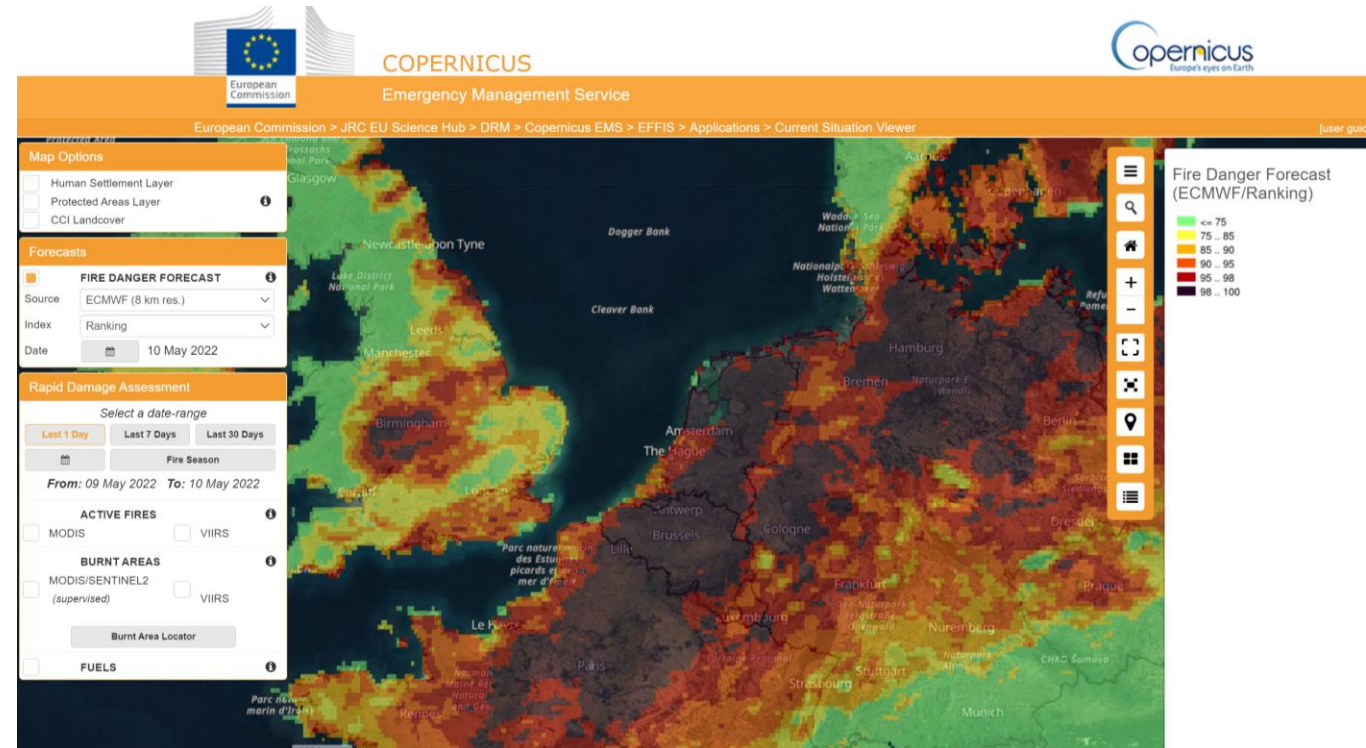


A paradigm shift in wildfire management in The Netherlands

UK Wildfire Conference

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Climate Adaptation?
Leave that to the Dutch!
Our houses are perfectly safe!



