




Forest Policy & Management and Climate Change Adaptation

Conceição Ferreira
PORTUGAL

Integrate Network Meeting 27-29th Oct 2021



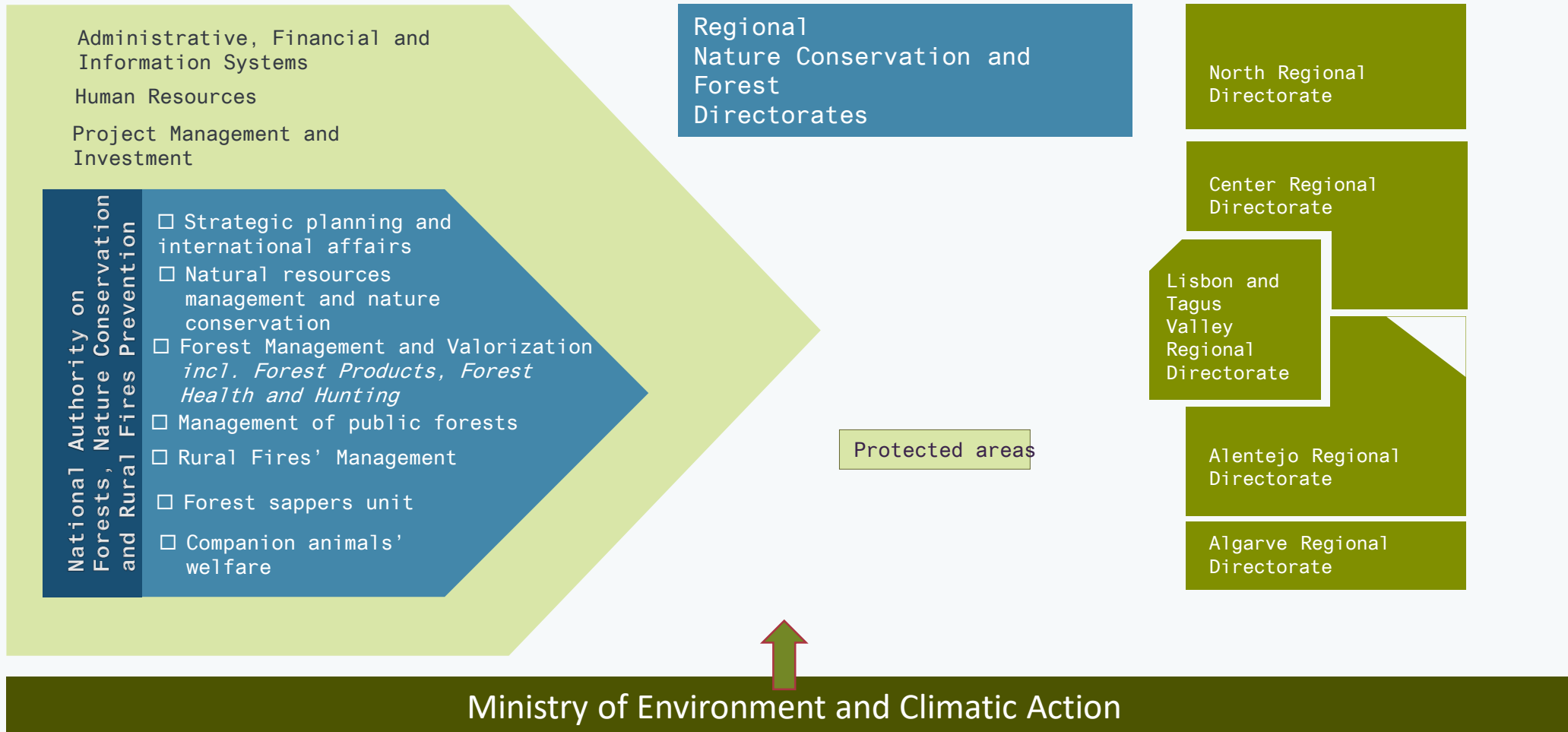


How we are organised

1

ICNF

Institute for Nature Conservation and Forests

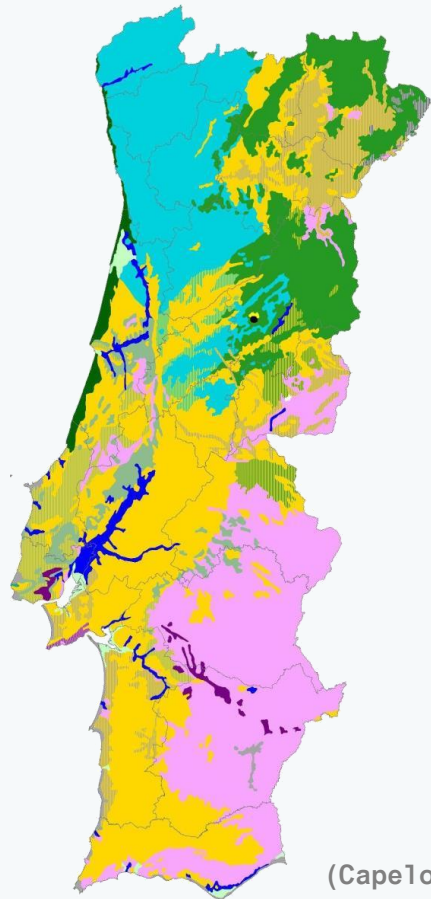


Our Forests and
Biodiversity

2

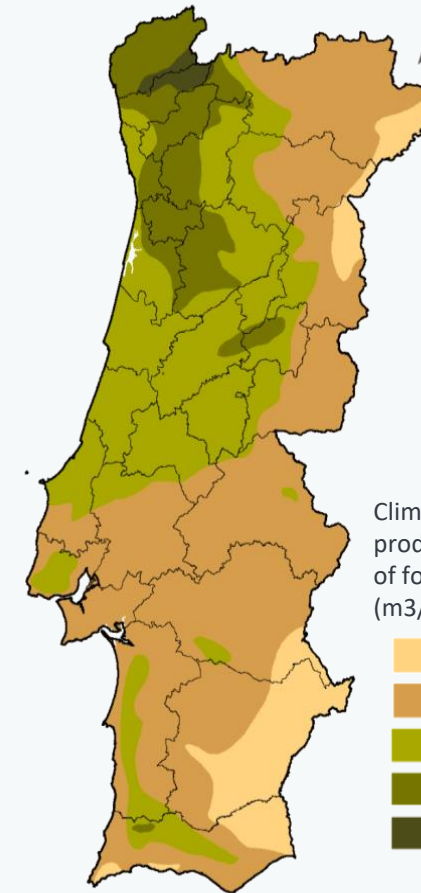
FORESTS & BIODIVERSITY IN PORTUGAL

FOREST TYPES



- Pedunculate oak (*Quercus robur*)
- Pyrenean oak (*Quercus pyrenaica*)
- Cork oak (*Quercus suber*) [NATIONAL TREE]
- Holm oak (*Quercus rotundifolia*)
- Portuguese oak (*Quercus faginea*)
- Maritime pine (*Pinus pinaster*) and other species
- Wild olive tree (*Olea europaea* ssp. *sylvestris*)
- Riparian trees (*Alnus*, *Salix*, *Fraxinus*, etc .)
- Salt marsh species
- Cork oak and junipers (*Juniperus* sp .)
- English oak and cork oak
- Portuguese oak and cork oak
- Pyrenean oak and cork oak

