



Photo: Feuerwehr Bonn

Wildfires

Newsletter

October 2022



Bonn Network
International Civil Protection
and Disaster Risk Reduction



Dear Readers,

As with other natural hazards, the probability of forest fires is increasing more and more in terms of the climate crisis.

But what should effective forest fire prevention and control look like in Germany? How do other countries defend themselves against this natural hazard?

These and other questions are answered by Prof. Dr. Johann Georg Goldammer, head of the Global Fire Monitoring Center (GFMC) of the Max Planck Institute for Chemistry and the University of Freiburg. In the following, the THW and the Bonn Fire Department present their own projects.

Likewise, our newsletter informs you about new publications and upcoming events.

In case you would like to promote your projects, events or publications in our newsletters, please do not hesitate to contact us.

We hope you enjoy reading!

Yours secretariat of the network

Marie-Theres Baranski, Carlo Huysmans
and Dr. Benni Thiebes



Source: Feuerwehr Bonn

What is the Bonn Network International Civil Protection and Disaster Risk Reduction?

The Bonn Network International Civil Protection and Disaster Risk Reduction was founded in 2017 as an association of national and international actors in the field of disaster prevention based in Bonn. Today, 33 institutions and organizations from politics, civil society, science and the private sector are among the network partners. The network thus strengthens Bonn as a center of competence in the field of international disaster control and risk management.

Contact person of the network secretariat is Marie-Theres Baranski. She can be reached at info@bonn-network.org.



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Interview on volunteering in civil protection

Prof. Dr Johann Georg Goldammer is the head of the Global Fire Monitoring Center (GFMC) of the Max Planck Institute for Chemistry and the University of Freiburg. The GFMC is an connectionpoint for science, policy and application on the topic of landscape fire management. As of 2022, the GFMC has eight regional field offices (Regional Fire Management Resource Centers) in Europe, Asia, Africa and South America. Between 2000 and 2007 he was a member of the German Committee for Disaster Reduction (DKKV) and since then a personal member of the DKKV.



Source: Philipp von Ditfurth

1. Question: What challenges do you see in the prevention and control of wildfires in Germany today and in the future?

Until a few years ago, the global climate change and thus also in the climate in Central Europe, which climate modeling had predicted for decades, only had a limited impact on public and political perception. With the visible or noticeable onset of the climate crisis since 2018 we are experiencing an increase in long-lasting weather conditions without precipitation, heat waves, extreme wind events and changes in precipitation regimes. The latter are expressed in the fact that, with the same total annual precipitation, short and heavy precipitation downpours have replaced long-lasting rains that we call “Landregen” (land rains). This trend is leading to significant changes in the vegetation in our cultural and natural landscapes. In many regions of Germany we are experiencing a significant drop in the groundwater level and soil moisture.

The drying-up of agricultural areas is offset by a change in forest areas. Long periods of drought have weakened our forests. Some tree species, such as the shallow-rooted spruce, can no longer find water in the dried-out topsoil and thus are going to disappear in many regions, notably in lower altitudes. Even deciduous tree species

such as the beech, which until recently were considered promising candidates for coping with climate stress in future, are showing signs of stress, particularly through opened canopies (tree crown shedding leaves and twigs). As a result, more solar radiation penetrates the forest floor. Hardwood stands that were previously considered “fireproof” are becoming ready to burn. This is also reflected by the forest fire statistics of Germany. Since 2017 we have seen a greatly increased proportion of deciduous forests in the total burned forest areas, which are statistically recorded quite precisely.

The year 2022 has shown that the number of fires and the burnt areas have increased dramatically due to the extreme drought. Unfortunately, only forest fires are statistically recorded in Germany, but no fires in open-land lands. We are observing that fires burning on agricultural lands spread to forest lands and even to the outskirts of residential areas. We will expect the overall evaluation of the forest fire data of Germany for 2022 by May 2023.

In short, we are facing a situation that shows us that our closely interlinked natural and cultural landscapes, which also include the outskirts of rural communities and critical infrastructure, are becoming increasingly vulnerable to be affected wildfires. Thus, we are addressing (and



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calling) “landscape fires” – fires that occur in a complex intermix of endangered landscape elements, the boundaries of which are easily exceeded by fire and are therefore a challenge for many of those potentially affected and, above all, for various sectoral actors.

