



Manage the Fuel – Reduce the Risk 20th and 21st November 2019, Principality Stadium Cardiff



SERVIÇO MUNICIPAL DE PROTEÇÃO CIVIL

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- 1. INTRODUCTION;**
- 2. FIRE HISTORY IN PORTUGAL;**
- 3. MAFRA COUNTY SITUATION;**
- 4. SOLUTION;**
- 5. RESULTS;**
- 6. QUESTIONS;**



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1- INTRODUCTION;



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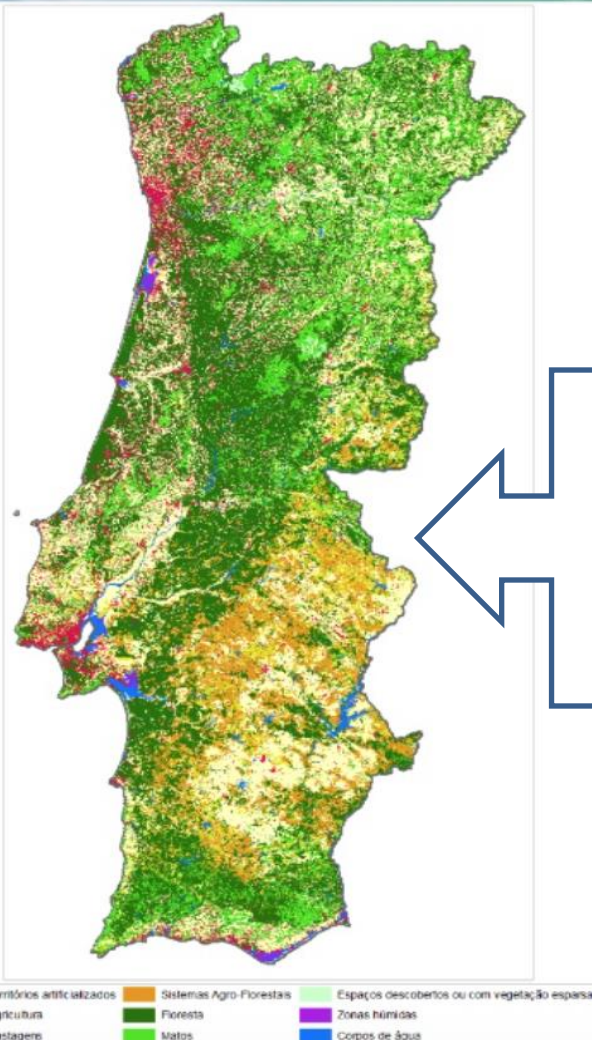
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1- INTRODUCTION;



74% of land occupation burns in wildfires

70% of Portugal is occupied by sylvan spaces, which include forests (35%), shrubs lands and pastures (31%).

Forest composition: 36% with oaks, Maritime pine and eucalyptus 26%.

Forests contribute annually to the national economy with 982 million euros and create 80.000 jobs. Only 3% of the total area are public.



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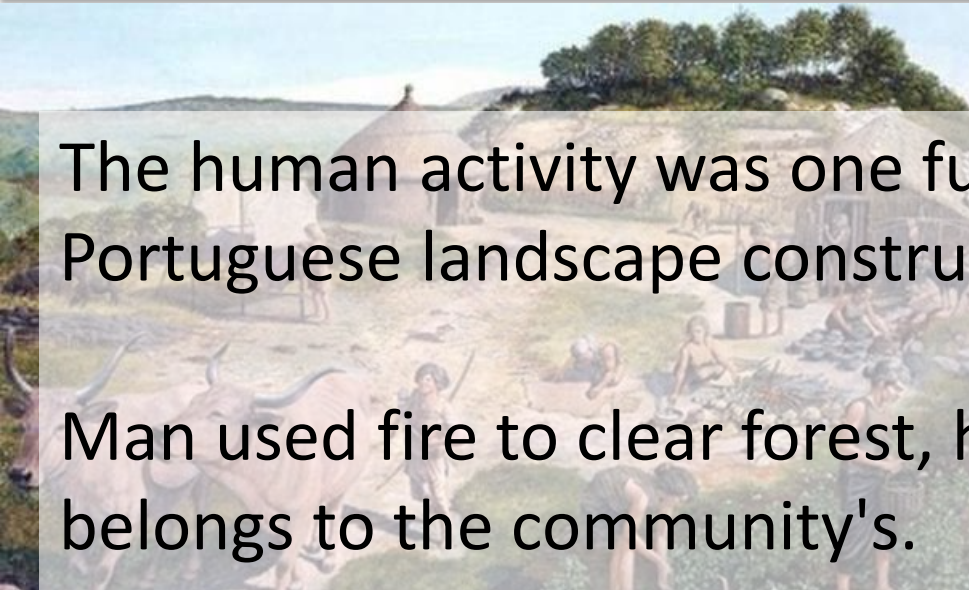
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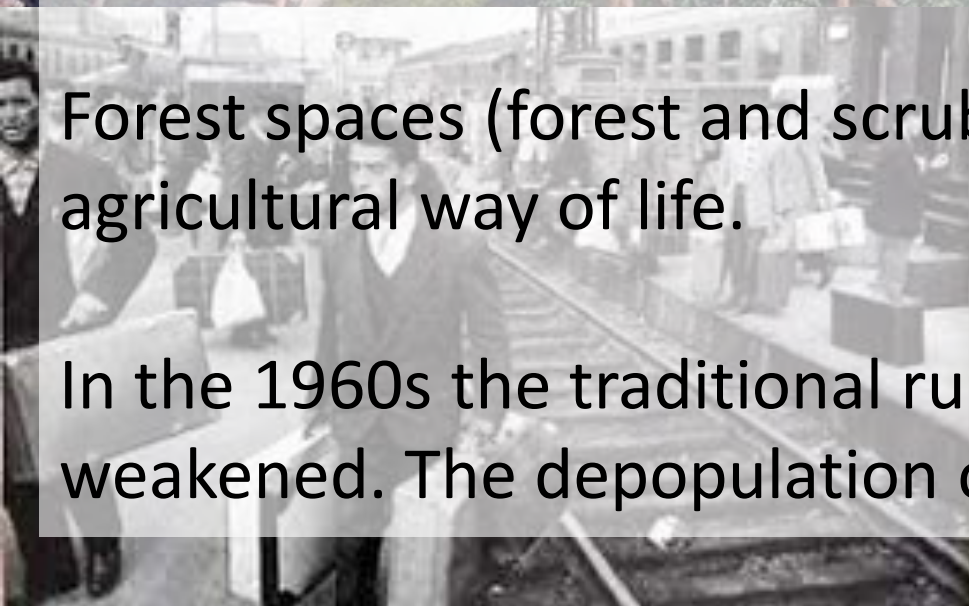
2- FIRE HISTORY IN PORTUGAL



The human activity was one fundamental element for the Portuguese landscape construction.



Man used fire to clear forest, heat and cook food. Fire belongs to the community's.