(Capelo *et al.* [2007], modified)

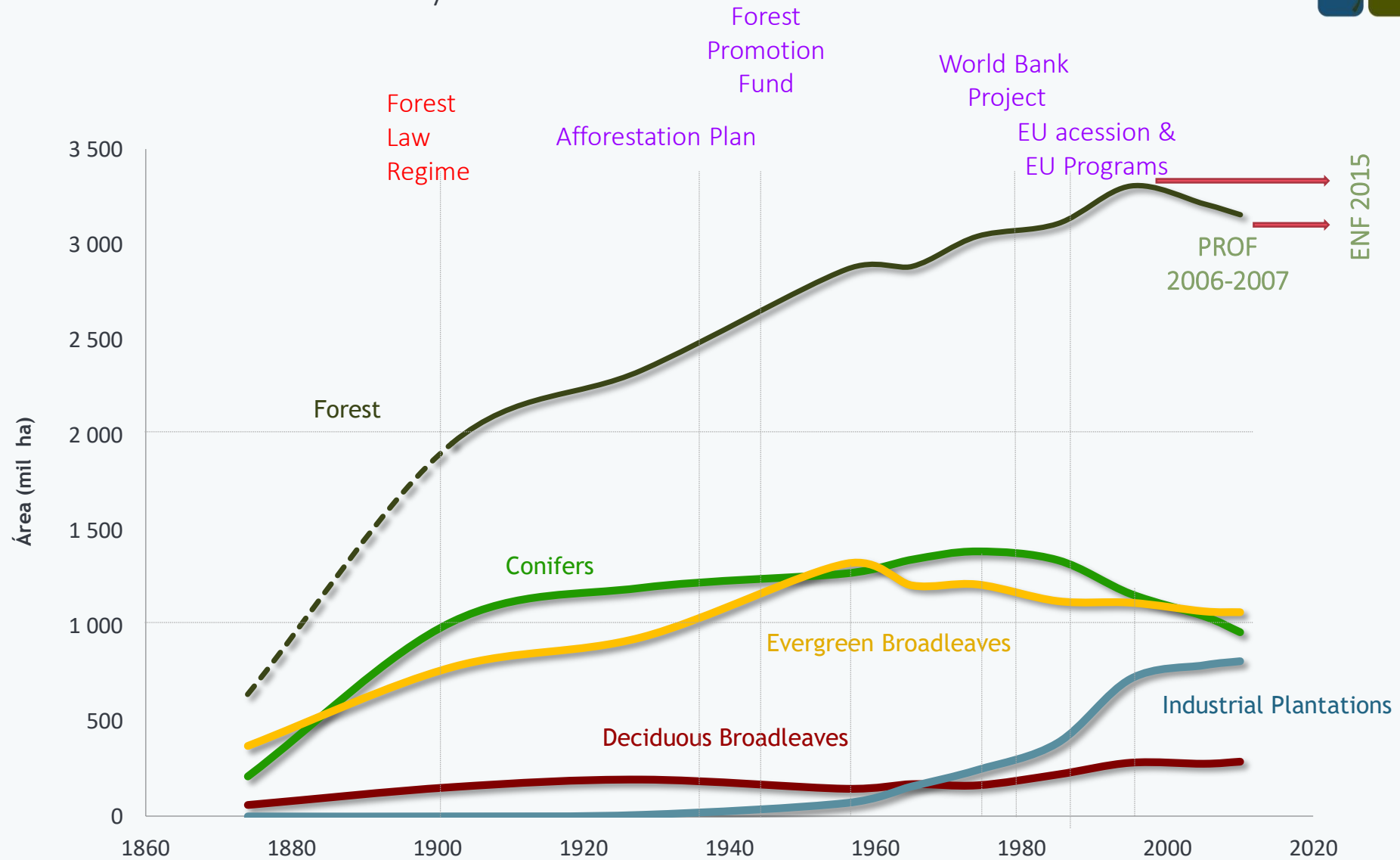


Climatic potential
production
of forest areas
(m³/ha.year)

- 3.0-4.5
- 4.5-6.0
- 6.0-7.5
- 7.5-9.0
- > 9.0

**Wood
Production**

- Eucalyptus
up to 40 m³/ha.year
- Maritime pine
up to 15 m³/ha.year



PROTECTED AREAS

National System of Designated Areas (SNAC)

A.
National
Network of
Protected Areas

B.
Natura 2000
Network

1.820.978 ha
21% of the
territory

C.
Other areas
designated
under
international
commitments
(eg. Ramsar,
Biosphere
Reserves, ...)

REN
National
Ecological
Reserve

RAN
National
Agricultural
Reserve

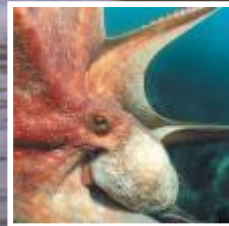
DPH
Public
Water
Domain

PROTECTED AREAS

- National Park
- Natural Park
- Natural Reserve
- Protected Landscape
- Natural monuments