2. Question: What measures are we taking here in Germany to prepare for this?

The response to a new, unprecedented situation, which above all requires skills in crisis prevention and crisis management, takes place in three steps, the first two of which are already underway. The first step is to use existing means to avert the crisis and, based on this experience, to improve skills in managing landscape fires and in civil protection. These build on previous experience with standard situations, which, for example, enable fire brigades in rural areas to reach fires in well-developed forest roads with conventional fire engines and extinguish them with water. But now we are faced with the challenge that further measures are required. These include the need for special training and, above all, equipment that allows emergency services to operate safely and effectively beyond the forest roads, i.e. off-road. In Germany, a large number of initiatives are underway. However, getting there is not easy, as we have highly fragmented responsibilities in fire and disaster management. In Germany, each of the 13 non-city states have their own fire service schools with different training concepts; 294 responsible counties that are responsible for rural fire management and a total of over 22,000 volunteer fire brigades – most of them in rural areas. Federalism is still proving to be a stumbling block here. The Federal Government is currently examining how to identify new ways in civil protection. These could provide for and thus strengthen the indispensable municipal responsibilities with support from the federal government.

The second step is to address the increasing vulnerability of our forests, open landscapes and also the interface of residential areas and vegetated land with high wildfire risk. A scientific-technical discourse is underway here about what the forest of the future in Germany could look like. The search for sustainable models of tree species selection, silviculture and above all the objectives of forest management comes up against the factor of uncertainty. To what extent does the progressively changing climate allow long-term planning at all? Will the climate crisis



Source: Feuerwehr Bonn

be the random number generator that will select from the propagated mix of simultaneously afforested tree species those that can survive or form the backbone of the forest of the future – I.e. not people or science decide, but the imponderables of the climate crisis?

The current sharp public discourse concerns what society and politics expect from the forest. Should extensive forest areas be left to their own



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devices in order to offer a habitat for endangered animal and plant species as near-natural ecosystems? Leave deadwood in the forest or not? Or should we – following the principles of traditional sustainable forest management – focus on the use of the renewable raw material wood for sustainable construction or use as source of renewable energy? A new and central theme is finding ways to increase the resilience of our forests to extreme weather events and fire. In addition to the many classic functions that the forest has to fulfil, a new task is now being added: the self-protection of the forest from climatic or weather extremes – and at the same time the protection of adjacent areas, localities and, above all, the avoidance of secondary damages.

The third step that is still to come is the definition of a strategic concept that takes up the considerations mentioned above and addresses the increasing susceptibility to crises and the vulnerability of our landscapes and society to fire. It is important to break down the classic silos of vertical sectoral responsibilities and to connect them horizontally. Fire management is a cross-sectional task that cannot be performed by the fire brigades alone. The involvement of landowners – from state, municipal and private forest companies to small-scale private forest owners and farmers – is a high priority here.

Example: In the "Freiburg Model", a Landscape Fire Task Force has been gradually established at the Office for Fire Protection and Disaster Management since 2012, which was supplemented from 2019 by involving the staff of a model ranger district of the Freiburg Forestry Office. Joint exercises and basic equipment for forest personnel since 2019 have so far proven their effectiveness in responding to an increasing number of forest fires.

This year's fires in Brandenburg and Saxony have repeatedly shown that agricultural areas and especially residential areas or villages at the

interface to forests and agricultural fields are at high risk to be affected by wildfires. This means that in the future we should involve farmers and local communities – and above all the village maintenance facilities – more closely. To this end, my center, together with a manufacturer of forest machines, has developed a fire-fighting module that can be coupled to all agricultural and forestry tractors with a standard three-point hitch. With high and low pressure, these off-road units can suppress wildfires effectively and above all efficiently in terms of water consumption.

3. Question: What can we learn from other countries in the process?

A comprehensive and exhaustive answer to this question would provide a longer catalog of experiences from other regions that we should look at more closely. This applies, among other, to methods of situation analysis, modeling of fire behavior or smoke dispersion, incident management and coordination, information and monitoring technologies, decision-support systems, ground and airborne firefighting technologies. Here are a few examples that address prevention and fundamental "low-tech" methods of firefighting.

