Canadian Safety and Security Program Project Charter

Fire Risk and Evacuation Capabilities in Isolated Communities

INTRODUCTION

Purpose

The Project Charter is established between Defence Research and Development Canada's Centre for Security Science (DRDC-CSS) and Project participants to outline the parameters and structure of a project. This includes project objectives; outcomes; impact; risks; schedule; resources; budget; and project organization.

Summary

This Project Charter hereby establishes the fire risk and evacuation capabilities in isolated communities as a Project in accordance with the Canadian Safety and Security Program (CSSP) managed through DRDC-CSS. This Targeted Investment project is being conducted for the Community Resilience and Natural Hazards Portfolios.

Background

Canada has experienced more intense wildfire seasons over the last decade. There have been larger, more frequent and uncontrollable wildland fires, extended smoke impacts, concomitant emergency alerts, extensive evacuations, and higher costs of fire protection. With weather being more conducive to fire as a result of climate change (Wang et al. 2015) and the growth of residential, recreational, and industrial development in forested areas, fire risk to communities is set to increase. Indigenous and remote forest-dependent communities have already seen the evolution of their environment due to climate change (Chapin III et al. 2004, Turner and Clifton 2009). Vulnerability of these communities will increase under the pressure of more intense fire activity if no specific and adapted mitigation measures are implemented in the coming years.

In Canada, evacuation has been the main response by emergency management agencies to ensure the safety of Canadians during wildfire events for both fire proximity and smoke, and the majority of evacuations are due to direct threat of wildfire (Beverly and Bothwell 2011). Although they make up less than 4% of the Canadian population, almost one-third of all evacuees and evacuation events from the last decades involved Indigenous communities (Christianson 2015) This is because around 80% of Indigenous communities in Canada are located in forests prone to wildfire (Christianson 2015; Erni et al. in prep) and are particularly vulnerable to emergency events caused by wildfires due to their relative remoteness and limited access to emergency services.

In Canada, Indigenous Service Canada has identified over 100 isolated communities (no year-round road access) which might have to be flown out, should an evacuation be deemed necessary. However, currently it is not clear that the airport servicing these communities have the required capability and capacity for a full, timely evacuation of the communities at risk. There is an imperative need to analyze and optimize evacuation

assets and timelines based on context or location of a community, particularly for remote and isolated communities.

Furthermore, risk and vulnerability might be perceived differently by an Indigenous community based on socioeconomic conditions, historic events, cultural beliefs, social and political norms, these factors must also be taken into account.

Objectives

This project will undertake analytical work to assess wildland fire risk to isolated communities, with an emphasis on identifying those communities facing highest risk and making context-relevant recommendations for fire mitigation measures.

Additionally, the project will generate an assessment of evacuation capabilities for the most vulnerable communities, which together with the mitigation options identified will provide the evidence base to inform necessary planning to strengthen resilience in those communities and to keep all community members safe.

PROJECT SCOPE

Generating detailed fire risk profiles and identify mitigation options, as well as options for optimizing evacuation assets and timelines in order to strengthen community resilience in isolated indigenous communities.

Included Work

There are four main components to this work:

1. Identify region(s) with isolated, high-risk communities based on fire risk map developed in the ongoing project CSSP-2016-CP-2286: “Mapping Current and Future Fire Risk in Canada,” and secure participation of a few such communities in the project to inform development of locally-relevant options to reduce risk and strengthen community resilience.

2. Employ high resolution risk modeling and methods to identify mitigation opportunities and to support pre-suppression planning (e.g. potential fire breaks or fuel treatments to protect the community or evacuation routes, suppression priority areas, and prospective “shelter-in-place” locations). Part of the risk assessment information will include “what-if” scenarios showing the potential impact of fire mitigation measures

3. Develop methods/model to identify dynamic evacuation trigger points throughout the fire season.

4. Perform an in-depth analysis of evacuation capabilities available to isolated communities and identify options for optimizing evacuation assets and timelines based on the context or location of the most vulnerable communities.