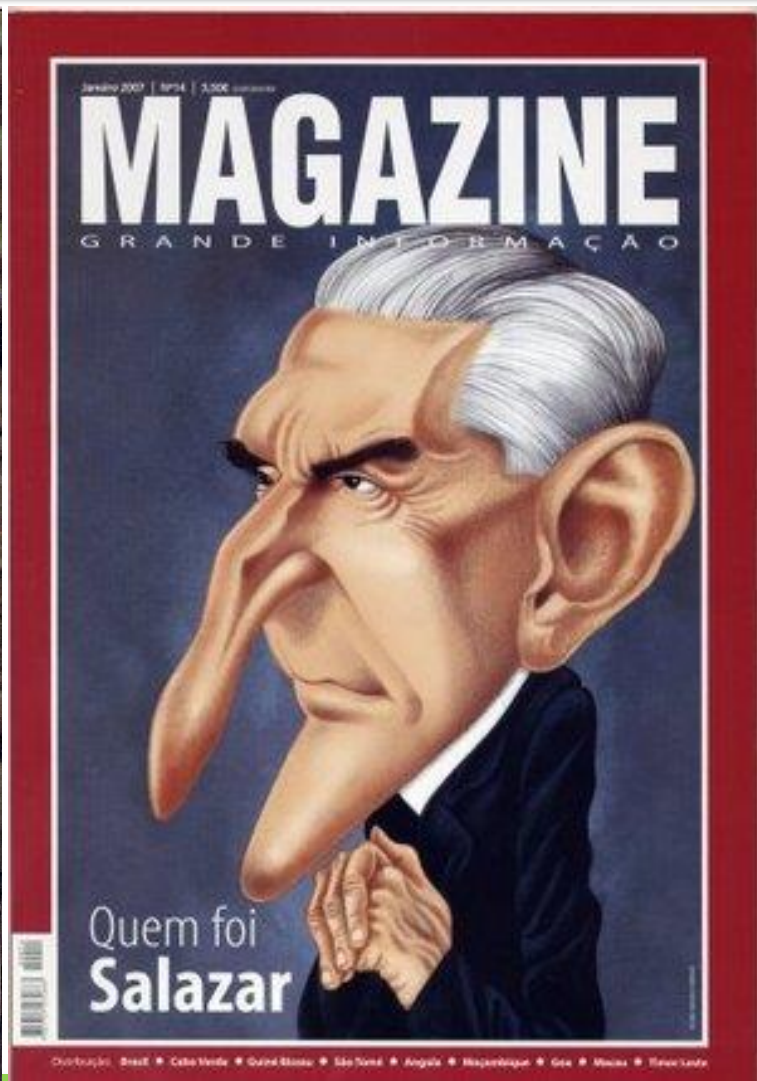


Forest spaces (forest and scrubland) were instruments of the agricultural way of life.



In the 1960s the traditional rural society foundations are weakened. The depopulation of the interior begins.

2- FIRE HISTORY IN PORTUGAL



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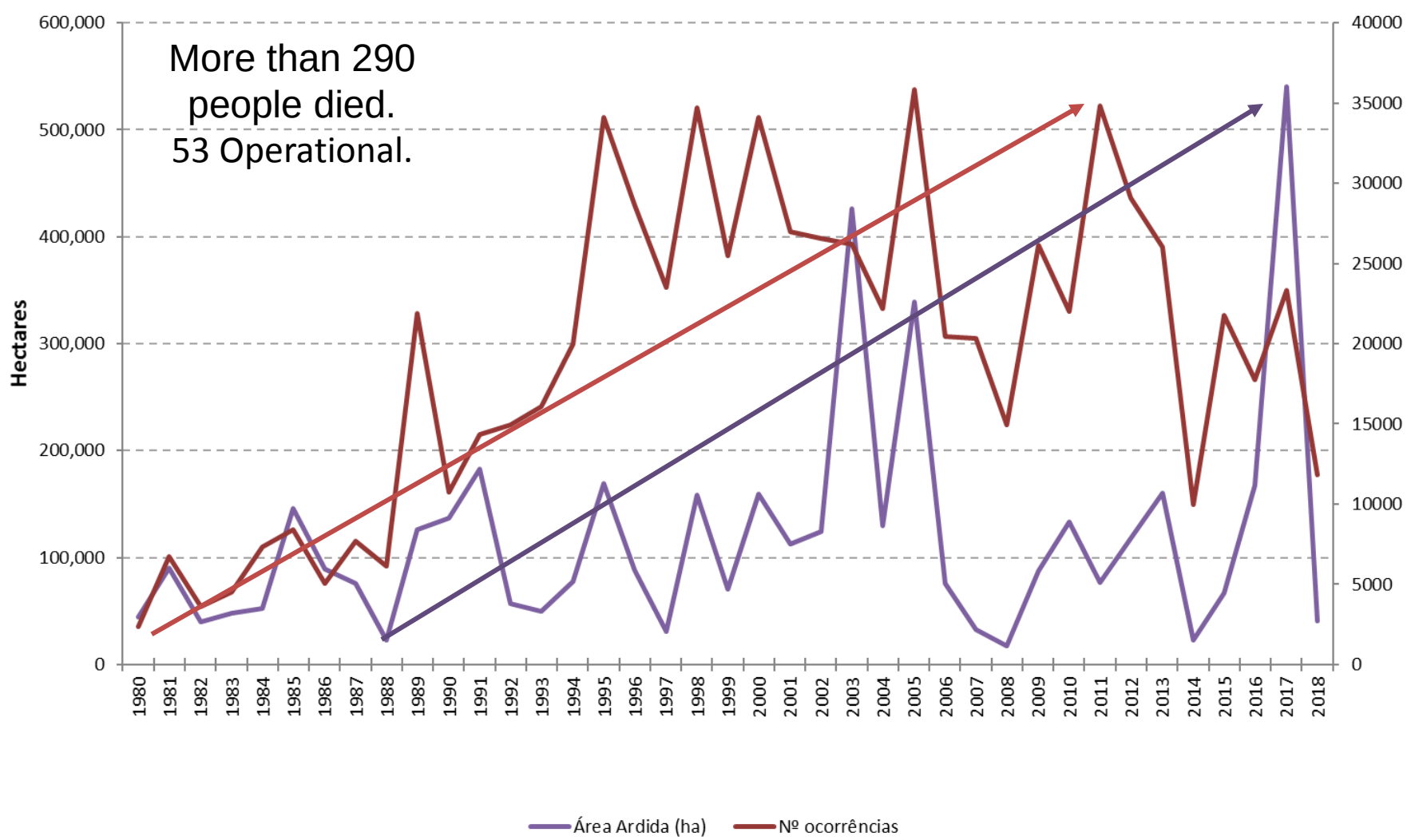
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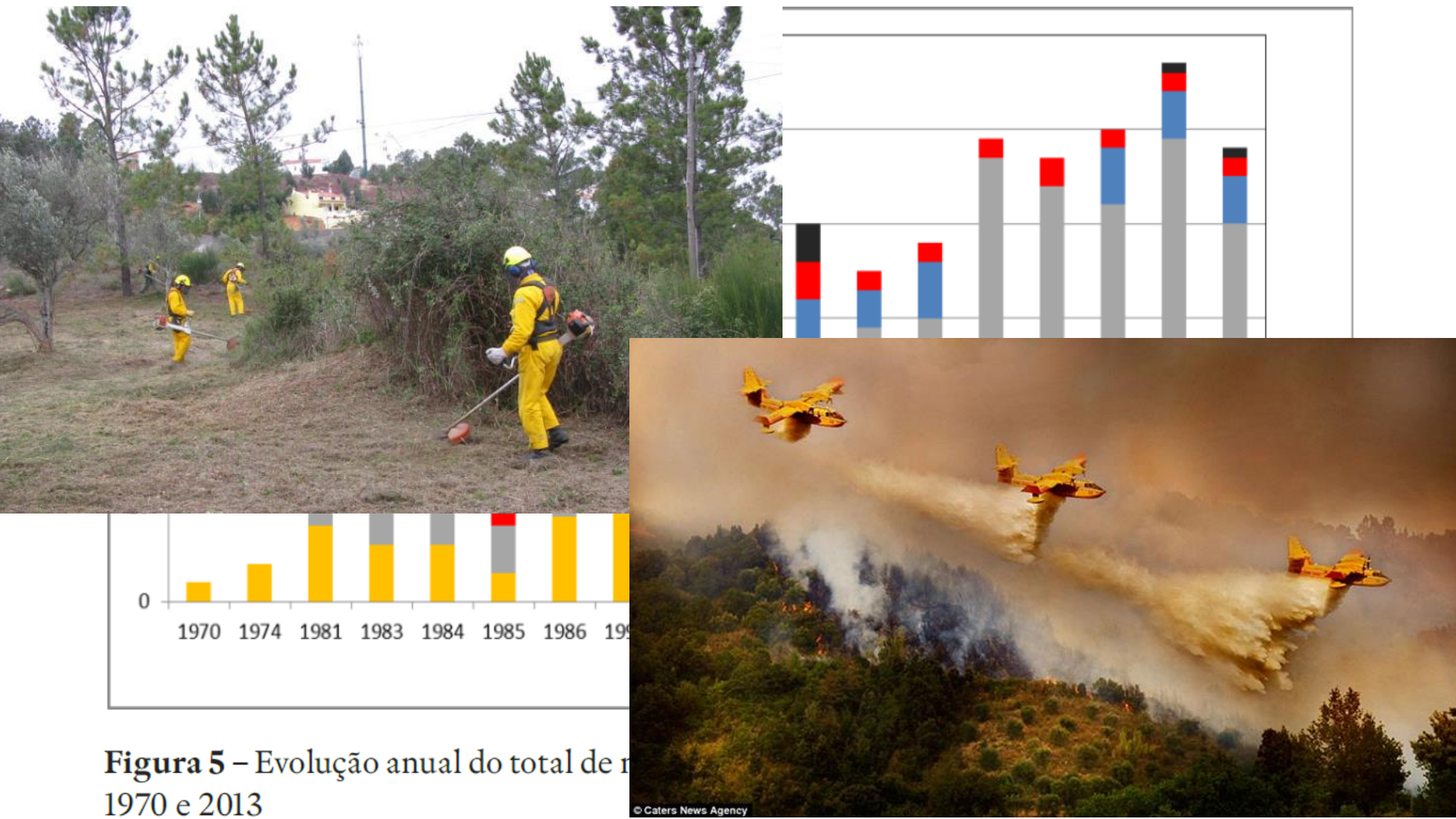
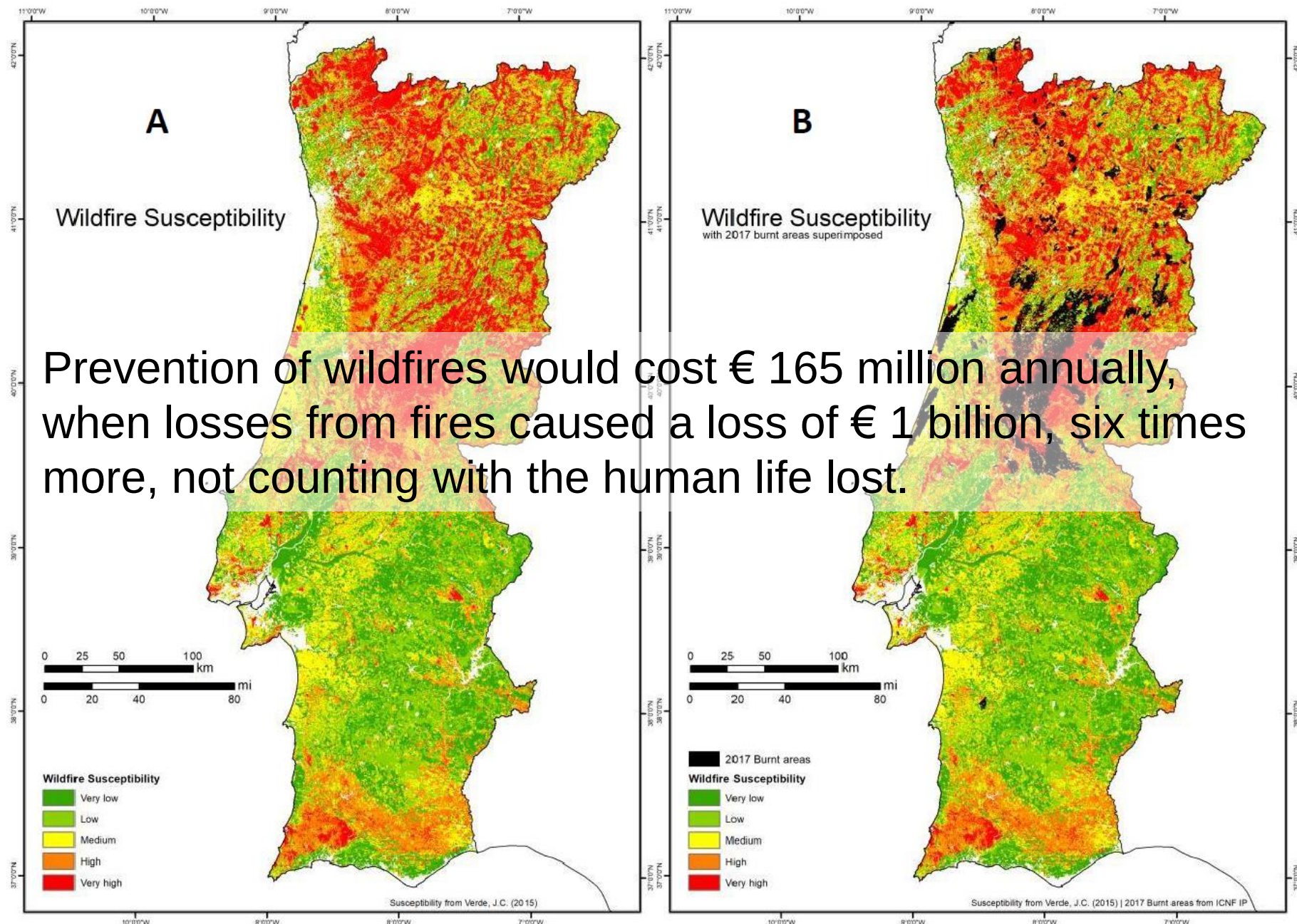