Land area:
771.131 ha

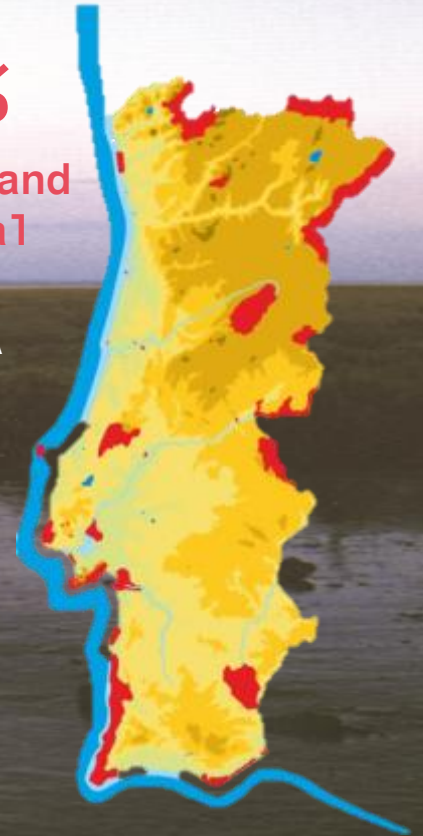


Marine area:
53.638 ha

~8%

Of mainland
Portugal

46 PA



MAIN ECONOMIC FIGURES

Wood and other forest products' industries

- Main subsectors: pulp and paper products, cork products, sawn wood, resin products, wood-based panels, construction, furniture, forest related operators
- Over 5000 companies, around 60 000 workers
- Exports around € 5139 million ($\approx 10\%$ of national exports)



A close-up photograph of a stack of cut logs. The logs are arranged in a pile, showing various cross-sections of wood with distinct growth rings. The colors range from light tan to dark brown. A semi-transparent yellow rectangular overlay covers the top-left portion of the image.

Forest Policy

3

POLICY INSTRUMENTS

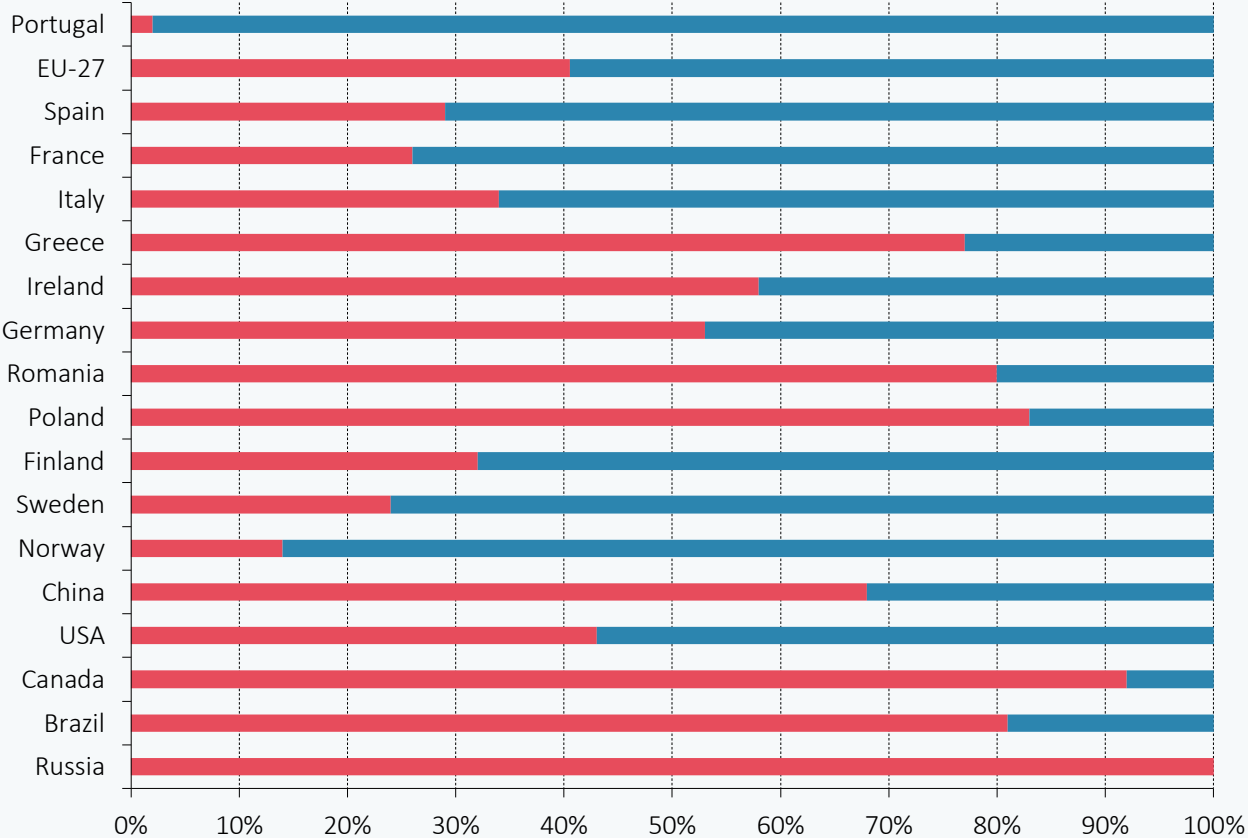
Apparent Paradox

Despite the many and severe constraints, the forest sector, as a whole, has been performing well (so far...)

