Interview with Prof. Johann Georg Goldammer, Director of the Global Fire Monitoring Center (GFMC) – 7 August 2017

Following the numerous fires that hit France and Portugal and Croatia, UNISDR asked Prof. Johann Georg Goldammer, Director of the Global Fire Monitoring Center (GFMC) to respond to the following questions:

It seems that we are facing more frequent and more severe wildfires in Europe and globally? Is it the case?

Globally we are observing two different trends of changing fire regimes. In some parts of Africa, Asia and Latin America former natural ecosystems are increasingly replaced by intensively managed agro-ecosystems: Agricultural lands, pasture lands and cash crop plantations. Historically many of the natural savannas, woodlands and forests were periodically flammable and subject to wildfires. Today fire is less common on these intensively cultivated lands. And since the landscapes are becoming more fragmented by roads and infrastructures, there are less large fires in these regions.

An opposite trend is observed all over Europe, including the Eastern European region and the adjoining territories between the Urals and Central Asia. Here the rural exodus – the increasing urbanization of people formerly living in the rural space – has resulted in reduced or abandoned land management and also less intensive practices of forest management. Here the formerly intensively managed landscapes are becoming less cultivated and overgrown by natural succession and invasion of trees. The rural work force, which in the past had an active role in preventing and controlling wildfires, is dwindling. In many villages in the Euro-Mediterranean region and adjoining countries of the Western Balkans only elderly people are living. Former farm houses are converted to weekend or summer houses. The abandonment of traditional use of the biomass for wood- and non-wood forest products, food and energy production results in higher loads of combustible material and thus makes these landscapes highly vulnerable to wildfires. The fires that are burning in Southern Europe in summer 2017 are affecting landscapes in which 30 to 50 years ago wildfires would hardly have burned.

How much climate change is changing and increasing fire risks in Europe and in other regions of the world?

The impacts of climate change on wildfire risk have been noted in many parts of the world. More extreme and longer-lasting droughts are one problem, as we can see it these days in Europe. Droughts create conditions for more intense and larger wildfires. But also the increase of occurrence of heavy rainfall events are causing problems, especially after severe fires that have destroyed the vegetation cover and denuded the soil. Post-fire rainstorms result in secondary disasters such as erosion, land- und mudslides, flash floods or siltation of rivers and water reservoirs.

The prolongation of the “fire seasons”, i.e. fires starting earlier and burning later in the year, is a phenomenon observed in Europe and North America. It is also noted that in many regions wildfires are now burning more intensively during night time. These phenomena may explain why the land owners and the State services responsible for fire management are becoming overwhelmed by extended periods of high fire danger and need for fire suppression activities. Collectively we need to be better prepared for these changes.

Are we facing new vulnerabilities as well?

Along with the increasing wildfire risk we are indeed observing new vulnerabilities. This year we could observe that wildfires in Chile, South Africa and in Europe affected the all elements of the landscapes in which humans are living. Natural landscapes, such as natural forests and other native ecosystems, protected areas or desiccated wetlands, are intermixed with cultural landscapes and industrial activities expanding into the natural and rural space. Thus, wildfires are more and more affecting the interface between highly flammable vegetation and residential areas such as farmsteads, villages and peri-urban housing zones. These fires do not only cause high economic losses by burning private and public assets and critical infrastructures. Fires burning in industrial deposits such as waste dumps or other hazardous materials often create dangerous pollution, e.g., the formation and release of dioxins. Such fires constitute a high threat to human health and security.

And finally we have the “modern nomads” – people who are transiting or temporarily living in the landscapes of high wildfire hazard. Recreation-seeking people fleeing the overheated cities during the hot summers may be ending up in highly flammable environments with a huge security risk. Many of the 63 civilians, who were killed by the recent wildfires in Portugal, had been trapped in a safe-looking highway. This tragedy stands symbolically for a shift of fire-related vulnerability in our societies. Some of our observations confirm the magnitude of the problem: During the last eight weeks a total of close to 20,000 people had to be evacuated and brought to safety from wildfires in France, Croatia, Portugal and Italy. This is a new trend in Europe, resembling the evacuation practices in North America. According to the Global Wildland Fire Fatalities and Damages Reports, which are annually published by the Global Fire Monitoring Center, during the last five years an average of about 130,000 people had been evacuated from wildfires globally.

Considering all these changes and an obviously increasing wildfire risk: What kind of lessons identified has been put into practice? Or are we less prepared to average and extreme wildfires than 40 years ago?

While it is obvious that that the wildfire risk in Europe has increased significantly – the response to this development is varies between countries. Only a few countries have responded to the multitude of changes in their landscapes by developing adequate fire prevention and response strategies and improved the capabilities of the fire services to deal with complex fire situations. Spain is a good and leading example in this regard. Other countries unilaterally rely on purchase of modern firefighting technologies including firefighting aircraft.

