



European Union
Civil Protection and
Humanitarian Aid



EUROPEAN FOREST
INSTITUTE



***Forest Management and Prescribed Burns
mitigating Wildfire Risk in Central Europe***

in 20 Minutes!!

Alexander Held

EFI Resilience Programme, Bonn



“Brainstorming question:

we have this report about fire *prevention*. Which photo should we chose for the cover? A helicopter, obviously!! nobody wants to see some wrinkly old farmer with cattle, sheep, goats grazing on the cover of a report. A nice shiny Russian contract helicopter is what we want to spend our tax money on....”



Publication date 22 March 2021

A red helicopter is shown in flight, dropping a large amount of water or fire retardant onto a forest fire. The background is a dramatic sky with orange and yellow hues, suggesting a sunset or sunrise. The smoke from the fire is visible in the foreground.

Land-based wildfire prevention

*Principles and experiences on managing
landscapes, forests and woodlands
for safety and resilience in Europe*



EUROPEAN FOREST
INSTITUTE

- Introduction and Background:
 - A forestry
 - B prescribed fire
- Mitigating Wildfire Risk
- What we need

resilient landscapes – adapted communities –adequate response



EUROPEAN FOREST
INSTITUTE

Forest: diversity / complexity

Single purpose vs multifunctional forestry vs wilderness

Fuel Load is generally high in central Europe

Climate and weather patterns are changing. Scale of disturbances, interlink of disturbances.

Vegetation becomes “available fuel”.

Fire occurrence on the rise, meeting ecosystems and societies that are not used / adapted nor prepared.

Looking back in history does not really help. Also: use of wrong statistics.

Reactions are based on “What we know”: call 112, split of mandates: response strong, prevention (?) weak. Slowly we developing awareness that prevention can be more than a forest road and water.

resilient landscapes – adapted communities –adequate response

... **protect you** against natural hazards like avalanches, flooding or rock-falls



... **support people's livelihoods**, by providing employment and income

... **help provide your water**, by regulating quantity and quality of supply



... **help to mitigate our changing climate**, by storing carbon in forests and in wood-based products

... **moderate your local climate**, helping regulate wind, humidity and temperature



... **keep you healthy** with natural medicinal products and space for mental well-being



... **nourish your body** with berries, mushrooms, fruits and nuts, honey and game meat



... **feed your soul**, offering spiritual inspiration in a haven of nature



... **bring good cheer** with products like resins, tanins, decorative materials, Christmas trees



... **offer an inspirational setting** for leisure, recreation, adventure and hunting



... **are beautiful**, an existential part of the landscape where you can connect with nature, experience wildlife and find peace

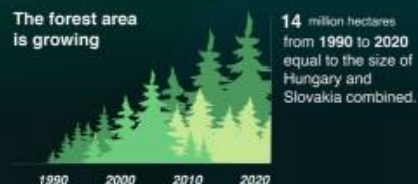
... **offer sustainable alternatives** to non-renewable, fossil-based materials used in construction, textiles, packaging and other products, originating from wood and cork



... **provide an enormous range of benefits to EU citizens**



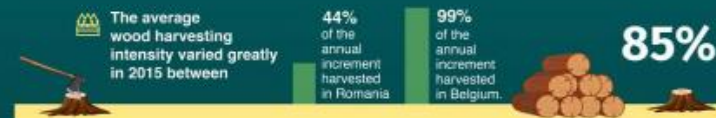
EU 27 forests in a nutshell



New innovative wood-based products in the textiles, chemicals, plastics, biofuels and bioelectricity industries are not included in these figures.



This sums up to forests sequestering 10,6 % of the EU's annual emissions in 2018.

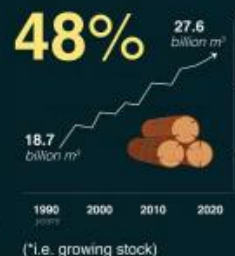


Conservation status

Forest habitats show the highest proportion of improving trends of their conservation status compared to other habitat types.



Between 1990 and 2020, the total volume of timber* in forests increased by



26% of forest products are self-consumed products such as berries, mushrooms and decorative plant materials and resin.

(EU 28 and including the EU)

Their economic value (inc self-consumed products) was estimated to be comparable to 70% of the annual roundwood removals value in Europe

Ökosystemleistungen des Waldes

Dargestellt sind die Leistungen, die der Wald in Deutschland auf einem Hektar erbringt. Insgesamt ist ein Drittel Deutschlands (11,4 Mio. Hektar) bewaldet.