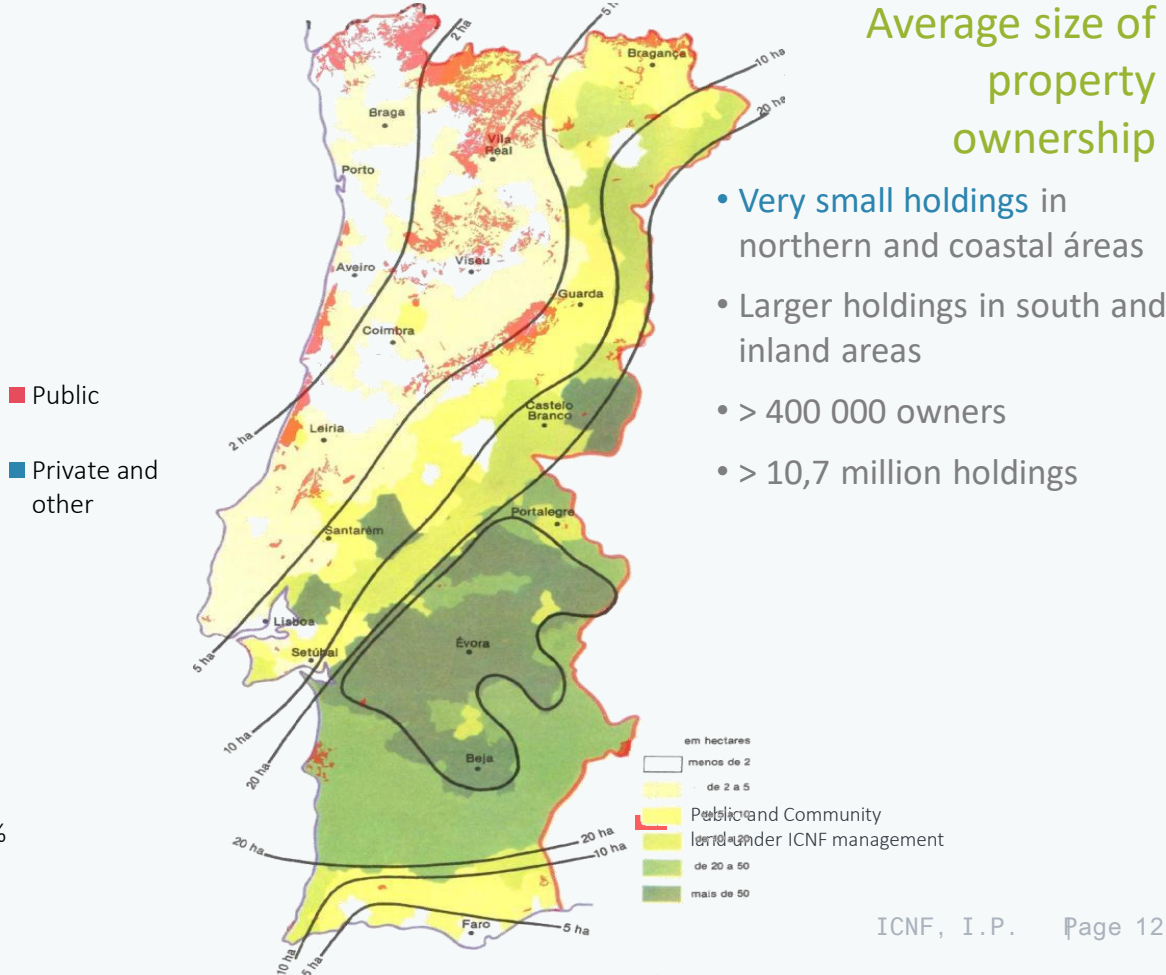
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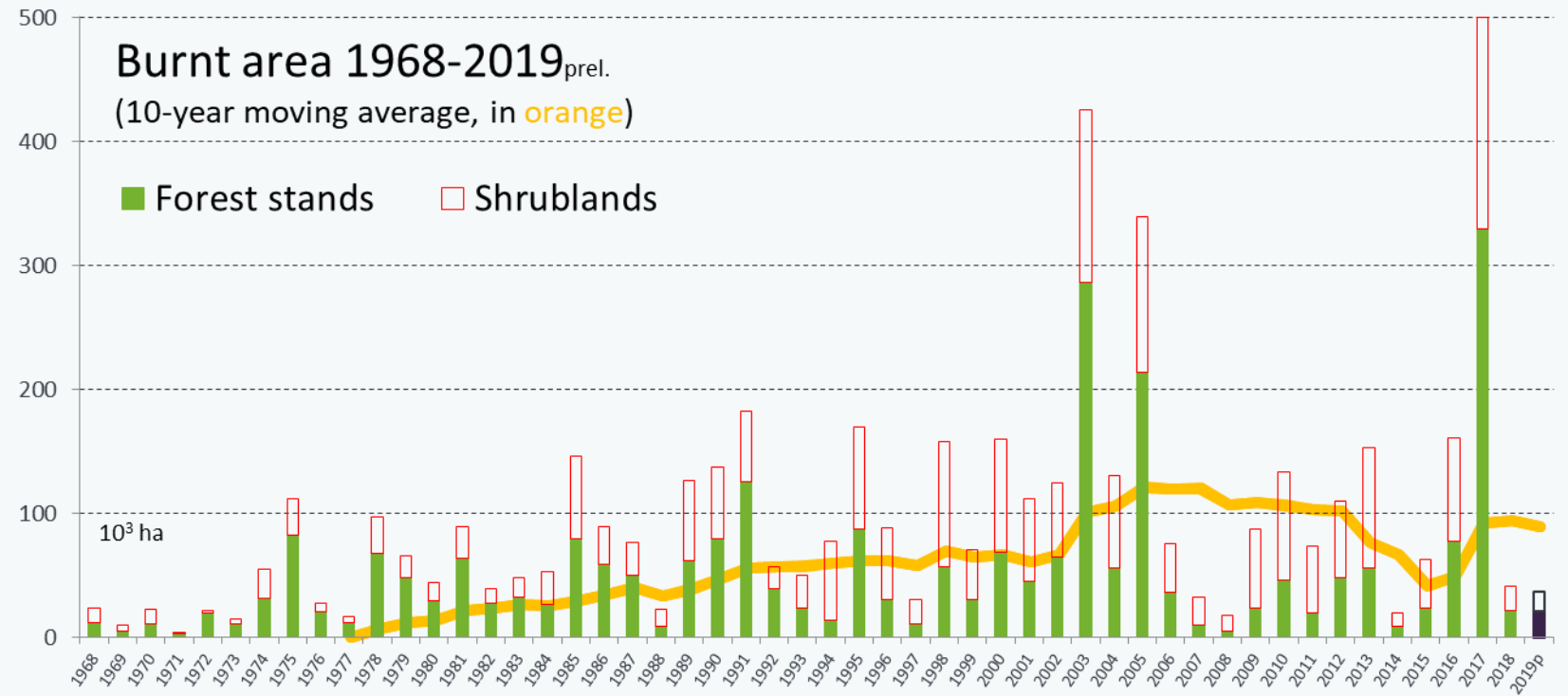
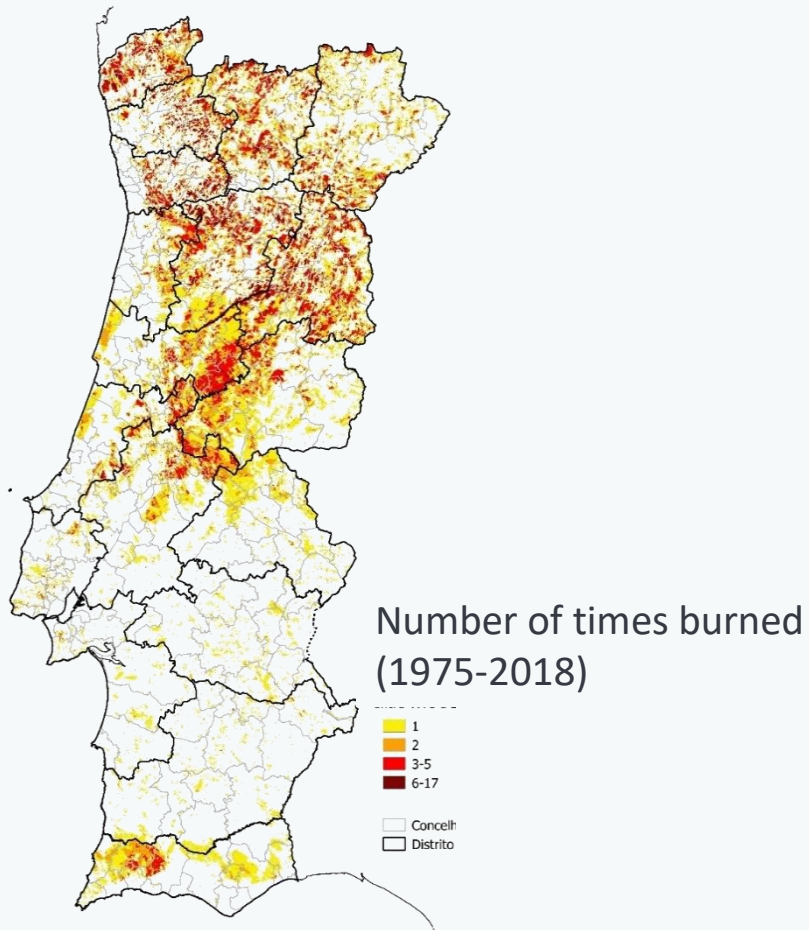
CONSTRAINTS – OWNERSHIP STRUCTURE