Climate change

Effects on Meteorology and Vegetation

- More rain
- Higher temperatures
- Longer growth seasons
- More biomass
- More frequent periods of drought
- More availability of fuels



Higher Fire Line Intensity

Higher Rate of Spread

Less capacity for control

Extreme Wildland Urban Interface



Fire management in The Netherlands

Fire management

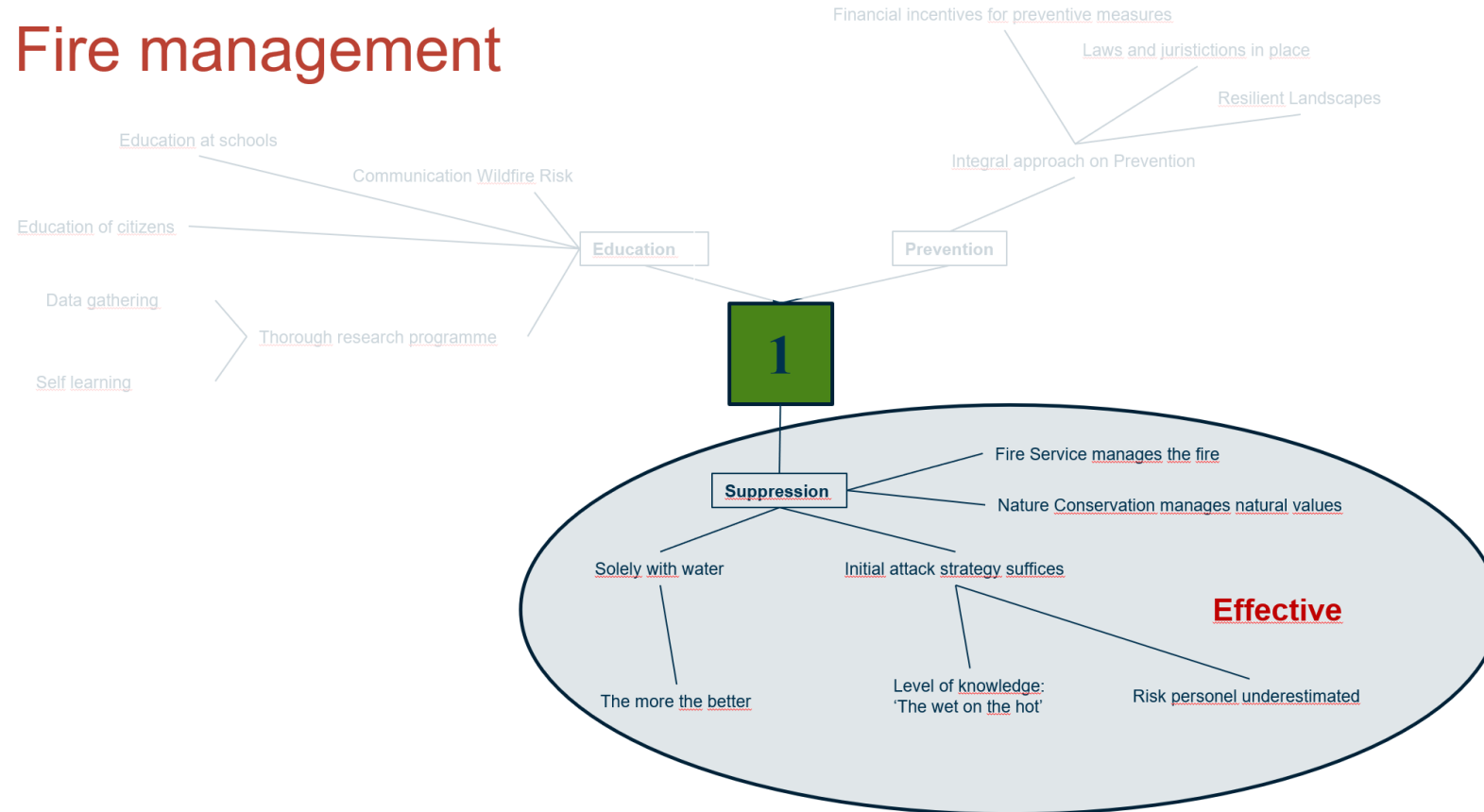


Table 3. Wildfire events classification based on fire behavior and capacity of control.