Figura 5 – Evolução anual do total de r
1970 e 2013

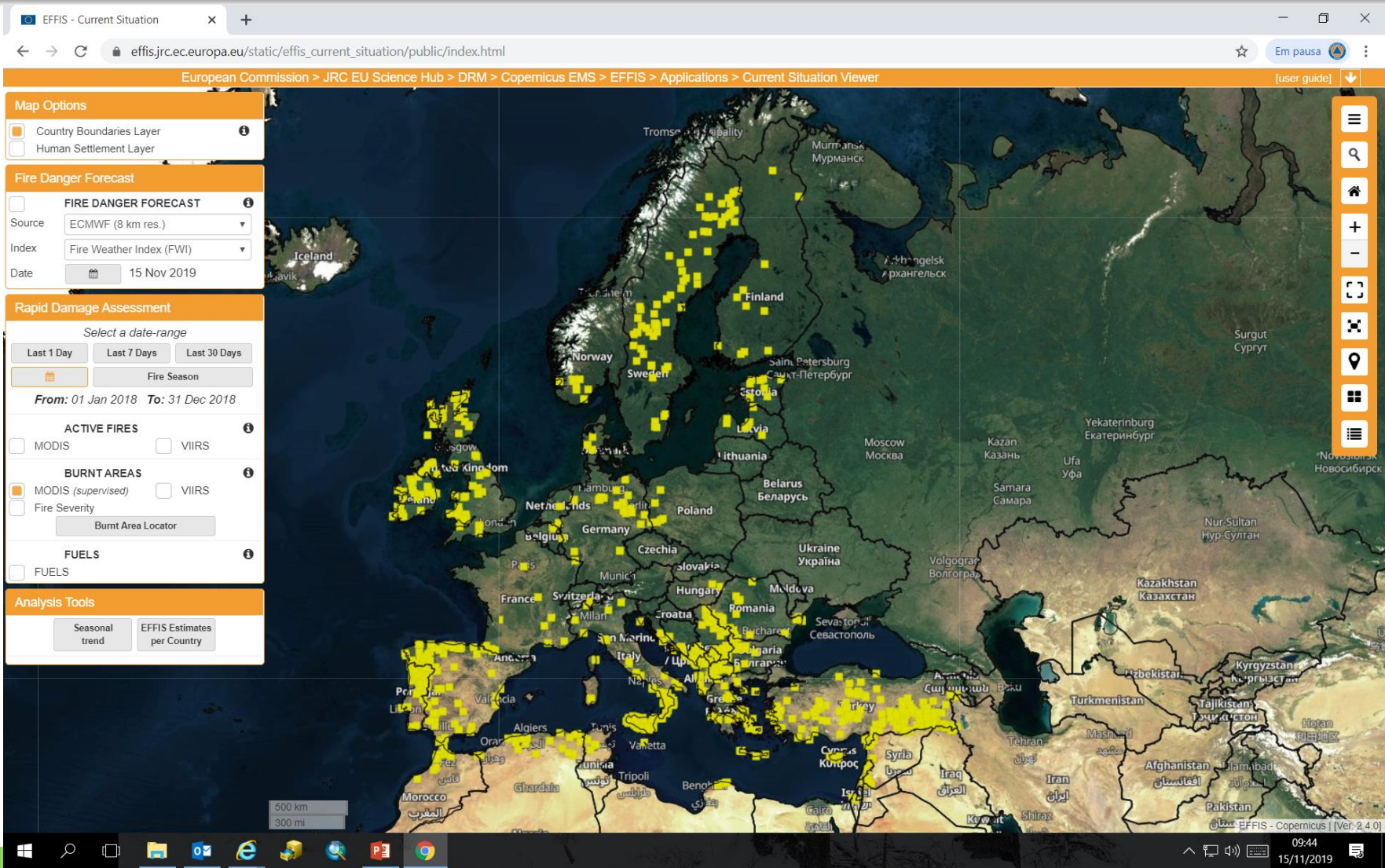


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3- MAFRA COUNTY SITUATION



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