private forest areas (> 90%)

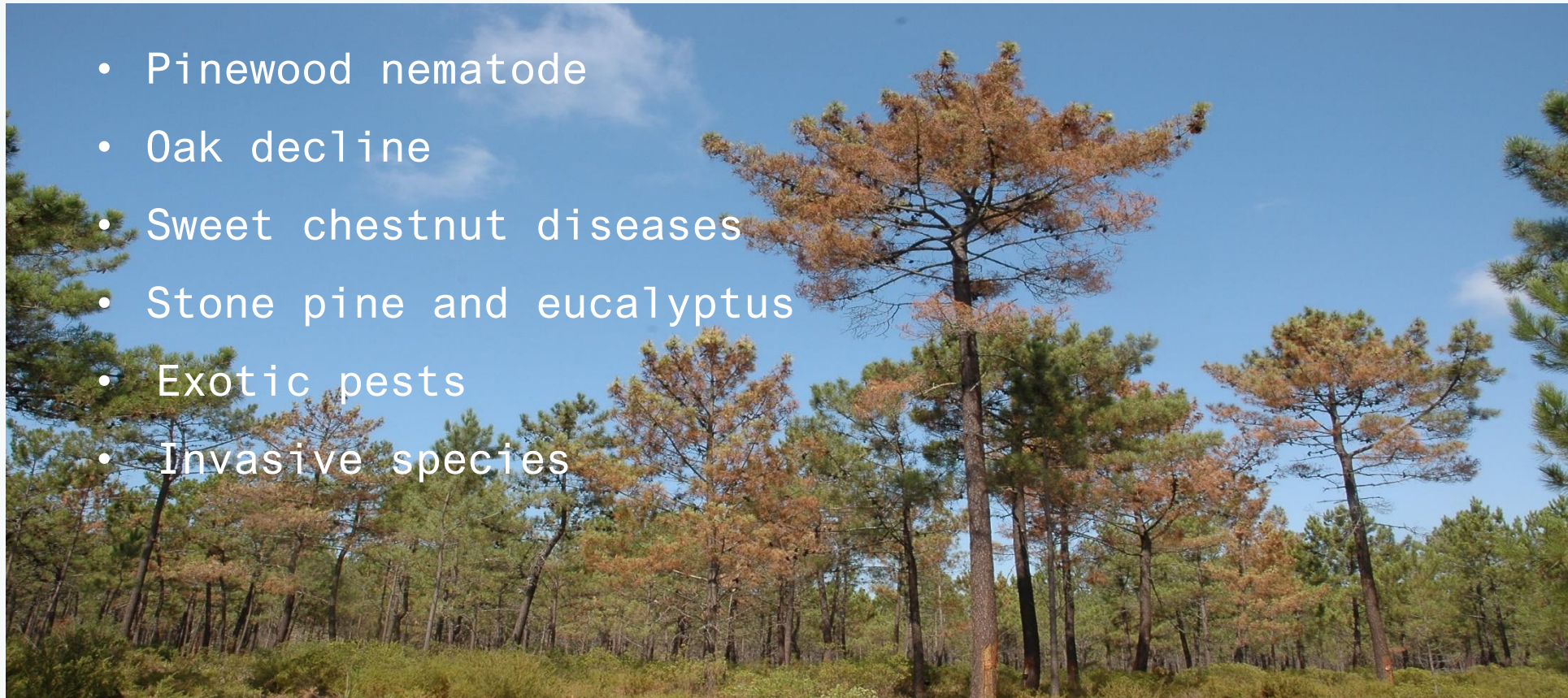


Source: FAO FRA 2010





- Pinewood nematode
- Oak decline
- Sweet chestnut diseases
- Stone pine and eucalyptus
- Exotic pests
- Invasive species