Fire Category	Real Time Measurable Behavior Parameters			Real Time Observable Manifestations of EFB				Type of Fire and Capacity of Control *	
	FLI* (kWm ⁻¹)	ROS (m/min)	FL (m)	PyroCb	Downdrafts	Spotting Activity	Spotting Distance (m)		
Normal Fires	1	<500	<5 ^a <15 ^b	<1.5	Absent	Absent	Absent	0	Surface fire Fairly easy
	2	500–2000	<15 ^a <30 ^b	<2.5	Absent	Absent	Low	<100	Surface fire Moderately difficult
	3	2000–4000	<20 ^c <50 ^d	2.5–3.5	Absent	Absent	High	≥100	Surface fire, torching possible Very difficult
	4	4000–10,000	<50 ^c <100 ^d	3.5–10	Unlikely	In some localized cases	Prolific	500–1000	Surface fire, crowning likely depending on vegetation type and stand structure Extremely difficult
Extreme Wildfire Events	5	10,000–30,000	<150 ^c <250 ^d	10–50	Possible	Present	Prolific	>1000	Crown fire, either wind- or plume-driven Spotting plays a relevant role in fire growth Possible fire breaching across an extended obstacle to local spread Chaotic and unpredictable fire spread Virtually impossible
	6	30,000–100,000	<300	50–100	Probable	Present	Massive Spotting	>2000	Plume-driven, highly turbulent fire Chaotic and unpredictable fire spread Spotting, including long distance, plays a relevant role in fire growth Possible fire breaching across an extended obstacle to local spread Impossible
	7	>100,000 (possible)	>300 (possible)	>100 (possible)	Present	Present	Massive Spotting	>5000	Plume-driven, highly turbulent fire Area-wide ignition and firestorm development non-organized flame fronts because of extreme turbulence/vorticity and massive spotting Impossible

Note: ^a Forest and shrubland; ^b grassland; ^c forest; ^d shrubland and grassland; *FLI classes 1–4 follow the classification by Alexander and Lanoville [125].

Society (and fire services) are used to category 1 fires



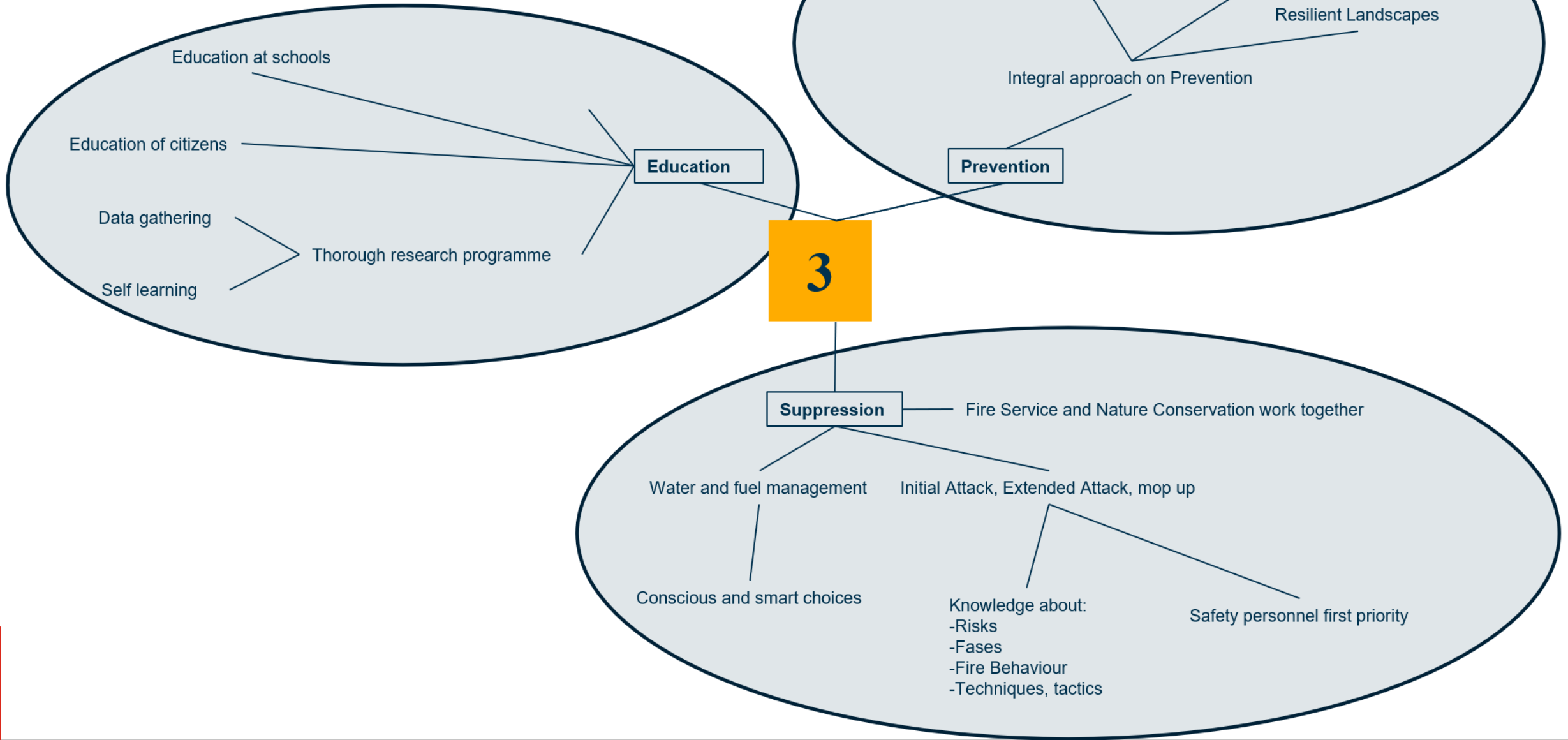
But now it has to deal with category 3 fires