First of all, the experience of municipal or local joint responsibility should be mentioned here – above all in the regions of the Global South. Here, the concept of "Integrated Fire Management" (IFM) has been applied and further developed over the past three decades. The goal of IFM in the sense of fire management at the municipal level (community-based fire management) is the involvement of the local population in the prevention of wildfires and the safe and environmentally compatible use of fire in land use. In addition, rural communities or farms are empowered to defend themselves against wildfires.



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Also interesting for us are the experiences in the combination of agriculture and forestry (agro-forestry), which also includes controlled grazing in and around the forest. Grazing by domestic animals in open forests is targeted to reduce the ground vegetation and thus depriving the wild-fire of fuel. Controlled forest grazing usually is not used for factory farming, but rather for local subsistence farming. In the hot and sunny regions of the tropics, this form of farming also serves animal welfare.

In Germany, forest grazing is largely forbidden in the federal states, even if pilot projects show that this form of combined forest management creates ecologically valuable stocks. With regard to forest grazing to reduce the risk of forest fires, a first model project is currently being set up in Brandenburg.

Another experience from other countries concerns the method of fighting forest fires without high technological effort and with small amount of water or without any water at all. Here, too, it is important to take a look at the regions of the world where there are hardly any or no fire brigades and, above all, water is scarce. The method mainly used in Germany, of irrigating the forest on both sides of roads and driveways in the event of a forest fire to build up "wet containment lines" and to fight the fire, is not used to this extent in other countries – if only for reasons of water shortage. In many countries, primarily light, mobile and off-road vehicles with high-pressure extinguishing systems are used, not heavy vehicles.

The use of light hand-held devices, such as the (rediscovered) fire swatter and the fire-fighting backpack, is now being used by many fire brigades – recognizing that fires are burning and have to be attacked far beyond the roads. Appropriate training or specialization of selected emergency services is urgently required. The Freiburg model, which has two of 22,000 specialized volunteer fire brigades, is contrasted

with specialized emergency services consisting of volunteers who can be deployed on a highly mobile basis between the federal states and deployed to difficult terrain – such as the @fire group. Their perseverance paid off this year – their missions in Saxony, Brandenburg and Saxony-Anhalt were successful. Operational concepts such as the Freiburg model and @fire are based on basic training, physical fitness, off-road capability and, above all, the use of hand-held devices and tactical fire. These are successful alternatives to the often pointless application of water along driveways.

4. Question: How do other crises and disasters affect the dangers of vegetation fires, e.g., in Ukraine?

Ukraine is the only country in the world that is struggling with an extremely wide range of problems of a magnitude not seen elsewhere. It begins in 1986 with the failure of the Chernobyl nuclear power plant, which resulted in radioactive contamination of large areas of the country. In the past, fires in radionuclide-contaminated forests and formerly agricultural areas have repeatedly released and redistributed radioactivity. Firefighting in highly radioactive vegetation and, above all, contaminated soil, which releases radioactive dust particles when walking or driving on in dry seasons, poses a great danger for emergency service personnel. These threats can only be countered with rather complex and expensive special equipment.

Fires in the Chernobyl protection zone, as well as in other parts of the country, are mainly caused by post-harvest burning of agricultural lands, especially grain fields. Instead of underploughing agricultural residues, the remaining unusable biomass is burned. These fires release emissions including elemental ("black") carbon particles, which – by prevailing southerly winds – are transported airborne to the Arctic. There, the deposited particles change the albedo and thus accelerate the melting of ice and snow. Like



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the consequences of radioactive fires, the consequences of the excessive use of fire in agriculture are little perceived by the public.

The war in Ukraine started unexpectedly. As a result of the armed conflict, extensive fires broke out at the beginning of the dry spring, which destroyed valuable forest stands and, above all, the agricultural areas important for food security in the country and worldwide. In Eastern Ukraine – the Donbass region – snipers and landmines made efforts practically impossible to control forest fires for many years. The collateral damages caused by fire during the war has increased sharply in recent weeks and months. This is where our regional center – the Regional Eastern Europe Fire Monitoring Center (REEFMC) is active now. The REEFMC is one of the eight regional centers of our facility and provides the government and the state agencies with information, advice and training. During the last months of the war we constantly monitored the fires with the help of satellite data. As of 30 September 2022, a total of 1.6 million hectares of land were affected by fires in Ukraine, including more than 210,000 hectares of forest. At the same time, the total forest area burned by wildfires in Germany in 2022 is around 4000 hectares. Here we can see that the magnitude of the forest fire problem in Germany is different and quite manageable compared to a country like Ukraine.