However, the provision of firefighting technologies does not replace the need for addressing the causative agents mentioned before, which have been leading to higher wildfire risk and increased vulnerability of societies.

There are only a few examples where national policies have and planning instruments have been developed to address the underlying causes of the changing risks and vulnerabilities. For instance, some countries in Eastern Europe, the South Caucasus and Central Asia, have revised their traditional approaches in fire management and developed fire management policies and implementation strategies. Most important is the shift of some priorities from response-oriented strategies to Integrated Fire Management (IFM) policies that consider two levels of integration.

The first level is the integration of civil society in fire management, notably through proactive community participation in fire prevention and wildfire self-defense. The need for this approach is obvious: People living in the rural space are key actors in the prevention of wildfires because many wildfires are started by agricultural burnings. Conversely uncontrolled wildfires primarily affect rural communities and their assets. Since these communities are often located in remote locations and too very far away to be swiftly assisted by state authorities, their active participation in the initial defense of farmsteads, villages and critical infrastructures against an approaching wildfire is crucial.

The second level of IFM is the integration of fire in land-use systems and in the management of natural ecosystems including forests. Many natural and cultural ecosystems have co-evolved with natural fires

and land-use fires over millennia: Fires started by lightning or set by aboriginal populations have shaped ecosystems of high stability and productivity. Exclusion of regular low-intensity fires from these ecosystems would result, among other, in the accumulation of hazardous combustible materials, which – once inevitably ignited – would create a much more severe and destructive impact as compared to regular fires. Ecosystem-based approached in land management and wildfire disaster risk reduction therefore must consider the historic and scientific evidence of fire-regulated ecosystem dynamics. Techniques of “prescribed burning” (also called “controlled burning”) have been developed for most ecosystem types globally.

However, the problem is that the lessons identified by the scientific community and the proposed fire management solutions are not sufficiently observed by policy and decision makers.

How science is contributing to reduce fire risk and what are the bets instruments in place to reduce such risks?

Fire science and related sciences dealing with fire’s impact on the environment and humans have made significant progress over the last decades. Today we possess exhaustive knowledge about the ecological role of fire in all vegetation zones. We know the consequences of excessive use of fire, e.g. in the conversion of tropical forest or peatlands to other land-use system, their impact on the atmosphere and climate. The consequences of vegetation fire smoke pollution on human health have been explored as well as the impacts of wildfires on human security. Curricula for academic training have been developed as well as guidelines for policy makers and practitioners.

However, we see that the science community did not successfully reach out to the community of policy and decision makers. In many European countries, the lack of dedicated doctrines – both in a legal and cultural sense of the definition – discourages and impedes the application of existing capacities and innovation. The enhancement of current capacities and the application of innovation (whether institutional or technological) is usually neither possible nor effective without first having incentive structures present to encourage new changes in operational capacity and culture. Literal and figurative “landscapes” which are impacted by this situation include:

- Natural Landscapes
- Cultural Landscapes
- Industrial Landscapes
- Administrative Landscapes

It is imperative that the Science-Policy Interface (SPI) be improved in these instances so that appropriate policies and operational parameters are established, which are needed to absorb and encourage all forms of innovation within and across any given “landscape”.

Portugal was affected by extreme fires last month, now the same is happening in the South of France. What lessons can we draw from these fires in terms of prevention and cooperation?

In June 2017 the Portuguese fire service and emergency personnel were completely overwhelmed. Sixty-three civilians died, many trapped in their cars while trying to escape the flames, while another 245 civilians were injured; one firefighter was killed and 13 other firefighters were injured. More than 20 villages and towns were damaged with many houses, structures and vehicles destroyed. In the aftermath, it was determined that the fire(s) damaged critical communication infrastructure early on, limiting some communities in their ability to receive or send information; it was also noted that 112 calls simply overwhelmed emergency call centers, i.e. many callers could not reach dispatchers to ask for help, report entrapments, etc.

The Portugal event resembled the extremely destructive wildfires in Chile in January and February 2017, which caused the evacuation of around 10,000 people, destroyed or damaged nearly 3000 structures, killed six civilians, injured 394 civilians, killed seven firefighters and police officers, while injuring 13 others. The international assistance to Chile had a high symbolic and diplomatic value but was largely

ineffective and highlighted limitations in cross-border and international emergency assistance.

These extreme fires repeatedly occur year by year despite technological upgrading of fire and emergency services. Politics have obviously failed to recognize and address the causes and driving factors that make landscapes more flammable and society more vulnerable to fire. In Portugal and elsewhere the increasing wildfire risk – as the mentioned consequence of the abandonment of the rural space – is fueled by the introduction of fast-growing tree species for industrial use, e.g. the rapidly expanding establishment of exotic and highly flammable eucalypt and pine plantations. The wildfire hazard in these plantations is well known.