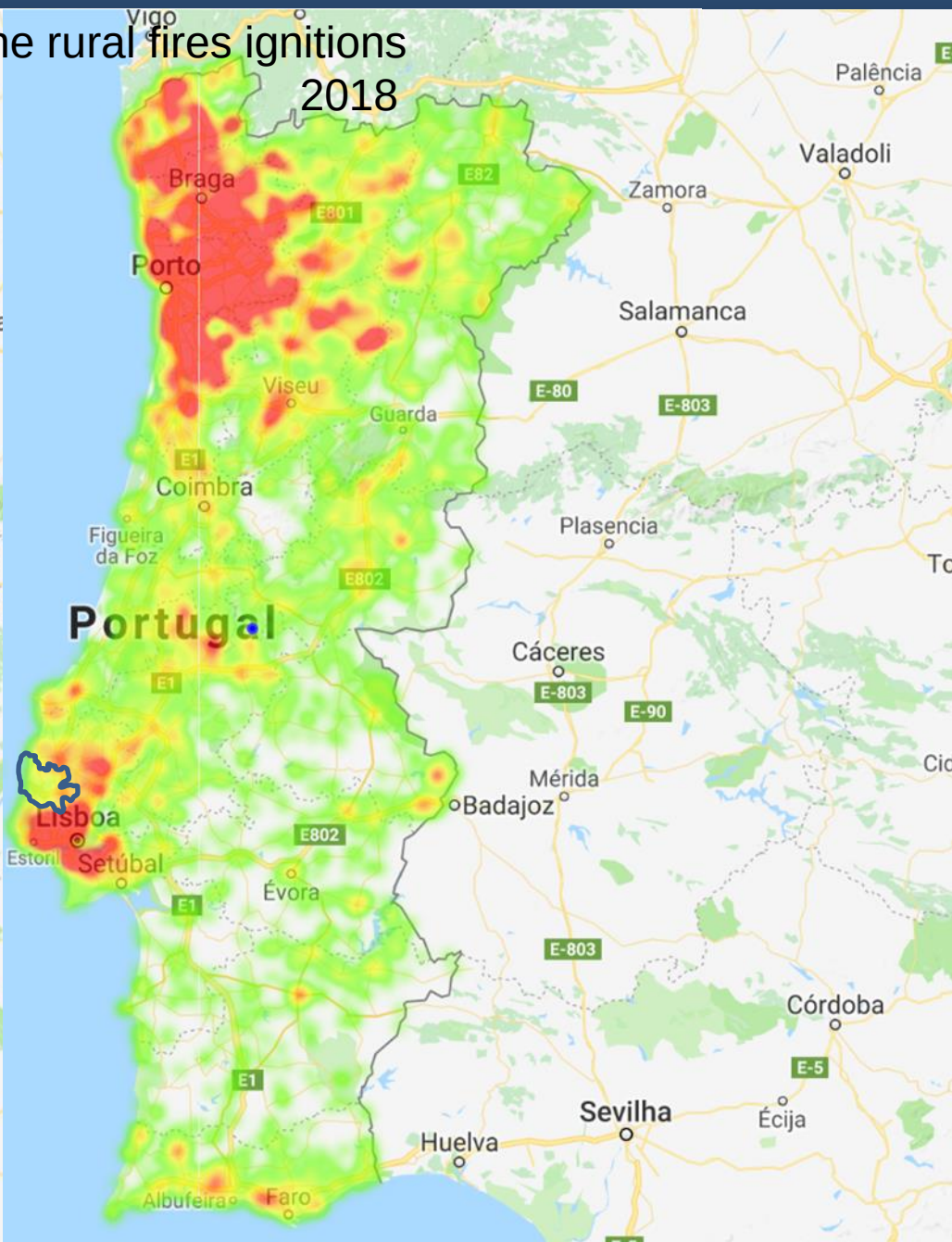
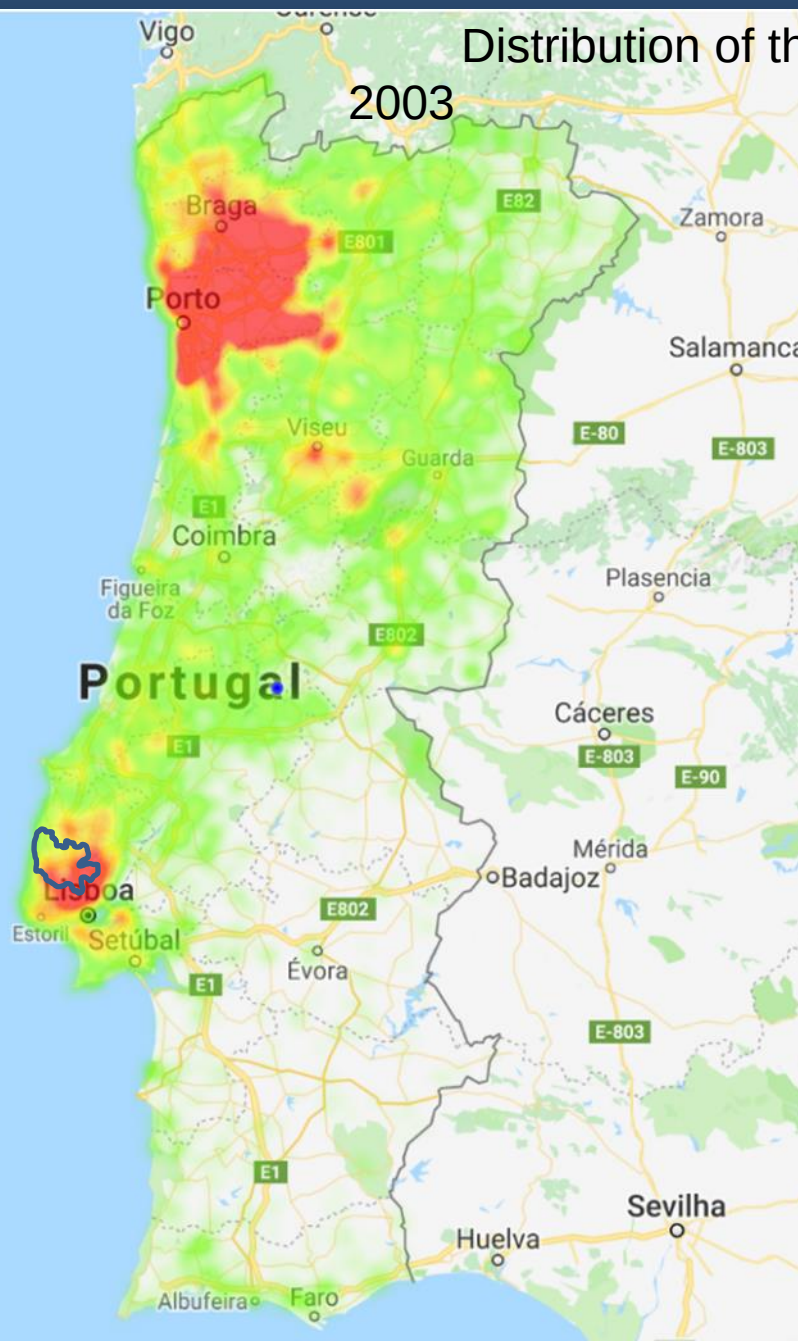
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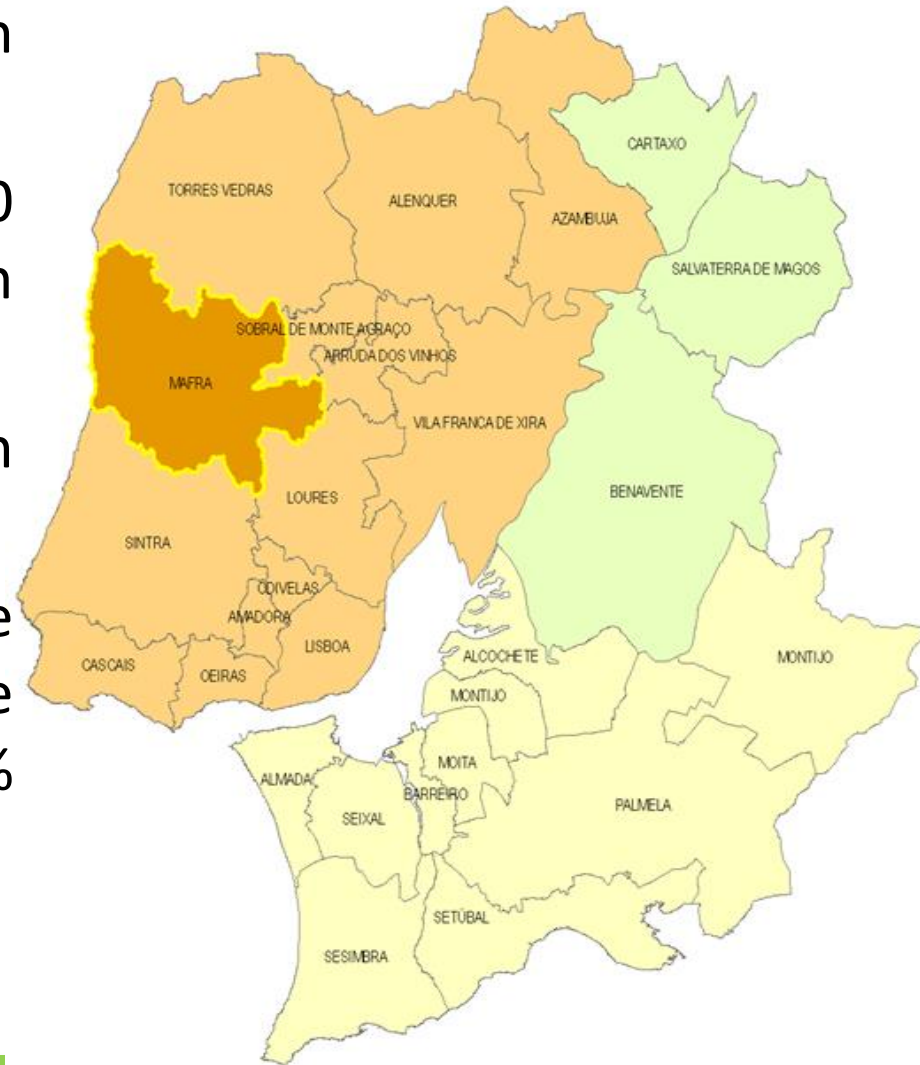
2- FIRE HISTORY IN PORTUGAL

