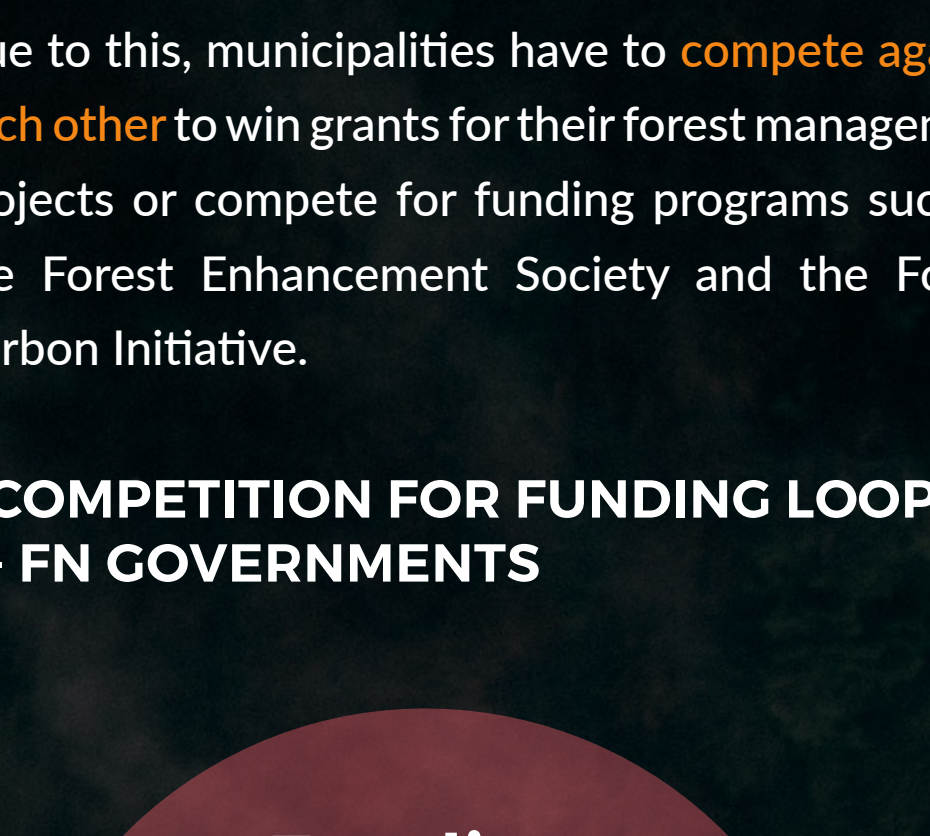


It is projected that Canada will spend approximately \$1 billion to \$1.4 billion in future costs for fire suppression alone.

Budget policy creates a vicious cycle where most of the budget is spent on firefighting. This results in forest managers having limited resources for fuel management, increasing the fuel for more wildfires to burn.

Due to this, municipalities have to compete against each other to win grants for their forest management projects or compete for funding programs such as the Forest Enhancement Society and the Forest Carbon Initiative.

COMPETITION FOR FUNDING LOOP - FN GOVERNMENTS



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COMPETITION FOR FUNDING LOOP - MUNICIPAL GOVERNMENTS



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SOLUTION



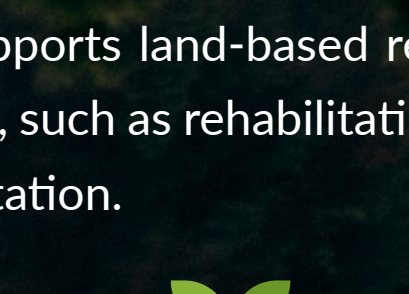
Funding & Financial Assistance Program



1. The BC government is dedicating \$72 million in funding for three years of wildfire recovery and reinforcing communities' resilience to wildfires.

\$50 million is provided for the new Community Resiliency Investment Program (CRI) that aims to minimize risks of wildfires around FN and other communities by promoting FireSmart activities on private lands.

\$22 million supports land-based recovery in heavily impacted areas, such as rehabilitating rangelands and initiate reforestation.



2. The Strategic Wildfire Prevention Initiative, managed by FNESS, FLNRORD and UBCM, is funded by the provincial government to support communities in mitigating risks from wildfires in the Wildland Urban Interface (WUI).

3. The Community Wildfire Protection Plan Program assists local governments and FN in identifying the levels of wildfire risks to their communities and providing resources to reduce those risks.

4. EMBC has partnered with the Canadian supermarket chain, Save-On-Foods, and the retail store chain, London Drugs, to develop an emergency preparedness kit that includes all the necessities while remaining affordable.

PROBLEM

SOLUTION



Inefficient Emergency Response



The 2017 wildfire season revealed a **lack of well-trained leaders** on task forces and demonstrated how a firefighter's **performance decreases** when responding to disasters **outside of their typical urban environment**.

A new structure was created to resolve these issues, but it uncovered **jurisdictional challenges** in coordinating response efforts between the separate entities of BCWS and municipal fire departments. If one party requires support from the other, there are **lengthy procedures** that involve writing up transactions, tracking time, and filling out proposals – **delaying response time**.

