

JKI-Project/‘Klimaschutzsofortprogramm des BMEL 2022‘

## KLIMAtiv

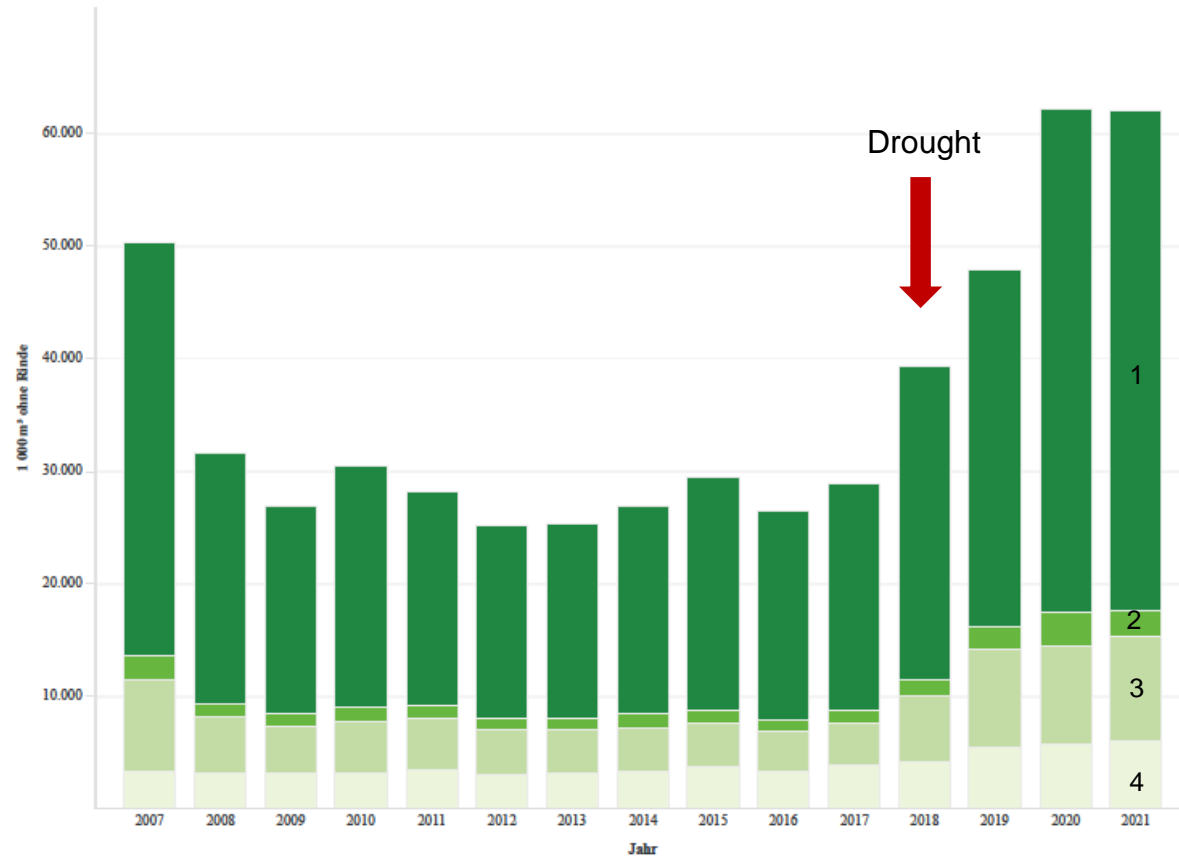
Climate-neutral fumigation methods and  
alternative phytosanitary treatments for logs

Garnet Marlen Kroos, JKI/ÖPV



# Situation in Germany

## - drought and outbreak of bark beetles infestations -



- 1 trunk wood
- 2 industrial timber
- 3 energy source, fire wood
- 4 unused wood

High reproduction rates and heavy **infestation with bark beetles**, especially in the **spruce species**, caused high levels of harvesting and market supply.

Around **61 %** of the 82.9 mill m<sup>3</sup> of timber felled in 2021 was **calamity timber** (pest infestation, fires or storms).

The percentage of **spruce** was particularly high at around **71 %**.