MULTIFUNCTIONALITY

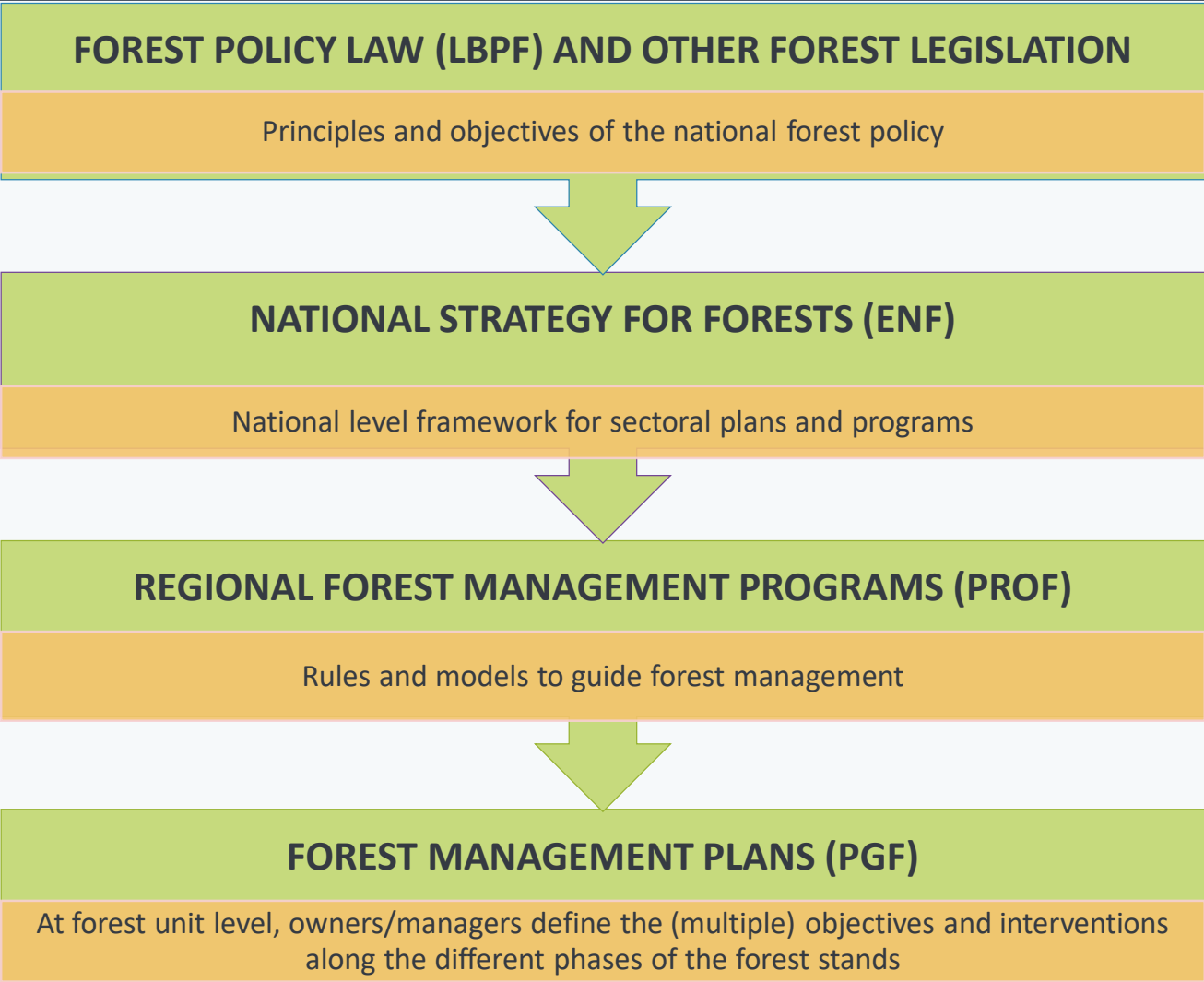


INTEGRATION of Functions

INSTRUMENTS AND MEASURES



- Legislation
- Support to specific activities
- Fiscal incentives
- Information/data
- R&D



25 years

Updated 2015

Approved 2006-2007, Reviewed 2019

PROF is the normative framework

NATIONAL STRATEGY FOR FORESTS

- Strategic Objectives
 - Decrease Impact of abiotic and biotic factors
 - Maximize land use potential
 - Enhance Forest management and stands' productivity
 - Enhance products' value and trade share
 - Improvement of the sector's efficiency and competitiveness
 - Simplify and mainstream policy instruments

FOREST POLICY AND CLIMATE CHANGE

Mitigation and Adaptation considered in Forest Policy since 1996

Forest Policies and Measures not specifically drawn for climate change mitigation or adaptation but (almost) all contribute to this aim

Forest Policy Act:
(1996)

Guiding Principle

(...) Forest operations should take into account the need of other natural resources (...) and **aim at their contribution to CO2 storage** and biodiversity (...)

Plan for the Sustainable Development of Portuguese Forests
(1999)

Strategic Objective - To increase carbon storage in forests

Operational Objectives:

- To increase carbon in forest soils
- To increase forest area
- To promote the use of wood and wood products with long life cycles
- To promote the reuse and recycling of wood
- To study the contribution of forests to carbon balance

National Strategy for Forests
(2006&2015 update)

Climate Change is a major perceived risk for the forest sector
Objective

- A. Minimize risks
- B. 7. Increase the contribution of forests to mitigation

FOREST POLICY AND CLIMATE CHANGE

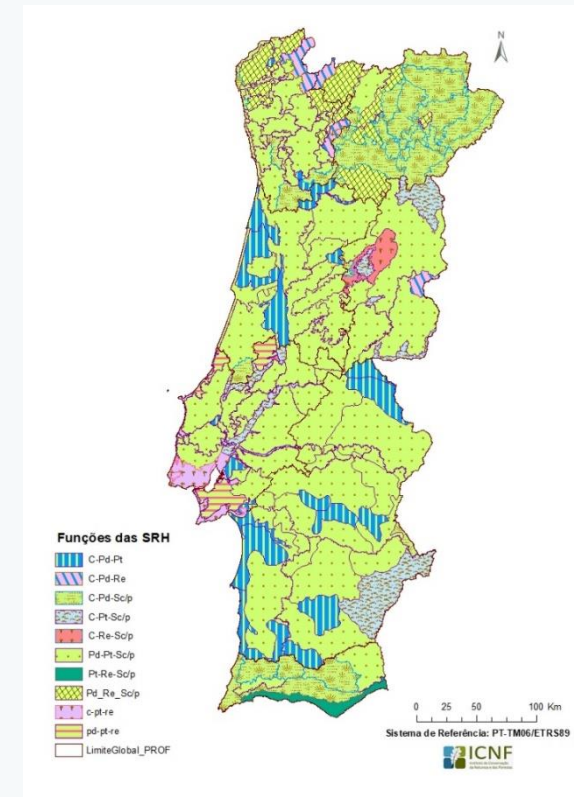
Regional Forest Programs

Assessment of regional forest potential

Definition of main functions and norms
(to be applied at unit level)

Climate scenarios RCP 8.5 e RCP 4.5: 2030, 2050

Species and models



A photograph of a field of purple flowers, likely lavender, with several large, dark-trunked trees in the background. The scene is bright and sunny. A semi-transparent purple rectangle is overlaid on the top left corner.