Infografik: helengrubler.de

Basisleistungen

- 1 Photosynthese
- 2 Sauerstoffproduktion
3 t O₂/ha*a
- 3 Kohlenstoffspeicher
Biomasse
114 t C/ha
- 4 Holzvorrat
358 Vfm/ha

- 5 Biodiversität
- 6 Bodenbildung
1 cm/100 a
- 7 Kohlenstoffspeicher
Waldboden
117 t C/ha

Versorgungsleistungen

- 8 Holzzuwachs
10,9 Vfm/ha*a
- 9 Stoffliche Holznutzung
4,8 m³/ha*a
- 10 Energieholz
2 m³/ha*a
- 11 Pilze & Beeren
Haushaltsübliche Mengen
- 12 Wildfleisch
1 kg/ha*a
- 13 Trinkwasserschutzgebiet
1.835 m²/ha

Regulationsleistungen

- 14 Luftfilter
60 t/ha*a (Staub, Ruß)
- 15 Klimaschutz
CO₂-Senke: 5,4 t CO₂/ha*a
- 16 Wasserfilter
3 Mio. l/ha*a
- 17 Bodenschutz
verhindert Erosion/Hochwasser
- 18 Biotopfläche
518 m²/ha (gesetzlich geschützt)
- 19 Totholz
22,4 m³/ha

Kulturelle Leistungen

- 20 Arbeitsplatz
0,1 Beschäftigte/ha
- 21 Forschung & Bildung
- 22 Wirtschaft
16.000 €/ha*a
Umsatz im Cluster Forst & Holz
- 23 Tourismus
50 lfm/ha Wanderwege
- 24 Gesundheit & Erholung
- 25 Bestattung

Continuous Cover Forestry CCF



Multi-purpose: compromise balance between ecology, economy, ecosystem services⁸











Single-Purpose Forestry: Timber

Not only prone to fire, but also to pest and disease, storm, drought,...