<https://www.bmel-statistik.de/forst-holz/holzmarkt>

# Harmful organisms

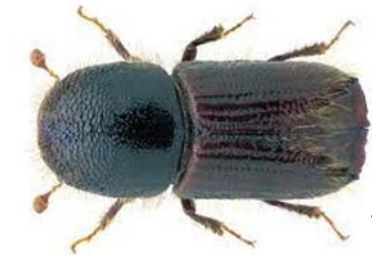


Damage pattern:

- Mating chambers
- Tunnels
- Side galleries with niches for the eggs

Bark beetle

*Ips typographus*



4.2-5.5 mm

Spruce wood engraver

*Pityogenes chalcographus*



1.6-2.9 mm

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Photo: Hill, Pflanzenschutzdienst Hessen, 2020

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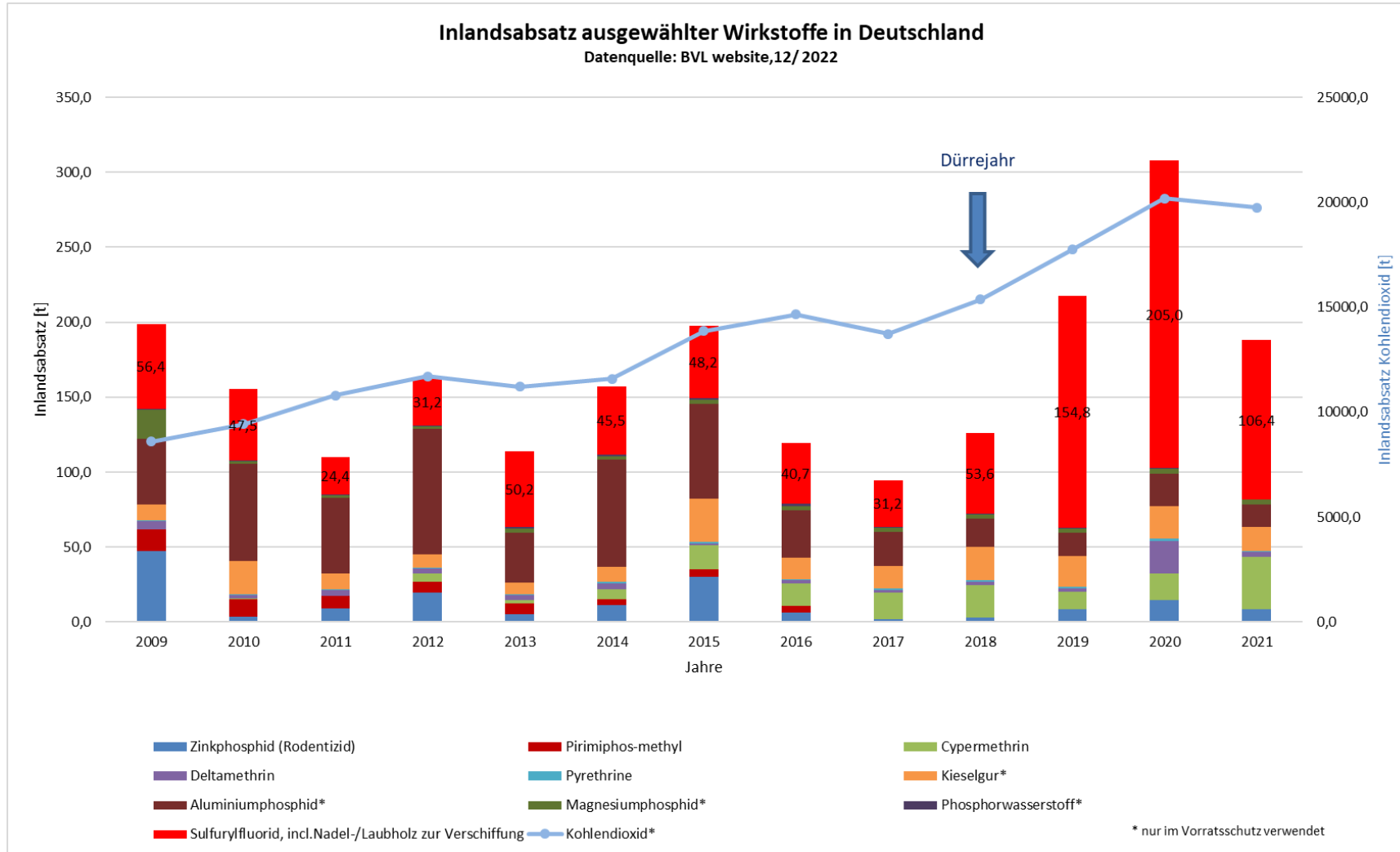
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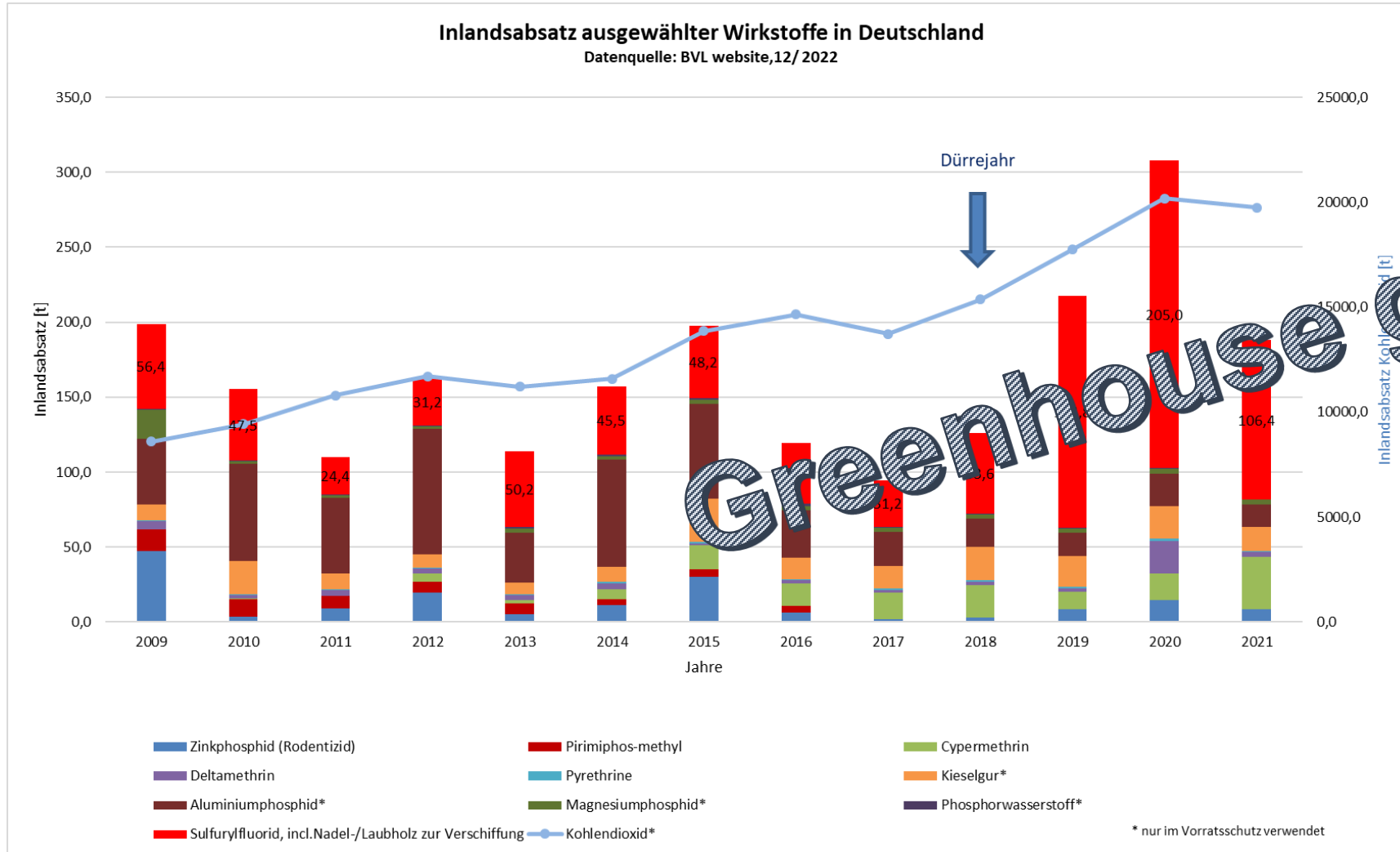
- ➔ **Forest hygiene and plant protection:**  
Removal of infested wood logs
- ➔ **Export, esp. to CN (approx. 50 %):**  
Plant Health Certificate:
  - free from quarantine and other pest organisms