Distribution of the rural fires ignitions



3- MAFRA COUNTY SITUATION

- The municipality of Mafra has an area of 291577 km²;
- Currently Mafra has about 90.000 inhabitants, growth rate of 45% in the last 20 years.
- The employed population work in social and economic sectors - 74%
- Between 1991 and 2011, the population linked to agriculture and forestry sectors fell from 13% to 3%.



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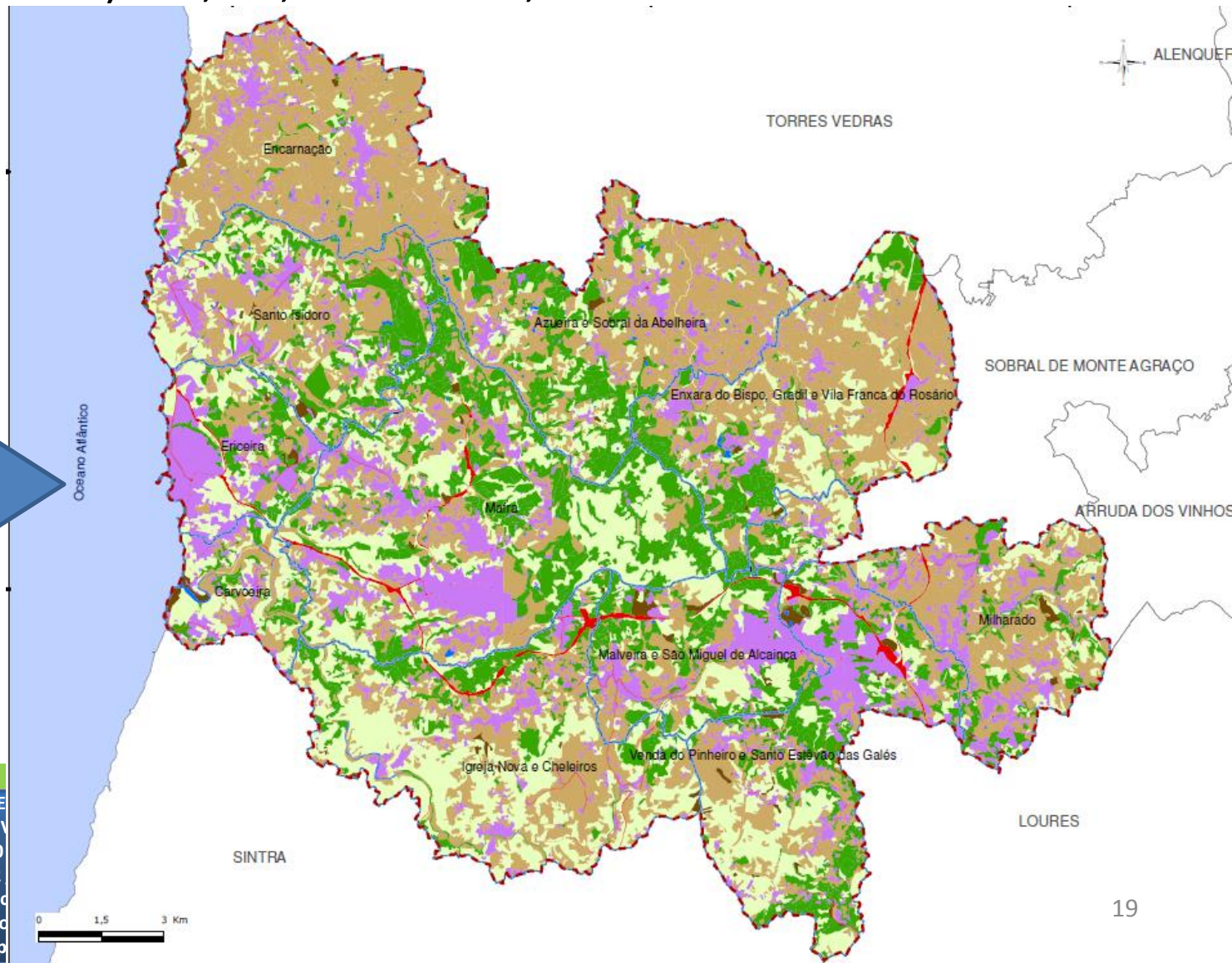
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3- MAFRA COUNTY SITUATION

Land cover chart of Mafra: Agriculture- 39,2%; uncultivated spaces (shrubs and pastures)- 23,9%, forest - 19,8% and social areas 14.0%.