The experience that we have gained in Germany with fires at sites contaminated by ordnance is benefiting the Ukraine. Between 2010 and 2014, my center, together with the company DiBuKa (Fire and Civil Protection Services, located in Seehausen, Altmark), brought converted military tanks armored, safe firefighting tanks ready for use in fighting fires at explosive ordnance sites. This year the firefighting tank type MARDER was called by North Saxony County to fight wildfires near Arzberg. A week later, the firefighting tank was deployed to Berlin to control a fierce wildfire burning on a ammunition-

disposal site in Grunewald. Our request for help from the German Federal Government to make such a tank available to the Ukrainians has so far gone unheeded. Nevertheless: Our last joint action was the training of foresters and members of fire brigades in the last week of September near Kiev. The motivation of our Ukrainian colleagues to take on these dangerous tasks is extremely high – that is deserving recognition!

And finally: Successful fighting of vegetation fires succeeds when...

... a fire management plan has been developed and implemented in which all the actors involved have worked hand in hand and are prepared with regard to prevention measures and preparedness – by the owners or managers of forests and agricultural lands, by private property owners, administrations of the municipalities, state authorities and the fire and rescue services.

We would like to thank Prof. Dr. Johann Georg Goldammer for the interview

Links:

[GFMC main portal with access to ca. 300.000 posts and documents](#)

[GFMC / Fire Ecology Research Group activities in Germany](#)



Member Contribution



A future European center of expertise in the field of forest- and wildfires

The EU co-funded project “Network of European Multihazard capacities hub of Scientifics Understanding and Sharing” (NEMAUSUS) launched in October 2021 for a duration of 18 months. With the increase of complex disasters an idea was born to find a way to shift more scientific evidence in a climate change context in terms of the implementation of the European CoE (European Centre of Expertise) to create a strong synergy between empirical knowledge and science based research in wildland and forest fires field. Therefore, the ambition of this project is to be able to connect the European network to other initiatives in the world.

Its main goal is to develop a blueprint for the implementation of a future "Community of Knowledge" in the frame of the Union Civil Protection Knowledge Network (UCPKN). Additional objectives are a complete feasibility study to design, develop and implement the CoE on forest/wildfires. As well as the creation of guidelines to support the emergence of other sustainable SoE across the EU under the umbrella of the UCPKN. And lastly the identification of stakeholders and partners for the future CoE.

As a pilot project for the UCPKN, NEMAUSUS contributes to the two pillars of the UCPKN in terms of capacity development and science. With that the European CoE aims to facilitate the sharing of knowledge between policy makers, scientists, local communities facing the risk, stakeholders of the technological innovative sector and disaster management practitio-

ners, following the principles of “Connect, Share and Grow”.

The project is lead by France and supported by the consortium partners from Croatia, Cyprus, Germany, Italy, Spain, and Sweden. To be more precise, the French Civil protection (DGSCGC) is the coordinator of the project, and the German THW, the Croatian Ministry of Interior, the Italian CPD and the Swedish MSB are furthermore present in the NEMAUSUS project.



Different research centres support the project with innovation oriented input, such as the CERIDES of the European University of Cyprus on risk management and decision science, the CEREN of Entente de Valabre on experimenting tools and means to fight forest fires and the Pau Costa Foundation on fire prevention through the lens of fire ecology.





The North Rhine-Westphalia forest fire module again in international forest fire operations

The only German forest fire module to date that is set up according to the specifications of the European Civil Protection Mechanism was again in action this summer. After its successful baptism of fire last year in Greece, the unit was now deployed in France.

The experiences from exercises and training, the deployment in Greece as well as the professional exchange with the state fire brigade school in Portugal resulted in an optimisation of the forest fire module.

Since this year, the established units from Bonn, Leverkusen and Königswinter have been supported by units from Düsseldorf and Ratingen, which bring additional all-terrain fire fighting vehicles into the forest fire module.

For the first time, the training for the task forces of the participating fire brigades was centralised by the Federal Office of Civil Protection and Disaster Assistance (BBK), under the technical supervision of the aid organisation @fire.



