

EN0013 / ENVIRONMENTAL / Environmental Degradation (Forestry)

Wildfires

Definition

Wildfires are any unplanned or uncontrolled fire affecting natural, cultural, industrial and residential landscapes (adapted from FAO, 2010).

Reference

FAO, 2010. FAO Term Portal: Collection: Fire Management (A10.6)/CSCM. Food and Agriculture Organization of the United Nations (FAO). www.fao.org/faoterm/viewentry/en/?entryId=97000 Accessed 27 October 2020.

Annotations

Synonyms

Landscape fire, Vegetation fire, Wildland fire, Forest fire, Bushfire, Brush fire, Scrub fire, Peat fire, Grass fire.

Additional scientific description

Unplanned or uncontrolled landscape fires (wildfires) are either started by natural causes (lightning, occasionally by burning coal seams or volcanic activity) or – predominantly at global level – by human activities and primarily by burning live or dead vegetation in natural or anthropogenically altered ecosystems (Robinne et al., 2018).

These include forests, grasslands, bush (shrub, scrub), and organic terrain (peatlands, wetlands), cultivated lands (agricultural and pasture lands, plantations, abandoned formerly cultivated lands) as well as protected lands (wilderness, conservation sites) (Robinne et al., 2018).

In addition, unplanned landscape fires may affect residential and industrial areas (houses and other structures, peri-urban fringes, infrastructure including critical infrastructure) and remnants of human activities (waste deposits, remediated and un-remediated mine sites, contaminated lands), resulting in co-burning of hazardous / toxic substances (GFMC, no date). Landscape fire attributes and descriptions include: fuel type (type of vegetation / combustible material burned, such as grass, shrub, forest, peat); fire type (ground, surface, crown fire); fire behaviour, energy release and emission characteristics (fire spread, fire intensity, fire severity, radiative power, smouldering vs. flaming combustion, gas and particle emissions); and temporal and spatial dimension (e.g., creeping fires in organic terrain, spotting flashovers, short- to long-lasting events; single vs. multiple fires) (GFMC, 2013; McLauchlan et al., 2020).

There have been a number of glossaries related to wildfires that have been prepared by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with partners, as well as glossaries developed by national bodies in various countries in order to reflect local practices and policies. In 1999, the FAO and the Global Fire Monitoring Center (GFMC) updated the 1986 version of the publication FAO Wildland Fire Management Terminology. The revised version with English definitions and partial translation to French, Spanish, and German became available in December 2003. Translation of terms into Russian and Mongolian were added in 2008 and further revised in 2014. As of September 2010, the collection consists of 1351 concepts with synonyms, variants, definitions, remarks and context fields, where appropriate (FAO, 2010).

Metrics and numeric limits

Satellite data are processed to provide information on fire area and numbers.

FAOSTAT provides data on burned areas and emissions. The burned area data are from the Global Fire Emissions Database Version 3 (GFED3) derived from satellite data of the Moderate Resolution Imaging Spectroradiometer (MODIS) data Collection (5.1 MCD45A1) (FAO, 2020).

The Global Wildfire Information System (GWIS) provides statistics on average area burnt and numbers of fires by region and country (GWIS, 2019).

Key relevant UN convention/multilateral treaty

The only regional legal agreement in place is the Agreement on Transboundary Haze of the Association of South East Asian Nations (ASEAN, 2002).

Examples of drivers, outcomes and risk management

Unlike the majority of the geological and hydro-meteorological hazards – wildfires represent a hazard that is primarily influenced by humans and thus to a degree can be predicted, controlled and, in many cases, prevented. Wildfire occurrence, characteristics and impacts are closely linked to other hazards: droughts, heat waves and extreme weather events can influence fire intensity and severity and thus the duration, size and controllability of wildfires. Damaging wildfires are a symptom of current and past policy, planning and governance decisions that have created a context where fire ignition and spread occurs across the landscape, resulting in damage and loss (Robinne et al., 2018).

The effects of wildfires on vegetation cover and soil stability may create secondary hazards / subsidiary perils, such as post-fire landslides, mudslides, flash floods, erosion and siltation (triggered by post-fire rainfall on fire-disturbed surfaces) or altering / thawing of permafrost sites.

Fires burning on terrain contaminated by radioactivity may lead to uncontrolled re-distribution of radioactive particles. Wildfires burning into residential and industrial areas and waste deposits may generate toxic pollutants. Fires burning on terrain bearing unexploded ordinance and land mines could result in injuries and fatalities (Finlay et al., 2012).

Infrastructure and services, including power, water, and communication lines, roads and railways are damaged by wildfires. As well as the costs of firefighting, there are large financial and economic costs associated with rebuilding homes, businesses, and entire communities that have been damaged or destroyed by a major fire event.

Human health can be severely affected by wildfires. Certain populations are particularly vulnerable. Wood smoke has high levels of particulate matter and toxins. Respiratory morbidity predominates, but cardiovascular, ophthalmic and psychiatric problems can also result. In addition, severe burns resulting from direct contact with the fire require care in special units and carry a risk of multi-organ complications. The wider health implications from spreading air, water and land pollution are of concern. Access to affected areas and communication with populations living within them is crucial in mitigating risk (Finlay et al., 2012).

References

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- Robinne, F.-N., J. Burns, P. Kant, B. de Groot et al., 2018. Global Fire Challenges in a Warming World. International Union of Forest Research Organizations (IUFRO). IUFRO Occasional Paper No. 32. <http://pure.iiasa.ac.at/id/eprint/15707/1/op32.pdf> Accessed on 27 April 2021.

Coordinating agency or organisation

Food and Agriculture Organization of the United Nations with input from the Global Fire Monitoring Center.