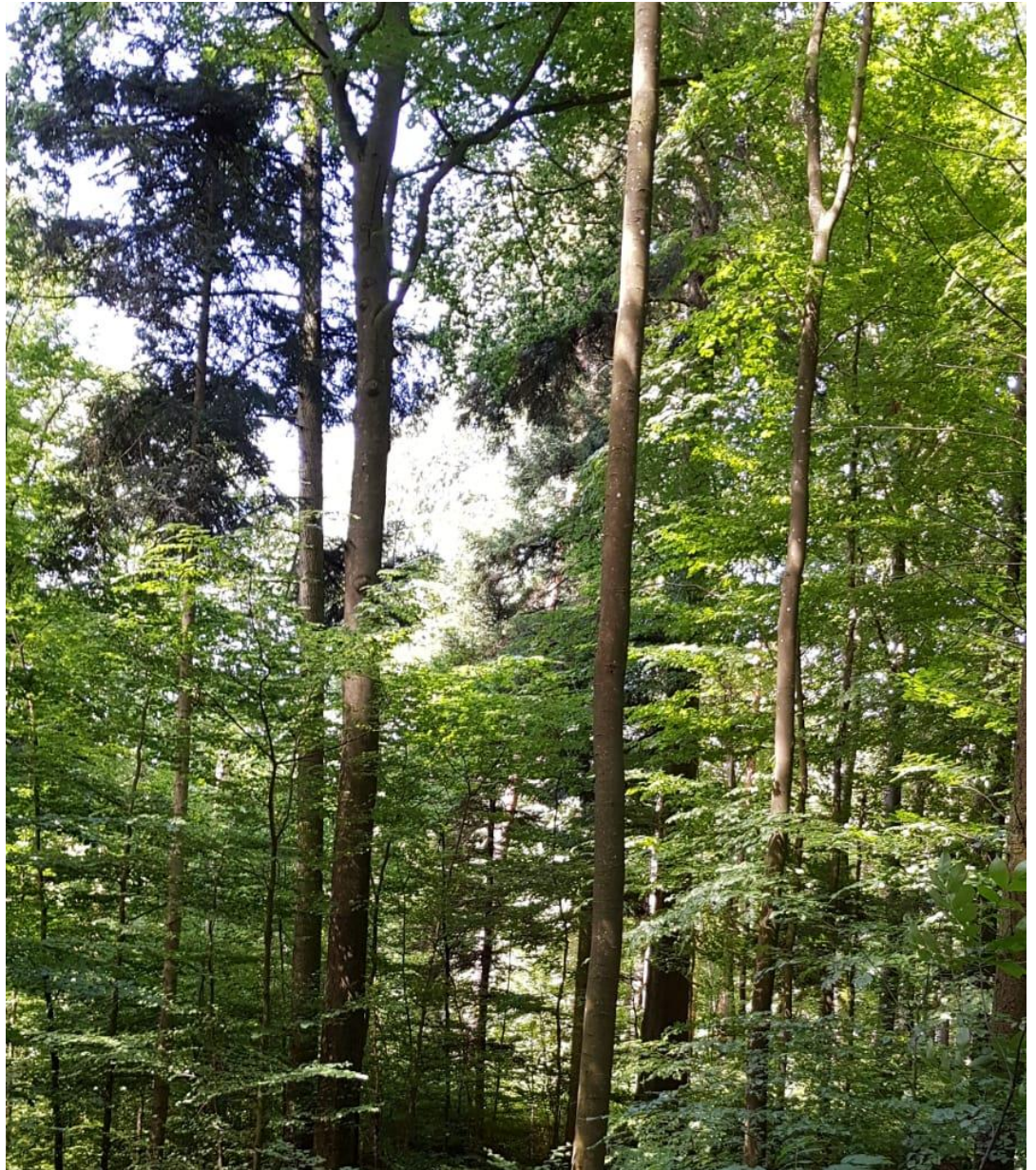




Challenge

Converting forests towards more resilience (beetle, storm, drought, fire...): Close-to-Nature Forestry / CCF

- Mixed tree species
- structured: 2 or better 3 layers
- No clear-felling
- Natural regeneration
- Deer management
- New tree species??
- Conflicting objectives?
Dead Wood vs Fuel Load Reduction??
- FSC vs fuel buffers?