3

'Paradigm Shift'

Education Suppression Prevention

Integrated Wildfire Management



Developments in The Netherlands

- Wildfire Signal '23 (research by NIPV)
- National Crisis Plan Wildfires
- National Risk Assessment
- National Safety Strategy
- KNMI Climate Scenarios 2023
- Taskforce Wildfire Management

Figuur 11 Totale risicodiagram

	Zeer onwaarschijnlijk	Onwaarschijnlijk	Enigszins waarschijnlijk	Waarschijnlijk	Zeer waarschijnlijk
Catastrofaal		<ul style="list-style-type: none"> • Overstroming zee 	<ul style="list-style-type: none"> • Pandemie door een mens overdraagbaar virus 		
Zeernstig	<ul style="list-style-type: none"> • IS grijpt de macht in Marokko • Inzet van kernwapens Saoedi-Arabië – Iran • Geïnduceerde aardbeving 	<ul style="list-style-type: none"> • Keteneffecten elektriciteitsuitval • Chinese hereniging Taiwan • Tijdelijke bezetting van een EU-lidstaat 	<ul style="list-style-type: none"> • Overstroming rivier • Griep pandemie • Instorten van de Venezolaanse staat • Uiteenvallen van de NAVO • Systeempartij in de fin. sector in zwaar weer 	<ul style="list-style-type: none"> • Orkaan • Hitte/droogte • Import van fossiele energie • Aanval Cloud Service Provider 	
Ernstig	<ul style="list-style-type: none"> • Kerncentrale Borssele • Treinramp met gaswolkbrand • Ransomware telecom 	<ul style="list-style-type: none"> • Handelsoorlog waar Europa bij betrokken is • Meervoudige terroristische aanslag • Verstoring van het betalingsverkeer • Statische vererving van een belang in grote telecom-aanbieder • Infiltratie openbaar bestuur 	<ul style="list-style-type: none"> • Sneeuwstorm • Crisis in de Zuid-Chinese Zee • Tweespalt in de EU • Crimineel geweld richting media en overheid • Ongewenste buitenlandse inmenging in diasporagemeenschappen • Bestorming en gijzeling Tweede Kamer 	<ul style="list-style-type: none"> • Landelijke black-out • (Heimelijke) beïnvloeding door China • Polarisatie rond complottheorieën • Desintegratie van Bosnië-Herzegovina 	<ul style="list-style-type: none"> • Hybride operaties – aangrijpen op maatschappelijk debat • Griep epidemie • Verstoring van handel door productieproblemen buitenland • Natuurbranden
Aanzienlijk	<ul style="list-style-type: none"> • Stralingsongeval in Europa • Falen opslagtank ammoniak 	<ul style="list-style-type: none"> • Europese schuldencrisis • Cyberaanval ICS - Chemische sector • Ransomware zorgsector • Terroristische aanslag met een bio-wapen 	<ul style="list-style-type: none"> • Uiteenspaten van de OVSE • Aanval op pride evenement • Natuurlijke aardbeving • Gewelddescalatie rechtsextremisten • Anarcho-extremisme • Buitenlandse regulering techbedrijven • Ondernijpende enclaves 	<ul style="list-style-type: none"> • Cyberspionage overheid • Georganiseerde criminaliteit door heel Nederland • Uitbraak MKZ onder koeien • Klassieke statelijke spionage • Innovatie nucleaire overbrengingsmiddelen • Correctie op waardering financiële activa • Misconfiguratie Internetdienstverlener • Criminele inmenging bedrijfsleven • Anti-overheidsextremisme 	<ul style="list-style-type: none"> • Collateral damage
Beperkt			<ul style="list-style-type: none"> • Uitbraak zoönotische variant vogelgriep 	<ul style="list-style-type: none"> • Tekorten essentiële grondstoffen • Overname van bedrijf dat o.a. dual-use goederen produceert 	<ul style="list-style-type: none"> • Alleenhandelende dader • Buitenlandse durfkapitaalinvesteringen in startups

Total risk diagram National Risk Assessment (2023)

Assignments for the Taskforce Wildfire Management

- Develop a new long-term strategic way forward (framework/vision) for The Netherlands Fire Service regarding wildfire management
- Make sure that there is structural (political) interest in wildfire management
- Work towards integrated fire management with prevention as the most important theme
- Develop a plan for the implementation of the projects/goals