# Domestic sales volume of sulfuryl fluoride/SF (SO<sub>2</sub>F<sub>2</sub>)





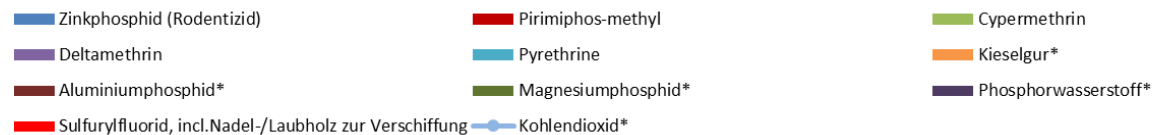
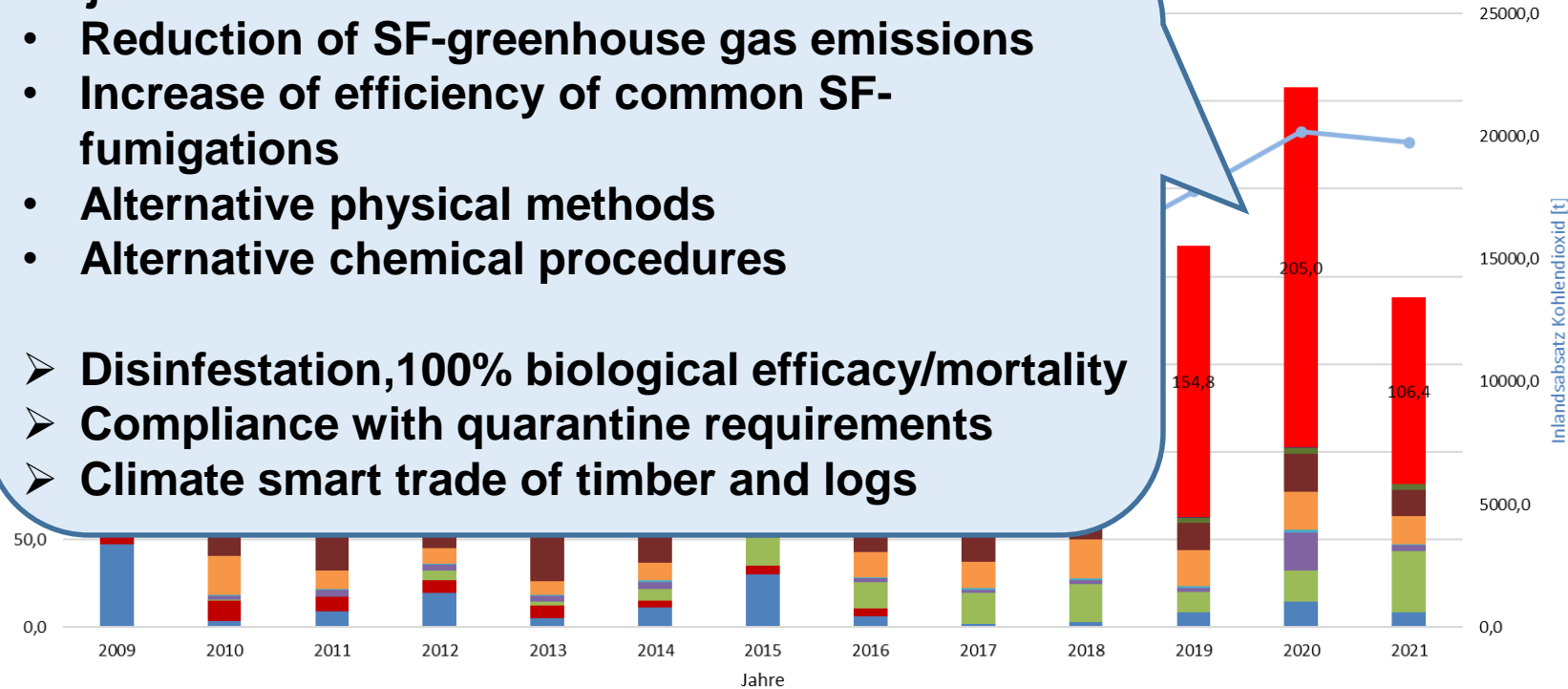
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## Objectives of KLIMAtiv