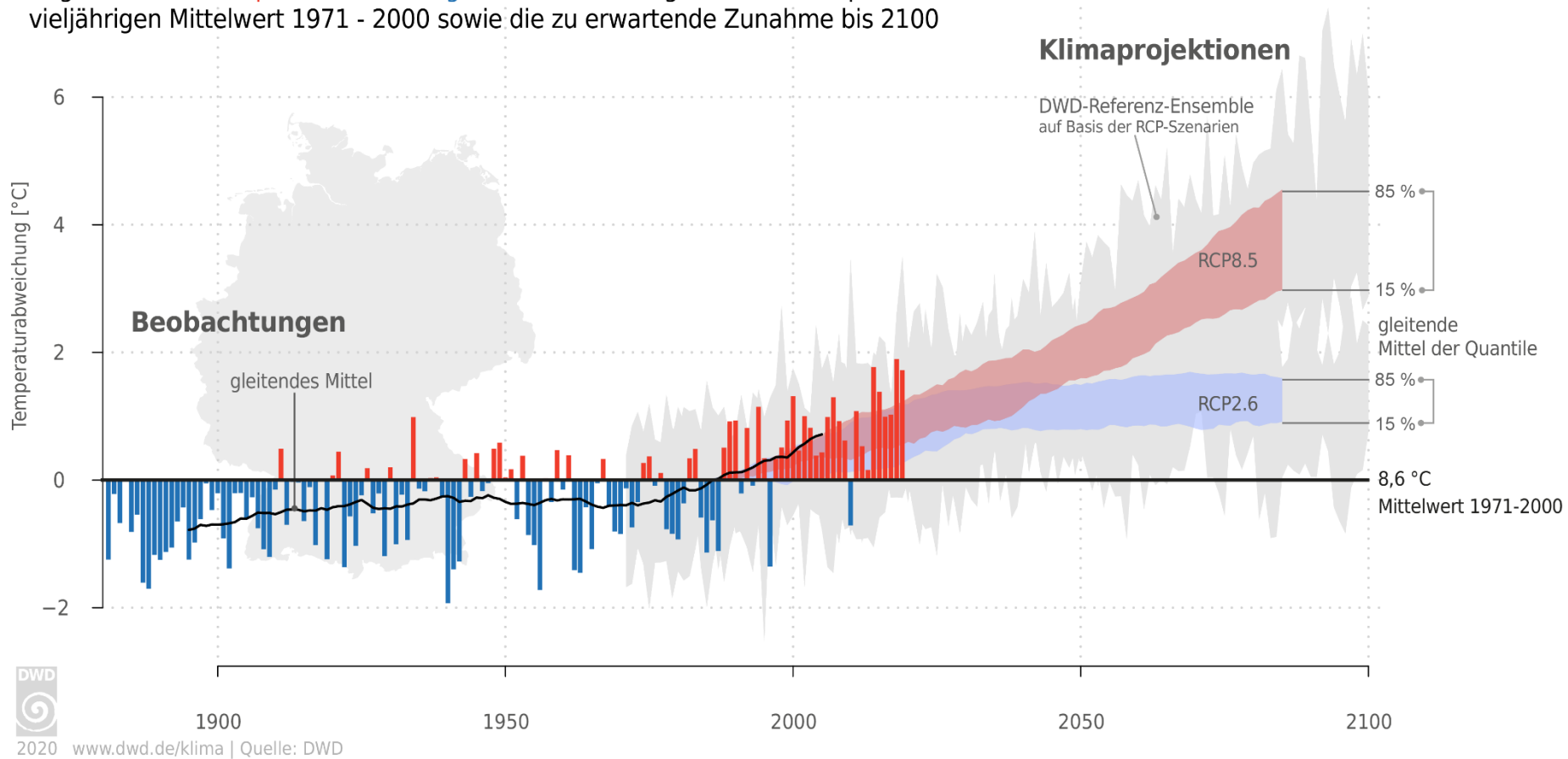






Deutschland im Klimawandel

Abgebildet sind die **positiven** und **negativen** Abweichungen der Lufttemperatur vom vieljährigen Mittelwert 1971 - 2000 sowie die zu erwartende Zunahme bis 2100

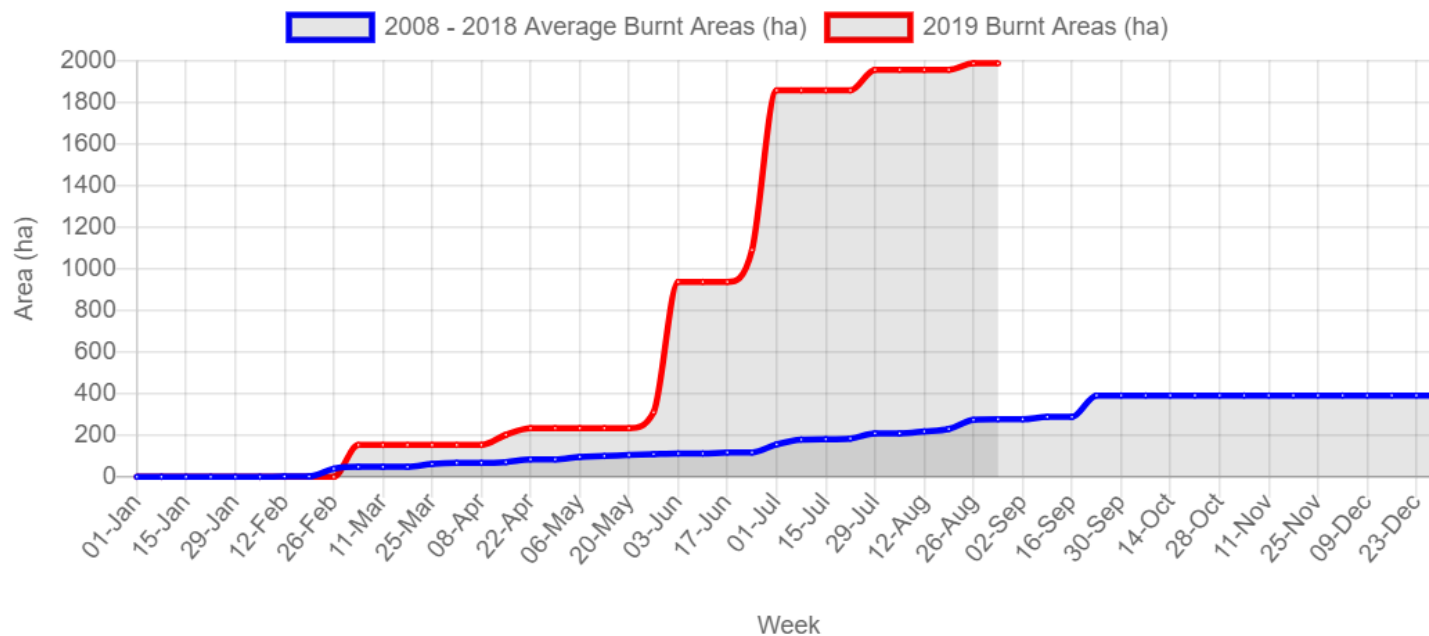


Burnt Areas

Number of Fires

SEASONAL TREND - Germany

Burnt Areas (ha) mapped in EFFIS (*)