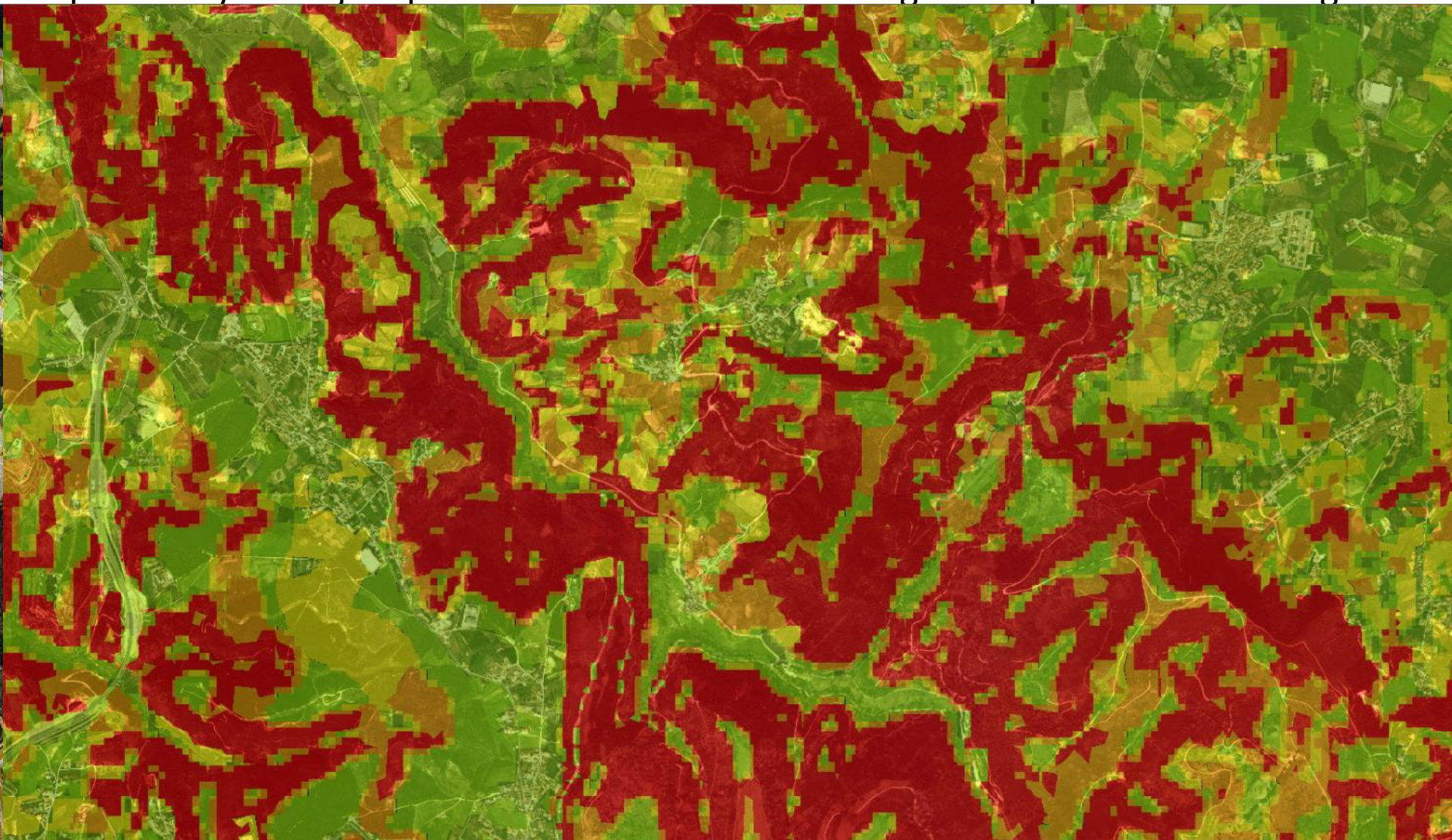
7500 ha
pastures
+ 7000ha
shrubs
+6000ha
Forest=
20.500ha
70% of the
territory
conducts fire.



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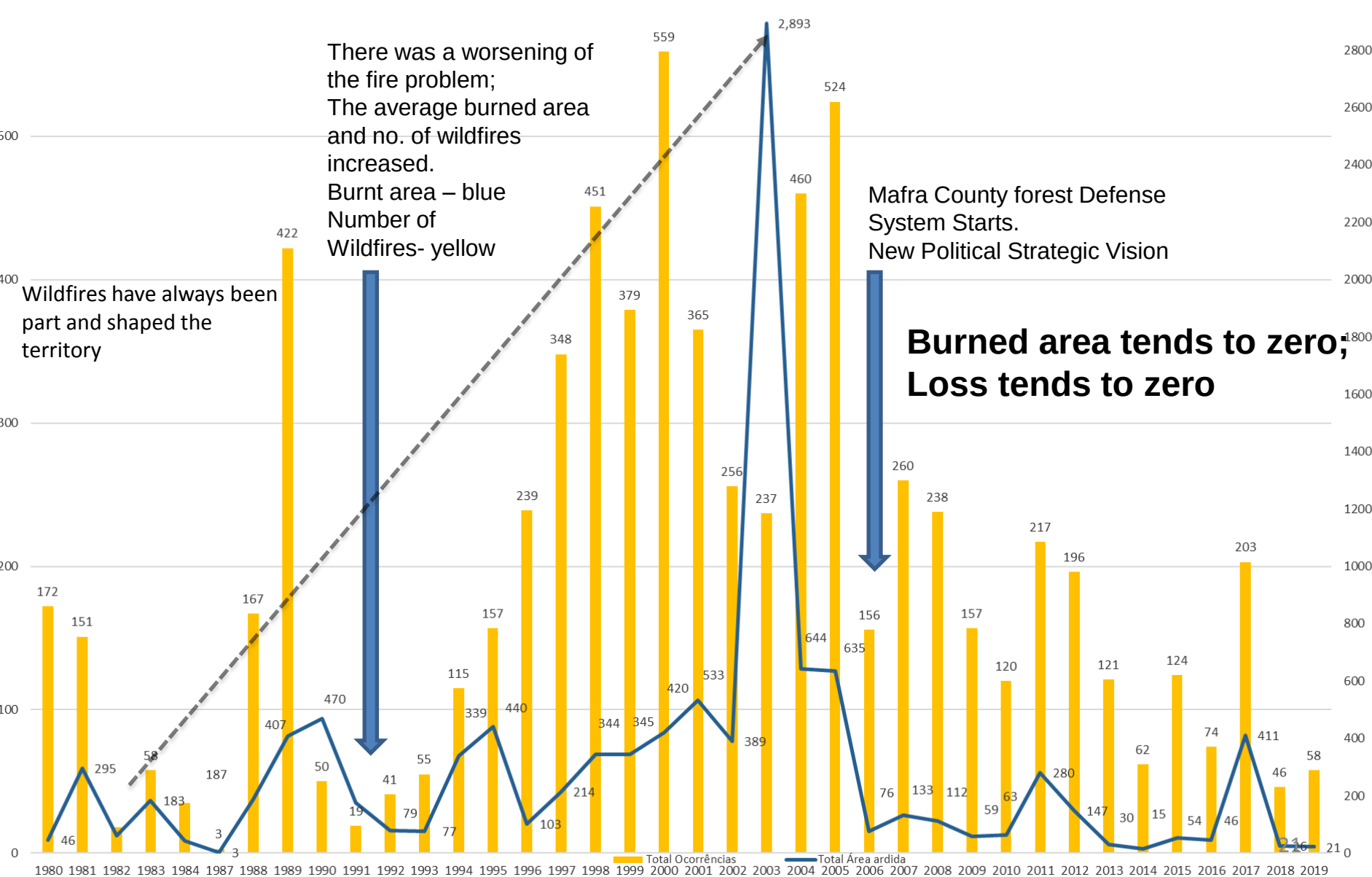
3- MAFRA COUNTY SITUATION

- Wild Urban Interface (WUI) totals 6.470ha, about 22.2% of the total territory,
- On this defined area, 2.617 ha are placed in slopes superior to 30%, where is the possibility of major speed rate of the wildfires and greater potential of damage.