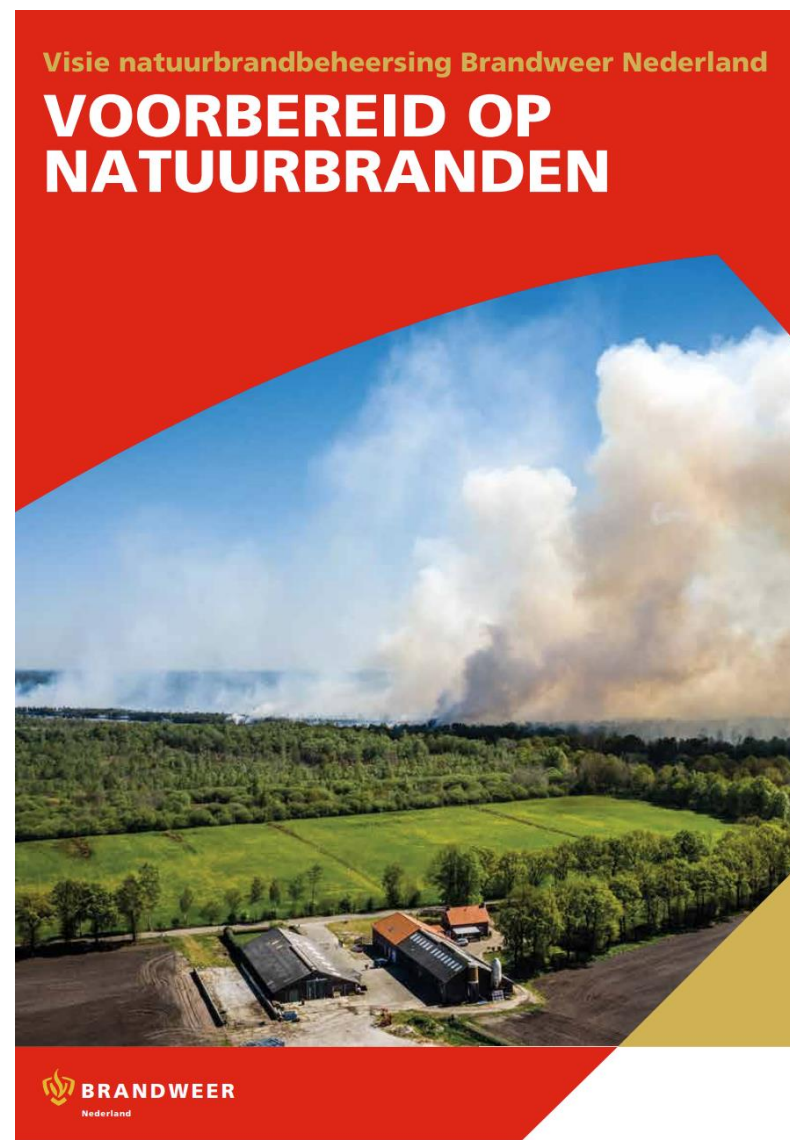
Process

- Start and brainstorm
- Project teams
 - Risk Management
 - Smart suppression
 - Research
- Steering Committee
- Representatives Councils
Netherlands Fire Service



Process

- Input from project teams
- Document with the basis for the strategic way forward
- Feedback rounds
 - Fire Service, National Wildfire Network, Ministries, Nature management organizations, provinces etc.
- All feedback included in document, final version of the new vision
- Vision in National Fire Chiefs Council and National Safety Board
- *The vision is largely based on knowledge and lessons learned from other countries*



Content Vision



INTEGRALE AANPAK

Integrated
Fire Management



REGIE EN SAMENWERKING

Management &
Collaboration



VERANTWOORDELIJKHEID

Responsibility



**VOORBEREIDE MAATSCHAPPIJ
EN COMMUNICATIE**

Prepared communities and
Communication



**NATIONAAL EN INTERNATIONAAL
(KENNIS)NETWERK**

National and
International
(Knowledge) Network



ACTUEEL NATUURBRAND-RISICOBELD

Real-time risk
Assessment



INFORMATIEGESTUURD WERKEN

Availability of
(operational) information

Risk Management



VERANKERING

Structural and uniform way of working



RISICO- EN GEBIEDSGERICHT WERKEN

A risk-oriented and area-specific approach of wildfire management



KEUZES OVER RISICO'S

(Administrative) Choices about risks

Smart suppression



VAKBEKWAAMHEID

Professional competences



DOCTRINE

Doctrine



REGIONAAL MATERIEEL EN MATERIAAL

Region-specific vehicles and materials



BOVENREGIONALE EN LANDELIJKE CAPACITEIT

Supra-regional and national capacities / means

Research



**FUNDAMENTEEL EN
PRAKTIJKGERICHT ONDERZOEK**

Fundamental and
applied research



KENNISDELING

Sharing of
knowledge



LEREN UIT DE PRAKTIJK

Learning from
incidents



DATA

Data

Other activities

- Working visit with Minister of Nature and Nitrogen at Military Training Site
- Working visit with Minister of Nature and Nitrogen at the Catalan Fire Service & Pau Costa Foundation
- Safety Council with Ministers of Justice and Safety and Nature and Nitrogen



Results

- €70 million for wildfire prevention
- Ministry of Nature is coordinating department
- A new vision and implementation plan by the NL Fire Service
- Administrative agreements:
 - Coordinating department
 - National Covenant Wildfire Management
 - National Center of Expertise
 - Reinforcement of subregional collaboration in wildfire response

But still.....

A whole lot of work to do!

Any questions?

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