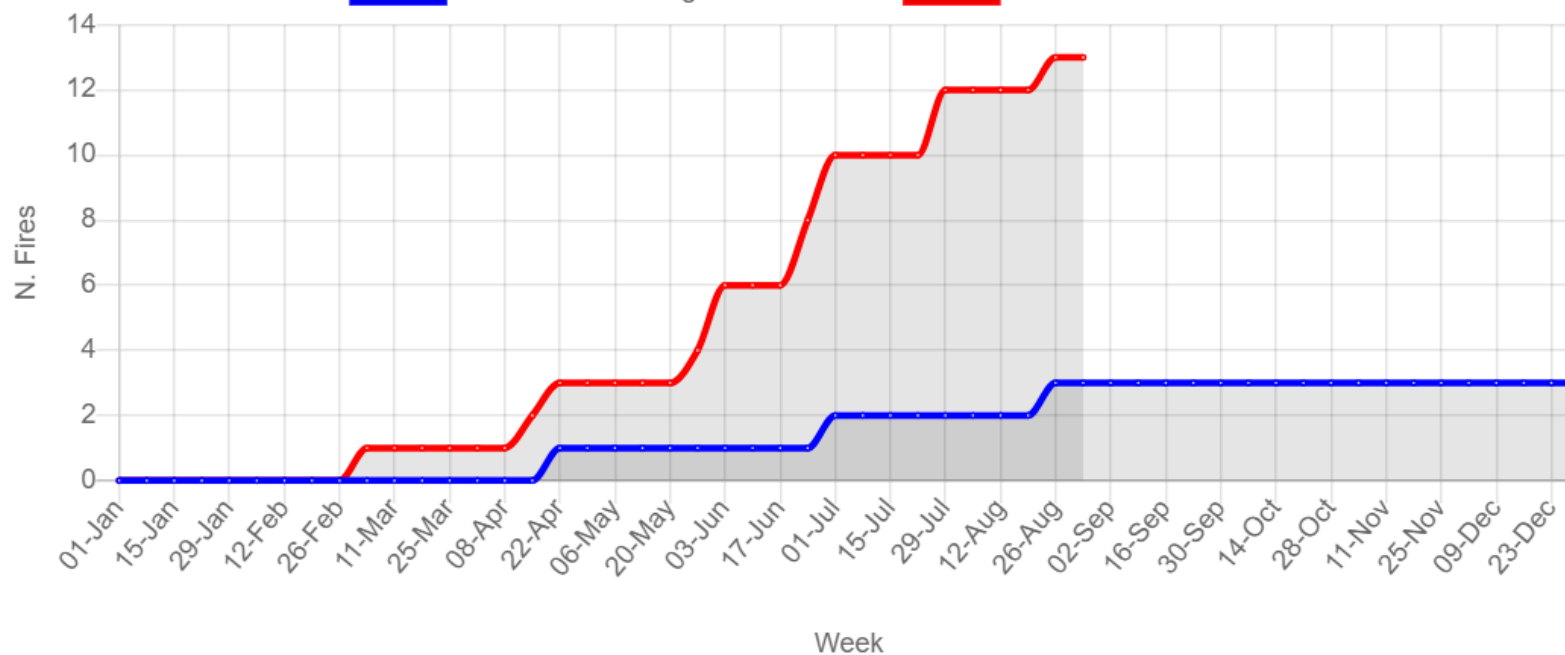
Burnt Areas

Number of Fires

SEASONAL TREND - Germany

Numbers of Fires mapped in EFFIS (of approx. 30 ha or larger)

2008 - 2018 Average Num. of Fires 2019 Num. of Fires





EUROPEAN FOREST
INSTITUTE

Fire Use / Prescribed Fire

Traditional Knowledge? Unfortunately its mostly gone. Fire was used in agriculture. Foresters started fire research as early as 1920 in Germany!! (same as CCF by the way!)