3- MAFRA COUNTY SITUATION

Results 2006-2019 – Annual Distribution of burnt area and wildfires

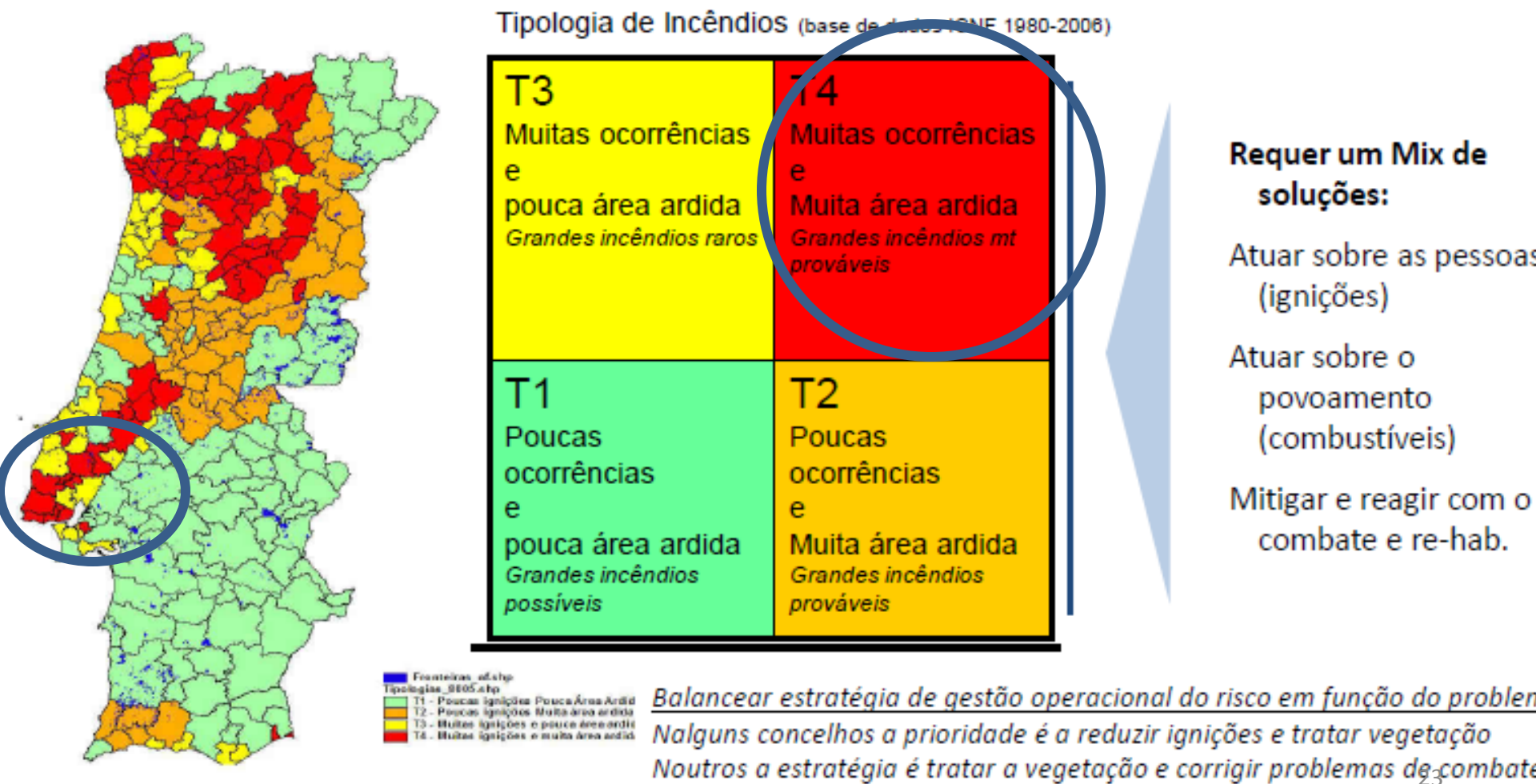


3- MAFRA COUNTY SITUATION



3- MAFRA COUNTY SITUATION

ONE RISK MANAGEMENT STRATEGY IS NOT ENOUGH.



Balacear estratégia de gestão operacional do risco em função do problema
Nalguns concelhos a prioridade é a reduzir ignições e tratar vegetação
Noutros a estratégia é tratar a vegetação e corrigir problemas de combate

MAFRA WILDFIRES PREVENTION PLAN



Forest management



Fire Use



Regulations and codes



Awareness information



Operations

Obligating forest management to Land owners (in WUI)

Increase The Multiple forest use – Tourism, Generate economic development through the economic value of wood.

Intensive management of forest fuels

Increase Forest Compartmentation

Use more efficient tools

Carrying out coercive fuel management in critical areas

Application of the decree of law 124/2006.

Strong inspection by agents

Creation of municipal regulations for urban spaces (WUI)

Involve forest owners

Involve urban owners

Local information teams (Jovens vigilantes, GNR)

Integrated communications network

Integrated training to all agencies.

scenarios analysis

Adaptive management of resources



4- SOLUTION



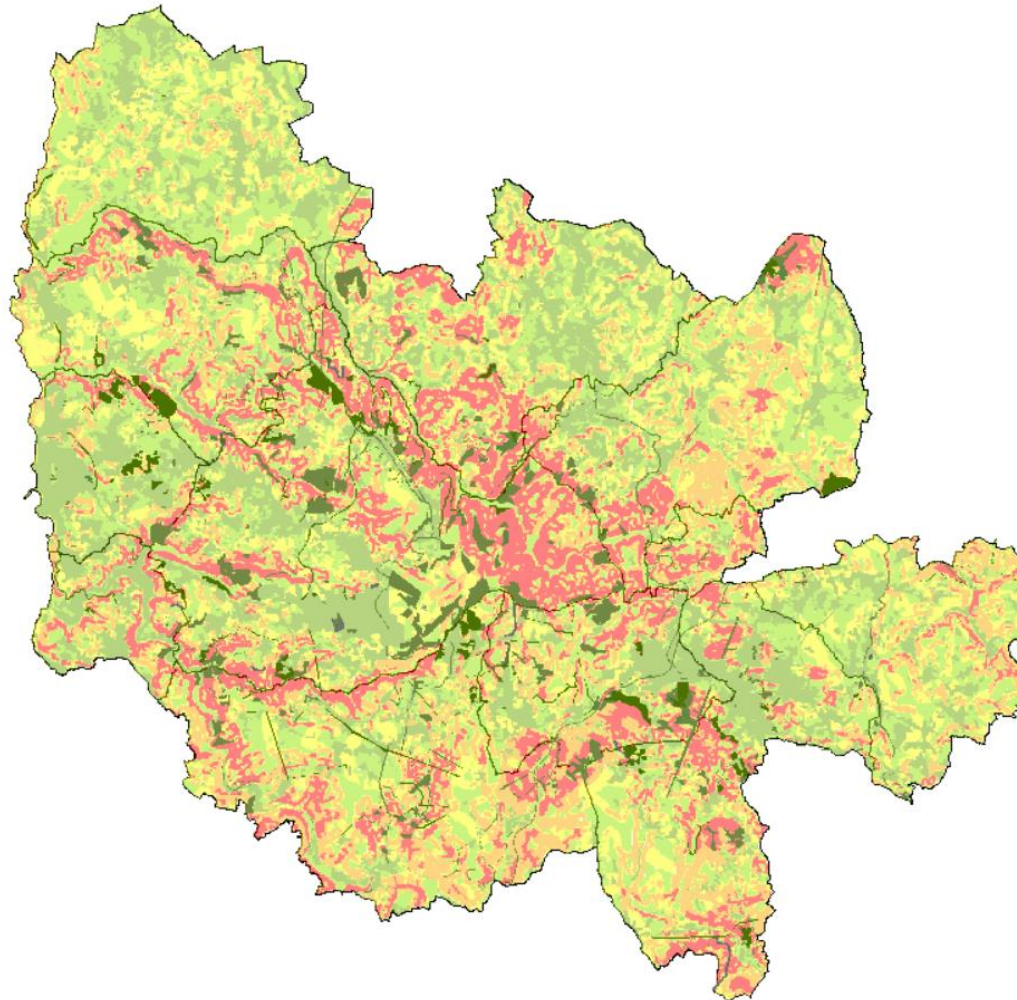
Forest management



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	Total
Forest Management (ha)	43.2	214.0	52.6	148.4	100.7	58.0	26.2	38.5	69.1	37.4	74.5	315.0	284	305.0	1766
Road Maintenance (km)	8.6	26.0	36.0	20.0	12.2	13.1	12.1	8.6	22.8	6.7	18.7	14.0	11.6	6.1	216



4- SOLUTION



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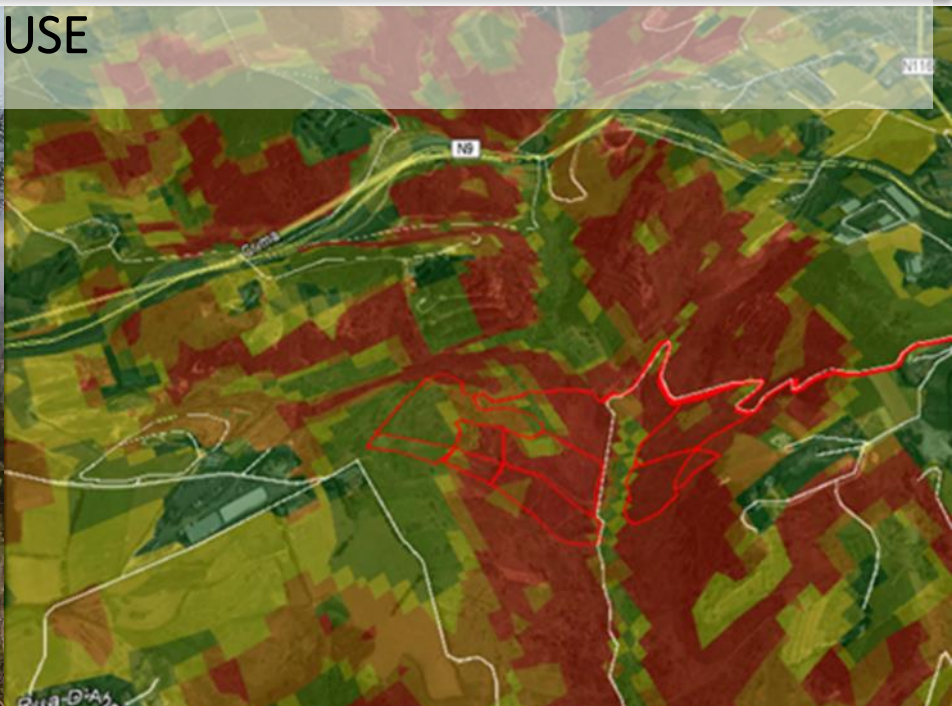
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4- SOLUTION