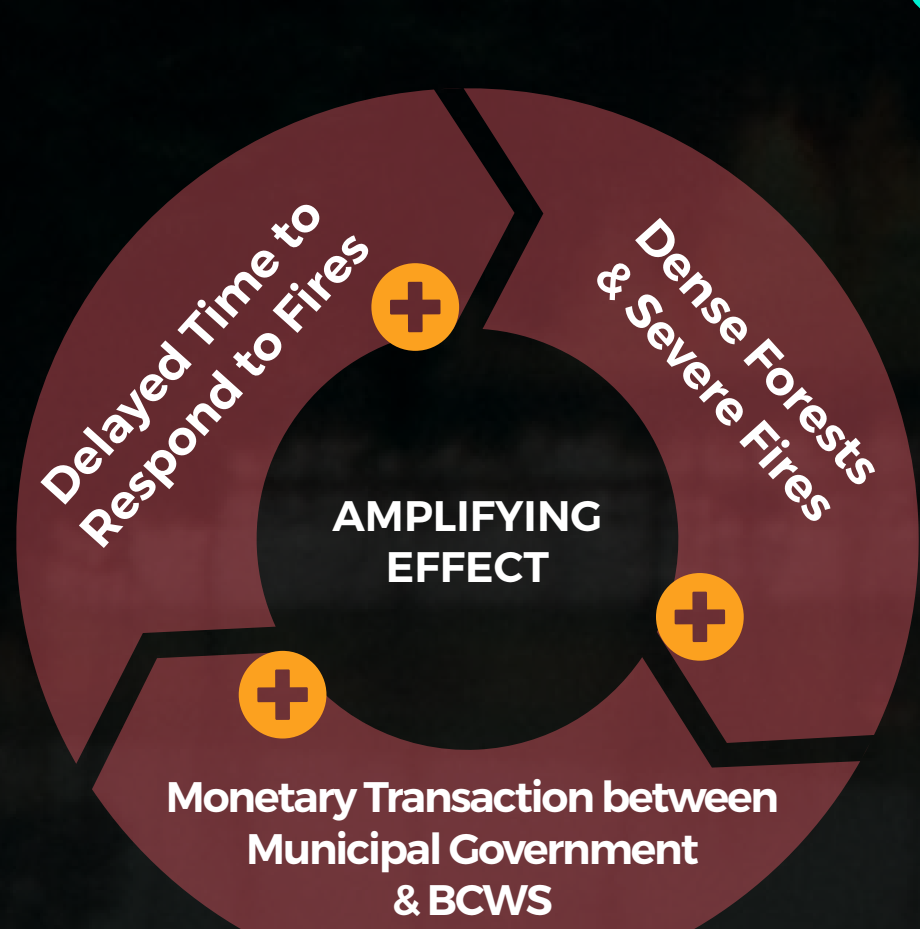


As wildfire seasons become longer, there is an escalation in the need for more volunteers to assist in **Emergency Social Services (ESS)**. Elongated evacuation orders induce **volunteer burnout** and there is trouble incentivizing people to replace them.

INEFFICIENT FIGHTING RESPONSE LOOP



INEFFICIENT STRUCTURAL RESPONSE LOOP



+ AMPLIFY

- REDUCE



Recovery Services



Relationships with FN strengthened from the recent collaborative emergency management agreement between **Canada, BC, and the Tsilhqot'in National Government**.

- Higher partner engagements to incorporate local knowledge to establish informed decision-making.
- The BCWS is increasing partnership with Indigenous communities and stakeholders to join the firefighting team.
- FLNRORD is underway to employ FN liaison contractors to provide traditional knowledge and advice, and to train and employ FN emergency firefighter crews

Other solutions were established for communities to alleviate the stress and negative impacts of the inefficient emergency responses and the prolonged fire season:

1. **EMBC** updated ESS policy framework for hosting displaced communities and providing additional human resources during peak disaster periods. New resources such as interactive maps of evacuations, the locations and hours of ESS centres, safety and preparedness information and advice on returning home were created. In addition, the Emergency Program Act was expanded to increase financial support for recovery.
2. **The Canada Small Business Financing Program** helps make loans easily accessible to smaller businesses as they begin to rebuild.
3. **The Employment Insurance Work Sharing Program** offers workers income support when business activity is reduced beyond the employer's control.

GAPS & LEVERS OF CHANGE

LEVERS

GAPS

LEVERS

1. BCWS and municipal fire departments should work conjointly to fight fires rather than having a transactional relationship.

Lack of COLLABORATION amongst stakeholders

Stakeholders compete for money and resources.

2. Canada and BC should model themselves after Australia's West Arnhem Land Fire Abatement Project, which employs Indigenous fire managers to work collaboratively on prescribed burning.

1. Communication through Education and Awareness:

- Re-educate people on the harmful nature of excessive fire suppression
- Tailor education programs towards the culture and environmental terrains of the communities
- Educate residents in the lower mainland about wildfires and its effects
- Open discussion on each stakeholder's perspectives
- Ensure open discussion on each stakeholder's perspectives

Disjointed COMMUNICATION across stakeholders

Stakeholders have different values and concerns about how the forest should be managed.

2. Ensure cohesive communication amongst the various levels of government and agencies. Re-examine government policies and legislations by defining roles and responsibilities within the different levels of government

1. Governments (Provincial and Federal) should improve budgeting for emergency disaster response.

Lack of CAPITAL towards proper funding

Discrepancy of money spent on responding to wildfires and money invested into prevention, preparedness, and recovery.

2. There is a market opportunity to provide in-person consulting services for local businesses and large industry recovery. There is also a need to find new solutions to alleviate extra costs incurred from wildfires.