Fire-Use still a “rocket science” and limited to 4 weeks / a in nature conservation (in “unnatural” vegetation types) . Only in open landscapes / heathland, / military training areas. But NOT inside forests. As early as 1975 when fire use was banned, since 2001 regular measure in nature conservation

Limited number of qualified burn crews available in a short RX weather window

Other stake holders: volunteer fire services, nature conservation, (plus emissions), landowners, tourism. Each has own policy and objectives. Sometimes bomb disposal on UXO terrain. Varying number of actors, really small scale fires but massive concerns.

Nature conservation burns can be incorporated into a wildfire prevention strategy, as can other nature conservation measures.

resilient landscapes – adapted communities –adequate response



Good Fire



Bad Fire



Simplistic approach and perceptions about fire in the non-fire-prone countries







EUROPEAN FOREST
INSTITUTE

Mitigating Wildfire Risk

Core element so far in prevention was **access** and **water** supply.

Increasing numbers of fire research, but what research?

New (slow!) awareness for fire triangle and fire behaviour triangle: **fuel management**

Reality check: burn permit for preventive fuel load reduction in forests....unknown so far. Problem of “no fire ecology” in central European ecosystems. Fear of wildfire. No understanding of the concept of **mildfire vs wildfire**. Very few burning days. Small window

(although we could still apply the generally valid rules: weather parameters and saturated soil moisture profile, ignition patterns, etc)

resilient landscapes – adapted communities –adequate response



EUROPEAN FOREST
INSTITUTE

Mitigating Wildfire Risk, cont.

Grazing. Reality check: too costly, complicated, wolves

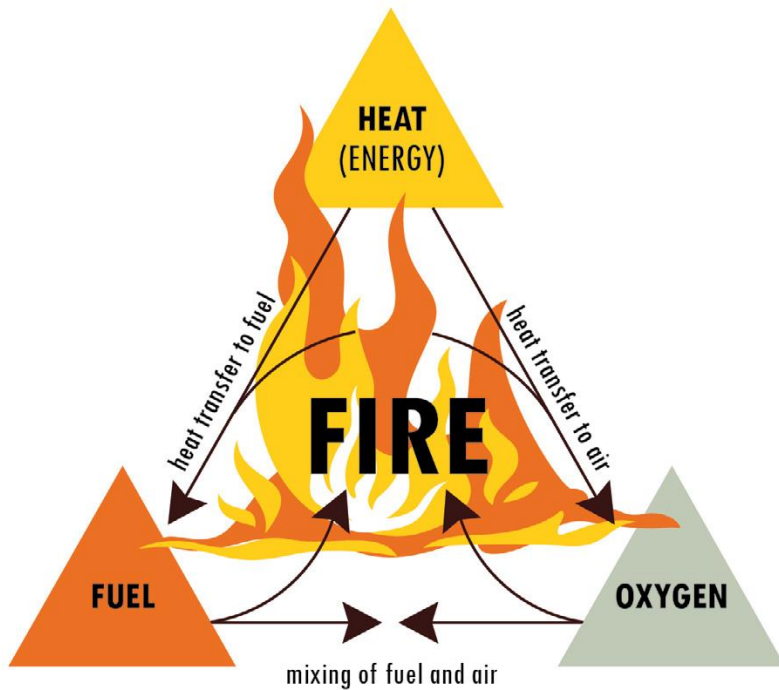
Mechanical treatments, i.e. along fuel buffers: reality check: FSC

Again, stakeholders with competency and international experience: limited number available