- Reduction of SF-greenhouse gas emissions
  - Increase of efficiency of common SF-fumigations
  - Alternative physical methods
  - Alternative chemical procedures
- Disinfestation, 100% biological efficacy/mortality
  - Compliance with quarantine requirements
  - Climate smart trade of timber and logs



\* nur im Vorratsschutz verwendet

# KLIMAtiv

## - phytosanitary fumigations and alternative methods -



- Effectiveness of  $\text{SO}_2\text{F}_2$ -fumigations
- Climate friendly plant protection products ( $\text{PH}_3$ , EDN)

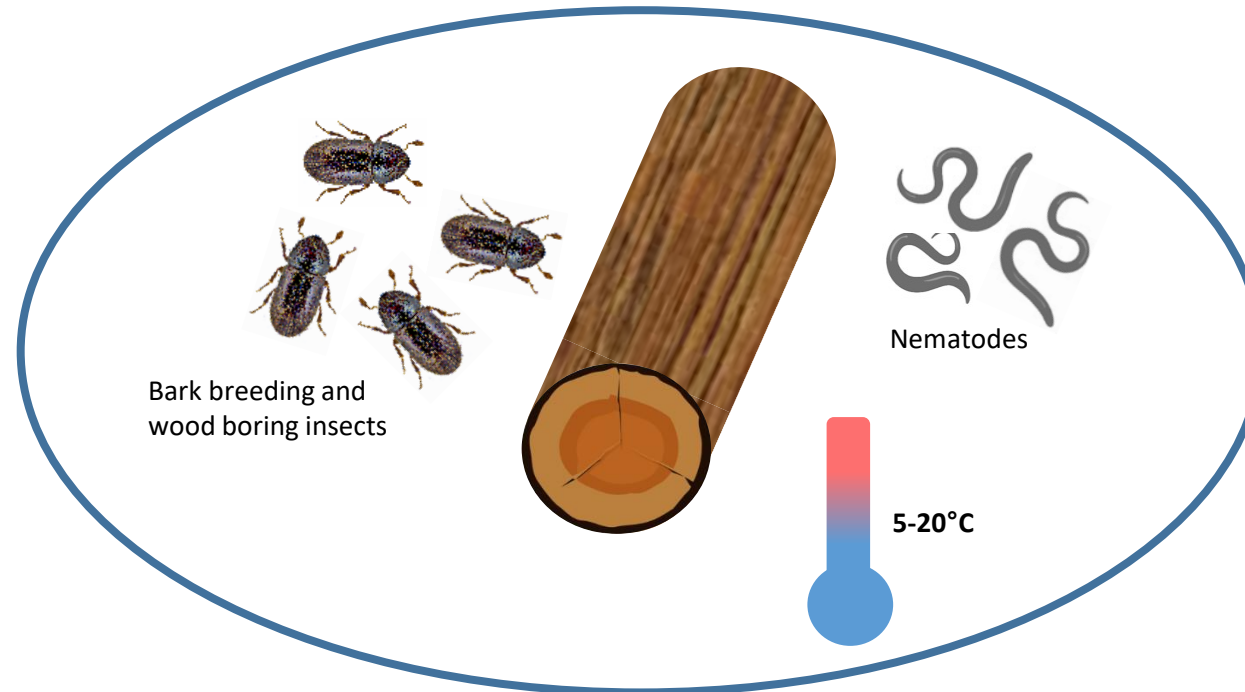


Figure: Hoppe, Schäfer, JKI/AG, 2023

(Scrubbing)

(Debarking)



- Heat treatment, vacuum steam sterilisation
- Underwater storage
- Oxygen displacement ( $\text{N}_2, \text{CO}_2$ )



# Thank you for your interest!

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