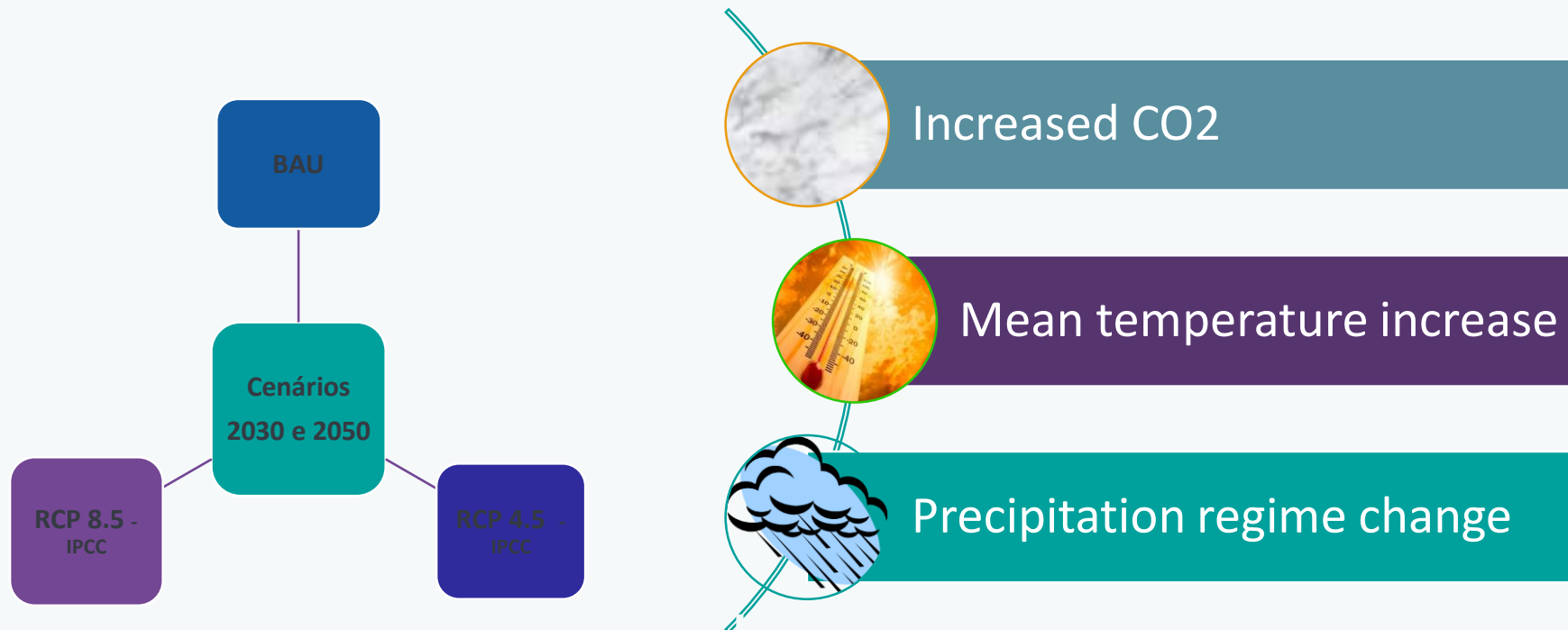
THE WAY FORWARD

4

ADAPTATION MEASURES

Predicting

Climate change scenarios



IPCC: Intergovernmental Panel on Climate Change (Painel Intergovernamental para as Alterações Climáticas)
RCP – Representative Concentration Pathways

National Adaptation Strategy

WORKING GROUP ON FORESTS – public authorities, academia, stakeholders, around 30 participants

- Prevent increased threats by biotic and abiotic risks
- Better suitability of forest species and functions to new climatic context
- More efficient use of limiting resources (water)



<http://www.icnf.pt/portal/florestas/ppf/resource/ficheiros/alt-clima/rel-florest-enaac>

ADAPTATION OF FORESTS TO CLIMATE CHANGE

Impacts and adaptation potential - main conclusions -

Higher fire risk

More favourable
conditions for harmful
biotic agents

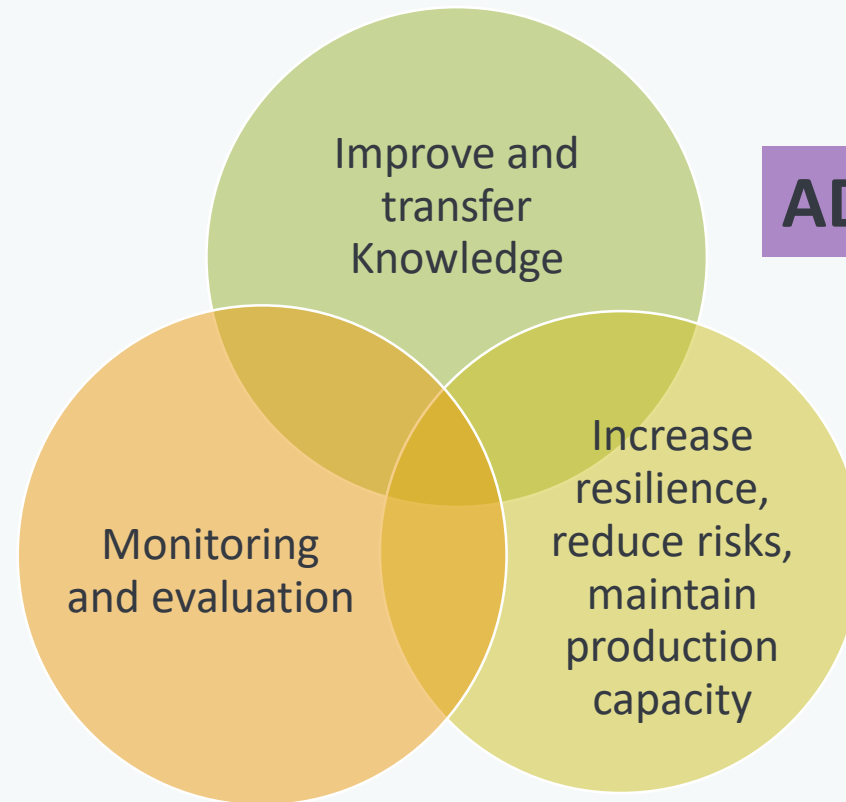
Productivity
Decrease

Increased
desertification
conditions

Habitats condition at
risk

Loss of sink capacity

Sinergetic effects



ADAPTATION MEASURES

Strategic Objectives

ONE EXAMPLE

Production capacity

Forest management aiming at increasing the resilience and vitality of stands

- Adequate tree density/cover
- Improving the genetic diversity of populations
- Diversification of the composition of stands and/or landscape
- Techniques that increase the success of afforestation (watering, mycorrhizae)

