Introduction

The effect of changing fire regimes, socio-economic developments, land-use changes, and climate change as drivers for improvement in fire and emergency management practices are well documented. Apparent and anticipated future changes to wildland fire regimes and wildfire risk at global level, along with the observed increasing vulnerability of ecosystems and society to wildfires, requires appropriate fire and land management solutions to reduce wildfire risk and impacts. In turn, there is a need to ensure that appropriate preparedness and response capacity exists domestically and at the global scale. Accordingly, there is a need for transboundary cooperation and for wildfire management agencies to share information and resources. This need is particularly compelling in the case of highly specialised capabilities such as fire aviation. The activities of groups such as the Wildland Fire Advisory Group (WFAG), the Global Wildland Fire Network (GWFN) and the UNECE / FAO Team of Specialists on Forest Fire confirm that global society is already willing to share expertise and resources in fire management, but that international cooperation needs to be streamlined and thus strengthened. This includes more systematic and formalised cooperation protocols.

The use of aerial means in fire and emergency management has expanded rapidly in recent decades. Aircraft now provide valuable support to fire management activities around the world. Many states make very effective use of aircraft in a wide range of roles. However there is evidence to suggest that these specialised, versatile and relatively costly resources could be utilised more effectively in many circumstances. There will be increased pressure to ensure that the use of aviation resources is safe and as efficient and effective as possible, particularly as the demand for aerial support grows with the anticipated changes in fire regimes, the increased wildland fire risk across the globe, and the increased expectations of communities regarding effective response.

Sharing of aviation resources between jurisdictions offers potential to generate considerable economic benefit and to improve the effectiveness and efficiency of fire prevention and response. There are current examples of highly effective protocols for cross-border sharing of fire aviation resources. In the past there have been many instances of effective international collaboration in fire aviation to support response to wildfire emergencies and wildfire disasters. However, it is also reasonable to say that there have been examples of ineffective and inappropriate sharing of aviation resources.

Cross-border sharing of aircraft is likely to be an increasing feature of wildland fire management. There are opportunities to significantly enhance resource sharing and to improve outcomes by establishing common operating procedures and standards and by embedding robust resource exchange procedures into pre-planned inter-jurisdictional agreements.

The International Fire Aviation Working Group (IFAWG) comprises an international group of aerial fire management specialists who lead and manage the use of aircraft for wildland fire management around the world. The genesis of the IFAWG harks back to the 4th International Wildland Fire Conference, hosted by Spain in 2007. During that conference a thematic Aviation Management workshop was held with the aim of identifying opportunities for multilateral cooperation to improve the safety, effectiveness and efficiency of aerial firefighting. The recommendations expressed a need to:

- continue to identify opportunities for sharing of information and resources;
- establish frameworks to properly evaluate the net benefit (including accounting for benefits of prevention of losses) of applying of aerial means;
- ensure that aerial operations are managed, supervised and supported to a high standard, and are properly integrated with other aspects of fire operations;
- establish a formal network to facilitate the continued sharing of information, with a priority on safety-related information;
- standardise approaches to integrated management of aerial means.
The IFAWG is made up of representatives from countries and jurisdictions who regularly utilize aerial means in managing landscape fire, including for firefighting. The IFAWG operates as a Working Group of the Wildland Fire Advisory Group (WFAG) of the United Nations International Strategy for Disaster Reduction (UNISDR). The group aims to improve the safety and effectiveness of aerial means by sharing information, experience and resources. IFAWG joined the preparation, organization and follow-up of the UNECE/FAO Regional Forum on Cross-boundary Fire Management (United Nations, Geneva, 2013) and contributed with the international consent-based, voluntary Fire Aviation Guidelines.

The Fire Aviation Guidelines are intended to assist communities across the globe to manage fire and to build resilience to the effects of wildfire by improving the effectiveness of a specialised support capability – fire aviation. The guidelines aim primarily to:

- Assist adopting states to develop and manage appropriate, effective, high-quality aviation capabilities by providing guidance in regard to recommended minimum standards and appropriate best-practices.
- Enhance the opportunities for transboundary cooperation through the sharing of aviation capabilities between states or jurisdictions by (a) developing common standards and common operating practices for fire aviation that will enhance inter-operability; and (b) providing recommended procedures and supporting information for effective sharing of fire aviation resources.

Part I of the Guidelines constitute the Framework Document, which has been subject to international discussion and inputs since 2014. Part II of the Guidelines provides the International Manual of Common Rules for Fire Aviation, which are now available for screening and comments.

**Recommendations**

Members of IFAWG encourage the participants of the conference to include the following recommendations in the Conference Statement:

The conference acknowledges the valuable supporting role played by aerial means in fire and forest management. The conference also acknowledges and supports the benefits of sharing aircraft and support resources between jurisdictions. The conference recommends:

- Agencies and groups continue to develop methodologies to ensure that aerial means are safely applied as part of an integrated approach to fire and forest management, and are deployed according to assessed risk and sound economic principles;
- Agencies continue to develop bi-lateral and multi-lateral agreements, where appropriate, that set out pre-planned arrangements and operating practices to facilitate safe and effective sharing of aerial means between jurisdictions;
- Agencies and groups work together to continue to support and develop the voluntary Fire Aviation Guidelines in order to promote best management practices and in order to support safe and effective sharing of aviation resources between jurisdictions;
- The conference supports the adoption of the Fire Aviation Guidelines for independent endorsement and application by individual operators and agencies, or within the framework of bi-lateral and multi-lateral agreements;
- The conference suggests that any wider agreements or initiatives on international cooperation reference or incorporate and promote the Fire Aviation Guidelines where appropriate.