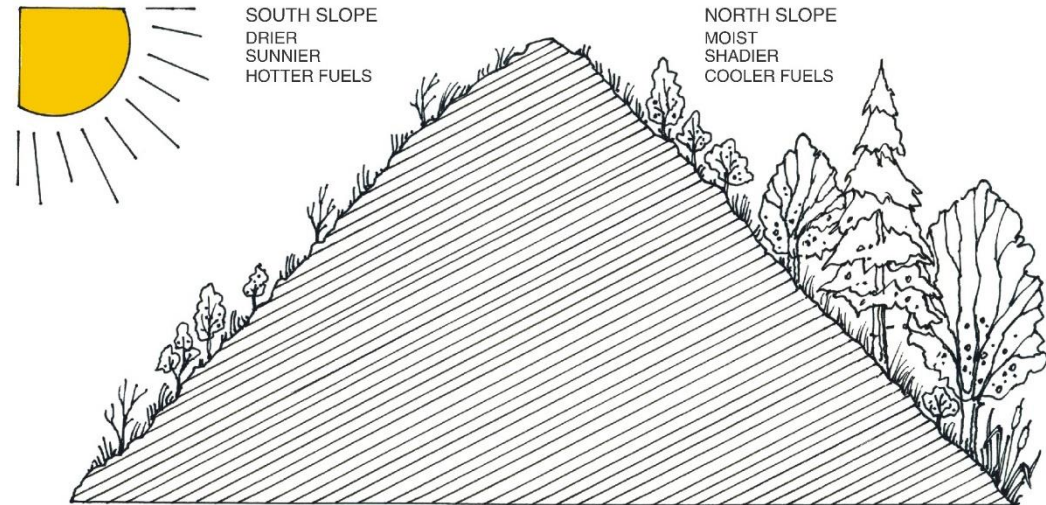
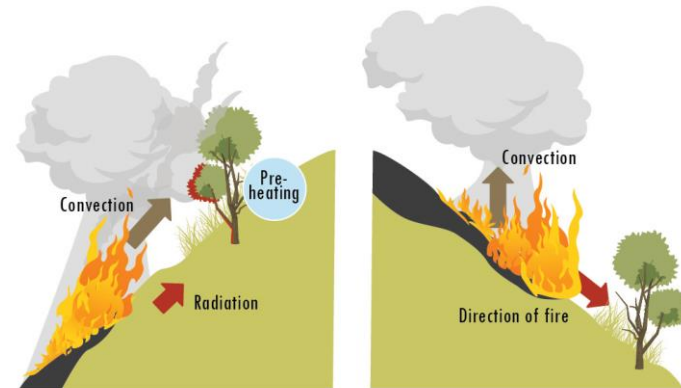
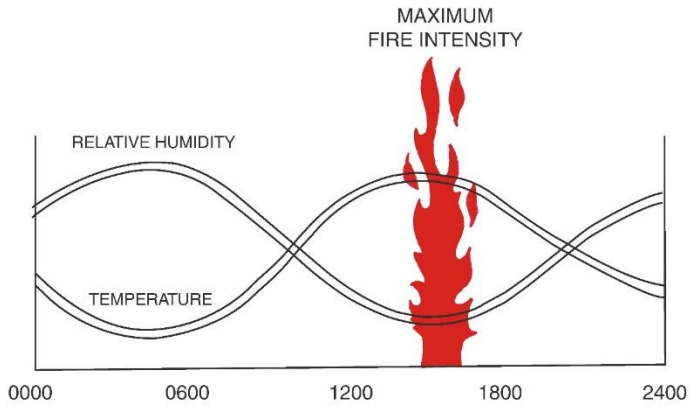
Result: we *talk* about risk mitigation. Talk is cheap.....

resilient landscapes – adapted communities –adequate response

The Universal Truth



The Universal Truth





The Universal Truth hasvarious aspects, unfortunately.

New challenge in old, resilient socio-cultural systems

Risk culture, denial and “can do”

Annual Increment: high, but....
sooner or later, its's all FUEL

Understanding the Risk....??

What do we know?

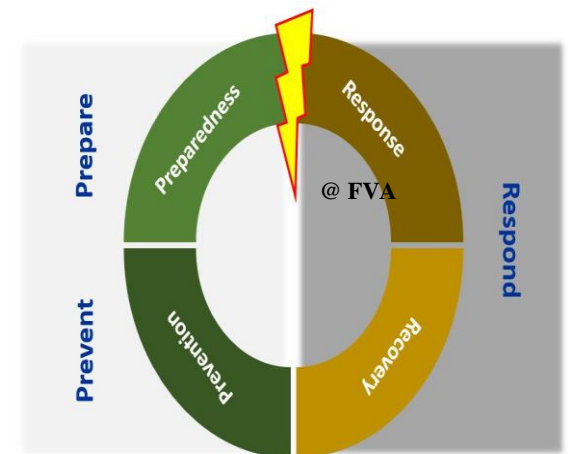
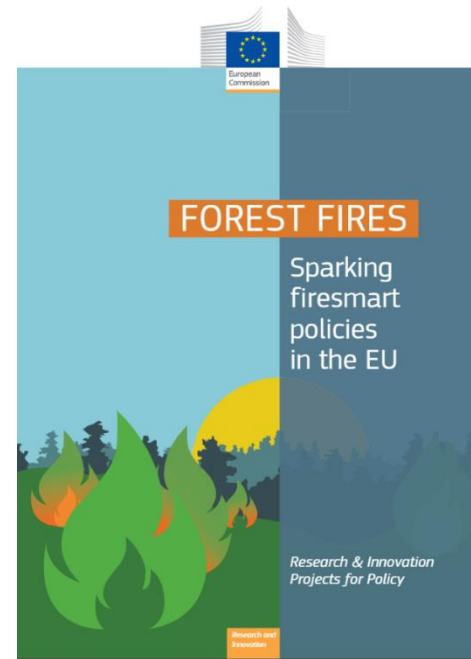
Framework Programme/Action	Number of projects reviewed	EU contribution (million EUR)
Sixth Framework Programme	1	12.6
Seventh Framework Programme	17	47.6
Horizon 2020 (2014-2017)	11	23.5
LIFE Programme	7	4.9
Civil Protection Mechanism	18	7.5
Coordination Actions	1	0.1
Cross-border cooperation	1	6.9
Total	56	103.2