FIRE USE



Quadro Resumo	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total	Médias
Dias de queima	17	2	8	9	11	0	5	0	8	10	6.5	8	8	92.5	8.41
N.º de parcelas	37	3	20	17	15	0	5	0	11	11	11	13	9	152	13.82
Área total (ha)	48.02	5.25	29.11	43.31	40.07	0	5.79	0	31.3	22.1	41.66	29.88	26.2	322.69	29.34



4- SOLUTION

REGULATIONS/CODES



limpeza de terrenos processos de notificação

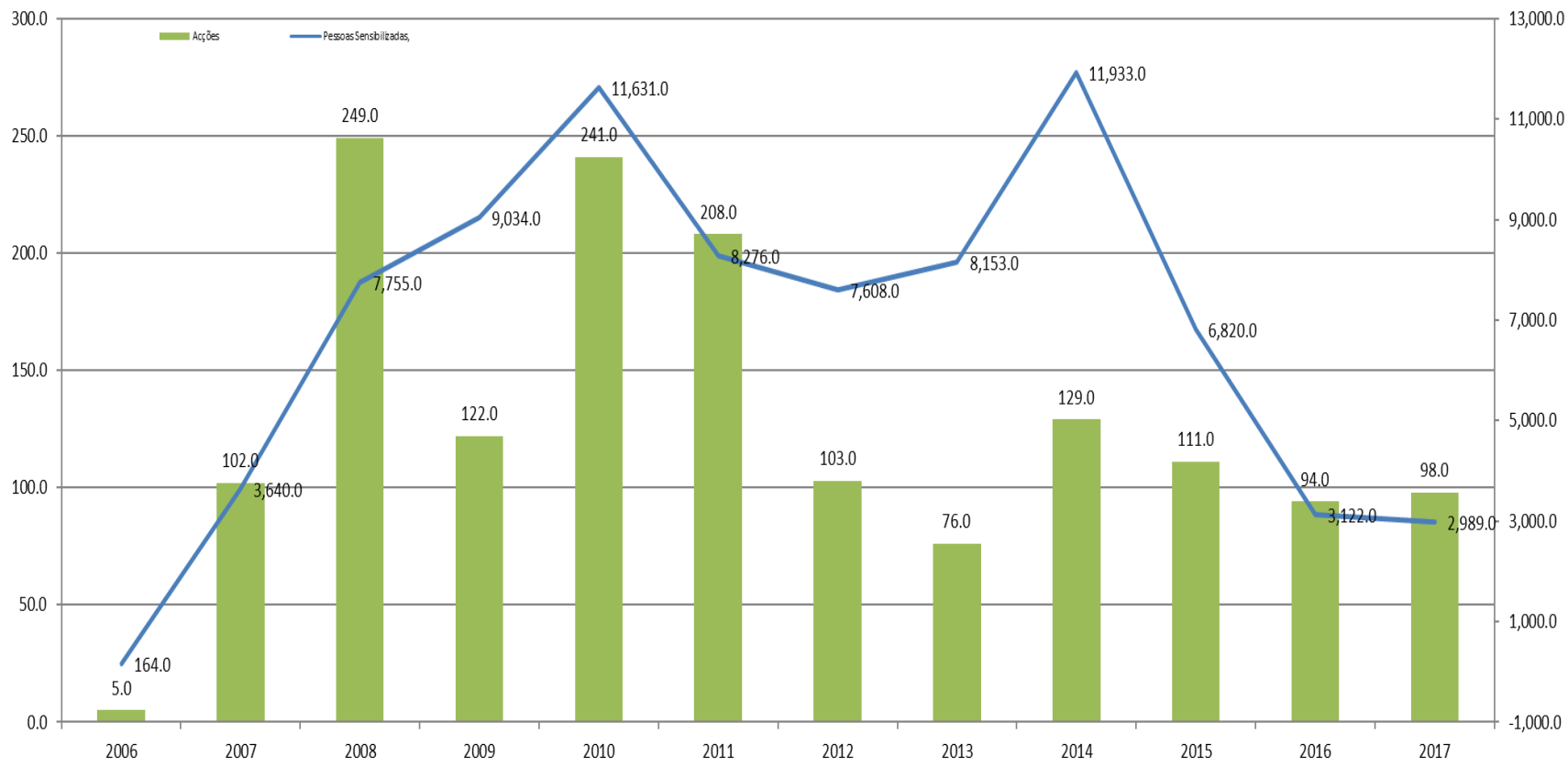
Anos	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
n. de processos	44	56	53	49	90	77	43	69	87	93	105	185	951
Processos com Perigo	8	25	33	22	61	24	7	25	27	23	27		282
prédios notificados	8	31	38	43	202	122	16	135	133	70	86		884
Prédios Limpos	5	30	27	38	120	67	16	135	133	70	86		727

657ha Intervencionados 2012/2016

AWARENESS / INFORMATION



Acções de Sensibilização



4- SOLUTION

Vigilância e Detecção;



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4- SOLUTION

OPERATIONS

Anexo 4 – Diagrama de Exploração

Concelho	Ano	N.º de ocorrências	Área ardida total (ha)	N.º de ocorrências <10ha	Eficácia (%)	Área ardida ocorr.<10 ha	Potencial de perda (ha)	FWI médio
Mafra	2001	365	533.1	358	98	185.11	49.6	
Mafra	2002	257	389.2	255	99	155.22	116.4	27
Mafra	2003	237	2893.1	235	99	118.12	1380.6	29.1
Mafra	2004	666	643.5	660	99	178.4	77.4	21.8
Mafra	2005	704	635	695	98	210.46	47.1	27.4
Mafra	2006	279	75.9	278	99	52.27	23.4	28.1
Mafra	2007	397	132.7	396	99	121.35	11.3	20.9
Mafra	2008	329	112.3	328	99	83.7	28.3	21.5
Mafra	2009	206	58.8	205	99	46.47	12.2	22.5
Mafra	2010	217	63	216	99	49.71	13.2	23.2
Mafra	2011	299	280	294	98	136.1	28.7	28.9
Mafra	2012	296	147.4	294	99	88.26	29.4	25.5
Mafra	2013	188	30.4	188	100	30.38	0	29.5
Mafra	2014	102	14.6	102	100	14.56	0	19.9
Mafra	2015	175	53.7	174	99	42.51	11	25.6
Mafra	2016	144	43.1	144	100	43.11	0	24.8
Mafra	2017	203	414	198	97	41.89	74.3	28.4
Mafra	2018	132	27.7	131	99	17.41	10.2	22.3
Mafra	2019	169	33.8	169	100	33.77	0	26



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PROBLEM →
← ANALYZE
SOLUTION!



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5- RESULTS

1994-2005	number of wildfires			Total burned area (ha)		
	Small Fires (<1ha)	Wildfires	Total	forest stands	Bush	Total
Average	259	82	341	347.9	260.3	608.2
2006-2017	number of wildfires			Total burned area (ha)		
	Small Fires (<1ha)	Wildfires	Total	forest stands	Bush	Total
Average	131	20	151	21.5	99.2	120.7
	Small Fires (<1ha)	Wildfires	Total	forest stands	Bush	Total
decrease %	49.4	76.2	55.8	93.8	61.9	80.2

Strategic objectives in 2006:

Comparison between homologous periods of 12 years. 1994/2005 and 2006/2017

Burned area tends to zero; Loss tends to zero.



The problem is solved?

NO, it is only controlled .. because the less burn in wildfires; more forest fuel loads we have to burn and we are exposed to a mega fire.

Thus, what do not burn in wildfires must be treated and destroyed, specially with the prescribed fire;



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The wildfire defence system must escape from the wildfire fighting trap (deception).

We must battle the causes of wildfires, we have to work in:

- Social dynamics - reduce ignitions, promote good behaviors, involve people;
- Structural prevention; fuel management, fire use; fuel breaks in WUI, road maintenance;
- Early detection and strong 1st response;



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6- QUESTIONS