Source: Feuerwehr Bonn

On the afternoon of 10 August 2022, the control centre of the Bonn Fire Brigade received a request for assistance from France for the deployment of the forest fire module to support local units in a large, dynamic forest fire near Bor-

deaux. The readiness to deploy the German unit was immediately checked and a positive response was sent to the responsible situation centre in Brussels. The official order to deploy was given in the evening. Just six hours later, the German convoy, consisting of 20 vehicles, 4 trailers and 65 emergency personnel, set off in the direction of France. The forest fire module was supported



Source: Feuerwehr Bonn

by two forest fire tankers including personnel from Lower Saxony, expert advisors from the aid organisation @fire as well as a supply unit from the Johanniter-Unfall-Hilfe in Bonn.

The operation lasted about a week. The emergency forces were placed under the command of the local authorities and daily individual deployment orders were drawn up. The German forces mainly carried out fire-fighting operations in forest areas. In the areas that were apparently burnt out, pockets of embers had eaten deep into the ground and were still active there at high temperatures. In order to prevent the fires from flaring up again, these fires had to be found and extinguished with great effort.

The cooperation within the module, based on a uniform training, as well as the cooperation with the French units worked smoothly and can be considered a success. The knowledge gained from this operation will be used in the following training units.



Out of the Flames Mapping Online Engagement and Public Narratives Around the 2019 Amazon Rainforest Fires

Publisher:
European Forest Institute

[Download](#)

Summary:
The Amazon rainforest fires were one of the most important global events in the recent past, where various forest management issues were discussed in social media. By analysing data from digital platforms such as Twitter, Facebook, etc., an attempt was made to understand the public narratives and forms of engagement, participation and experiences.



Comparison of soil microfauna diversity between a burnt and unburnt peatland in Indonesia

Publisher: Center for International Forestry Research and World Agroforestry

[Download](#)

Summary: Forest fires release huge amounts of carbon dioxide into the atmosphere and have caused severe damage to Indonesia's ecosystems. This research examines and assesses the diversity and characteristics of soil macrofauna in a burnt peatland that is currently being restored through the establishment of a bioenergy plantation.



Wildfires in Chile: A review

Publisher: Xavier Úbeda, Pablo Sarricolea,

[Download](#)

Summary: This paper reviews the literature examining the wildfire phenomenon in Chile. Since ancient times, Chile's wildfires have shaped the country's landscape, but today, as in many other parts of the world, the fire regime – pattern, frequency and intensity – has grown at an alarming rate.



Characterization of wildfires in Portugal

Publisher: European Journal of Forest Research

[Download](#)

Summary: Forest fires severity has increased in Portugal in the last decades. Climate change scenarios suggest the reinforcement of this severity. Forest ecosystem managers and policy-makers thus face the challenge of developing effective fire prevention policies. An approach for characterizing fire occurrence in Portugal, combining the use of geographic information systems and statistical analysis techniques, is presented.





UK Wildfire Conference - The Human Dimension

09. - 12.11.2022, Belfast

This event brings together various institutions working on the issue of forest fire, with participants and speakers from the fields of professional firefighters, land managers, scientists, researchers and government officials.

For more information click [here](#).



Wildland-Urban Interface Conference 2023

28. - 30.03.2023, Nevada, USA

The International Association of Fire Chiefs' Wildland-Urban Interface Conference offers hands-on training and interactive sessions that address wildfire challenges. Learn the latest about fire-adapted communities, outreach and suppression, and wildfire policies and tools.

For more information click [here](#).



9th International Conference on Forest Fire Research

11. - 18.11.2022, Coimbra

The conference aims to inform about the latest developments in forest fire research and technology and to promote international cooperation in this area. Topics such as fire at the forest-urban interface will be addressed. The [Firelogue](#) project, coordinated by the Fraunhofer Institute, acts as an associated research project of the conference. For more information click [here](#).



10th International Fire Ecology and Management Congress

04. - 08.12.2023, Monterey, California

The Association for Fire Ecology (AFE) will host the 10th International Congress on Fire Ecology and Management from 4-8 December 2023 in Monterey, California, at the Hyatt Regency Monterey Hotel. The call for papers will open in January 2023.

For more information click [here](#).



Impressum

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