- EU funding for fire research € 103 mio.
- National funding for fire research?
- Information translated into applicable knowledge?

“Integriertes Feuer-Management”



@ EU “Sparking Fire Smart Policies”





EUROPEAN FOREST
INSTITUTE

What we need (in Central Europe and purely my own opinion of course)

We don't have:

no enabling environment,

no enabling policy support,

not enough research /exchange for knowledge and skill transfer

No vision nor strategy

“no access”..or not the right people have no access to wrong funding instruments...help!

resilient landscapes – adapted communities –adequate response

Governance, Leadership



EUROPEAN FOREST
INSTITUTE

What we need (in Central Europe and purely my own opinion of course)

We have too many stakeholders with too many objectives and too many concerns

We have a guiding vision available: fire-smart policies

We have great expertise across Europe, willing to share.

We have “champions” that can drive the change (risk of no institutional learning)

However, champions are often freelancers, individuals with enthusiasm, but no mandate and no operational budget, no legislative power: no access to EU / EC mechanisms nor budget

resilient landscapes – adapted communities –adequate response



EUROPEAN FOREST
INSTITUTE

THE STIHL BR 800 -
FOR SERIOUS BLOWING
POWER THIS FIRE SEASON



What we need (in Central Europe and purely my own opinion of course)

Guiding support from EU? Pressure from EU? Instead of incentives to buy more water bombing aircraft. (the easy way out and of showing activism)

We need combination of all tools in the toolbox for Central Europe:

Forest Management towards less burnable structures and tree species composition: CCF. Then **Fire-Use** on selected areas and in combination with nature conservation

Short term technical, small scale measures i.e. fire breaks, fuel buffers and

Long term landscape scale measures : CCF

Early Warning, Access / Information, Initial Attack that deserves the names **initial** and **attack**. **Improvement of wildfire suppression tactics and techniques**

Awareness: FSC, authorities, policies, researchers..towards **more planned mild-fire use**

“responsible citizen” , locally based FPAs?

resilient landscapes – adapted communities –adequate response

Germany



© Christopher Benkert



Germany



IRELAND –



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

EIP- AGRI Approaches to Fire Management

- **Currently 25 EIP AGRI “Locally Led” Projects**
- **6 have defined Fire Management Modules in main high fire risk areas**
- **Highly flexible to local needs, terrain and traditions**
- **High levels of farmer engagement and results based reward systems**



• <https://www.agriculture.gov.ie/farmerschemespayments/europeaninnovationpartnershipincludinglocallyledschemes/eip-agrioperationalgroups/>

• <https://www.agriculture.gov.ie/media/migration/farmingschemesandpayments/europeaninnovationpartnership/EIP-AGRI%20Operational%20Group%20Booklet%202019%20proof%202.pdf>

• https://www.youtube.com/channel/UCGoPgiMPMZoRGSHgREzYWyw/videos?fbclid=IwAR2SnEDq5NKnt5jrYdYHKiMjuoeEGyMoxSu_P2NG5-Ys8irtuxAD4L7iEdQ



Living with Fire? Long way to go in Central Europe.
But we started the Journey!!

Prescribed fire as a management tool



EUROPEAN FOREST
INSTITUTE

**Thank You very much for your
time!**

EFI Resilience Programme