One could argue that the reduction of the risk of destruction by wildfires could be a simple economic calculation and up to the responsibility of the plantation industry. However, the extreme fires of June 2017 show that the uncontrolled invasion of the introduced tree species into the landscape beyond the plantations creates a high risk for rural inhabitants and tourists. A modern highway, at first glance a safe travel and transport route, may become a deadly trap.

The closure of such highways at risk, or the timely evacuation of endangered settlements, could be another measure to respond to a dangerous development. Yet, such measures would be comparable to the technological race for better fire suppression technologies, i.e. they would not reduce the wildfire risk as such.

How to address the problem? Landscape-level based cross-sectoral planning and inter-agency fire management planning seems to be imperative. More demanding, however, is the recognition that the trend of neglecting the rural space needs to be reversed. The realization of a “green economy” is prerequisite to revitalize the functioning, sustainability and security of the rural landscapes in Europe and elsewhere. The creation of “green jobs” may actually become very attractive for the next generations – but merits public subsidies in order to be competitive. Environmentally and ecologically sound land cultivation and its benefits have its price. The “Rovaniemi Action Plan for the Forest Sector in a Green Economy”, launched by the UNECE Committee on Forests and the Forest Industry and the FAO European Forestry Commission in 2013, is an exemplary vision towards reaching these goals and merits to be implemented.

How European governments should work together and what are the main measures that should be put in place to reduce fire impacts in the wake of more heat waves and high temperatures?

Globally there is no legally binding accord in place that would regulate goals and obligations to address fire management. Voluntary networks, such as the Global Wildland Fire Network or the International Wildland Fire Preparedness Mechanism – both acting in the fulfilment of the Sendai Framework for Disaster Risk Reduction 2015-2030 – are a first step towards building collective responsibility and action. In Europe there are three regional organizations in place that are addressing the theme of wildfire risk:

- The Council of Europe, representing 47 member countries, in the frame of the Euro-Mediterranean Major Hazards Agreement (EUR-OPA), is working through two “Specialised Euro-Mediterranean Centres” – the Global Fire Monitoring Center (GFMC) based in Germany and the European Centre for Forest Fires (ECFF) based in Greece. EUR-OPA has provided the resources to establish two Regional Fire Monitoring Centers in Southeast Europe / South Caucasus (Skopje, FYROM) and in Eastern Europe (Kiev, Ukraine). Main emphasis: Promotion of the Science-Policy Interface (SPI) in the regions and capacity building of rural communities in fire management, e.g. through the “Village Defense Guidelines”
- The Organization for Security and Cooperation in Europe (OSCE), representing 57 participating states, is supporting the development of national fire management policies. In 2015 the OSCE supported the establishment of the Fire Management Resource Center – Central Asia Region (based in Ulaanbaatar, Mongolia). Main emphasis: Based on the decision of the Ministerial Council of 2014 m the OSCE through its Economic and Environmental Dimension (“Second Dimension”) promotes the development of national fire management policies and inter-agency cooperation in fire management as well as the development of agreements for streamlining and developing standards for effective and efficient cooperation and interoperability in cross-

boundary fire management.

- The European Commission, representing 28 member countries, provides the European Fire Information System (EFFIS) and the Civil Protection Mechanism (CPM) with its operational hub – the Emergency Response Coordination Centre (ERCC). Main emphasis: Provision of information and data on vegetation fires and a broker function for coordination the response of the participating countries in case of a crisis.

In essence: The Council of Europe and the OSCE are targeting the underlying and changing socio-economic, political and environmental conditions that are influencing wildfire risk in their member states, and promote building of national and regional capacities in fire management.

How are GFMC and affiliated organization contributing to reduce these new extended fire risks?

In 2010 the GFMC began to decentralize and support building of regional capacities in fire management throughout the 14 regions worldwide. In July 2017 we have opened the 4th Regional Fire Management Resource Center, based in Indonesia and responsible for South East Asia. This center will work following the objectives and expertise of the two European and Central Asian Centers established between 2010 and 2017. Two more Regional Fire Management Resource Centers will be opened in 2017-18 in Latin America and the Central Eurasian Region.

URLs

GFMC:
http://www.fire.uni-freiburg.de/

Global Wildland Fire Network:
http://www.fire.uni-freiburg.de/GlobalNetworks/globalNet.html

International Wildfire Preparedness Mechanism (IWPM):
http://www.fire.uni-freiburg.de/iwpm/index.htm

GFMC publication “Vegetation Fires and Global Change: Challenges for Concerted International Action. A White Paper directed to the United Nations and International Organizations”:
http://www.fire.uni-freiburg.de/latestnews/Vegetation-Fires-Global-Change-UN-White-Paper-GFMC-2013.pdf

Community-based Fire Management, including Village Defense Guidelines
http://www.fire.uni-freiburg.de/Manag/CBFiM.htm

EuroFire Competency Standards for capacitating Fire and Rescue Services and Local Communities (available in 14 languages):
http://www.euro-fire.eu/