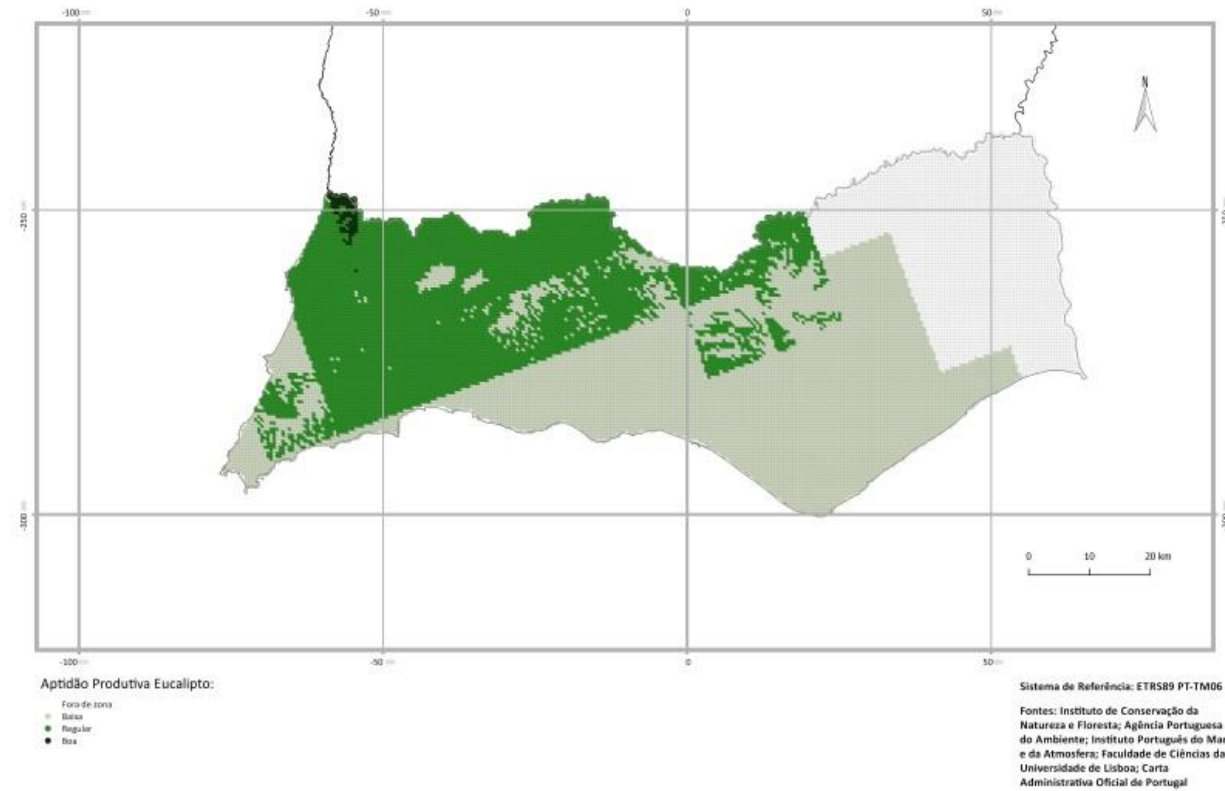
Strengthening the role of forest and forest management in soil and water protection

- Afforestation and improvement of stands in areas at risk of desertification;
- Actions aiming at maintaining/increasing the soil organic matter

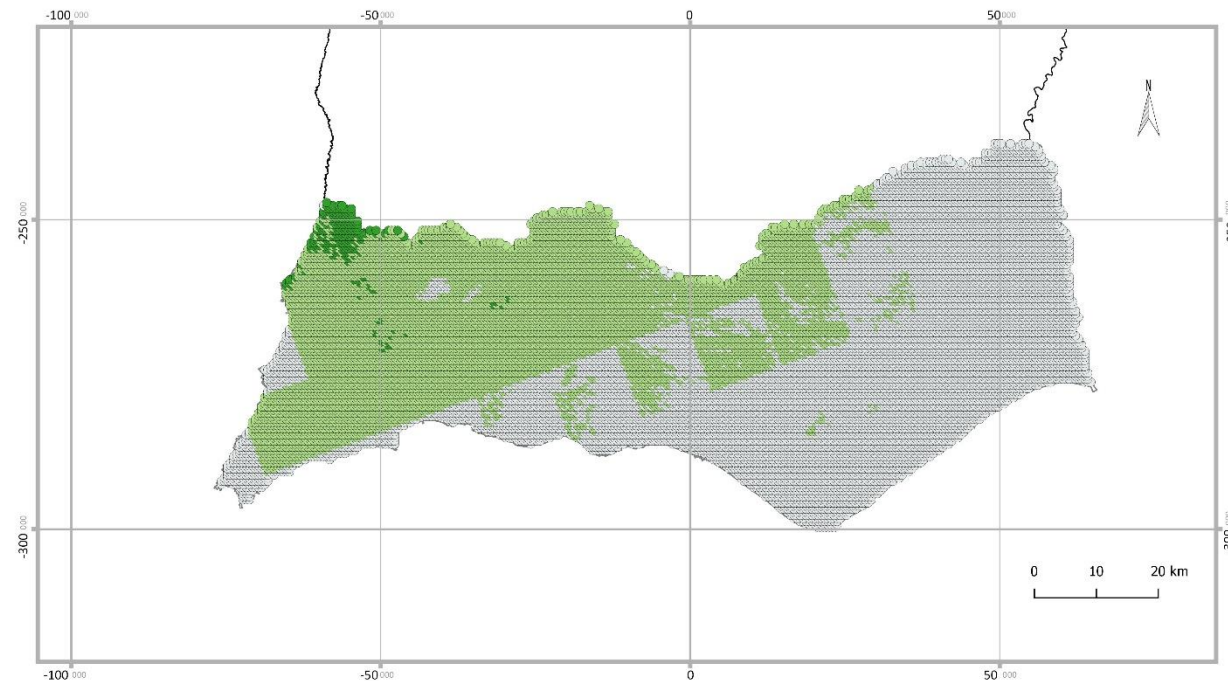
Promote the carbon sequestration capacity of forest ecosystems

- new stands with suitable genotypes
- Use of techniques that minimize soil mobilization
- Improvement of stands by increasing its carbon sequestration capacity

MAPPING the evolution of species' productivity



MAPPING the evolution of species' productivity



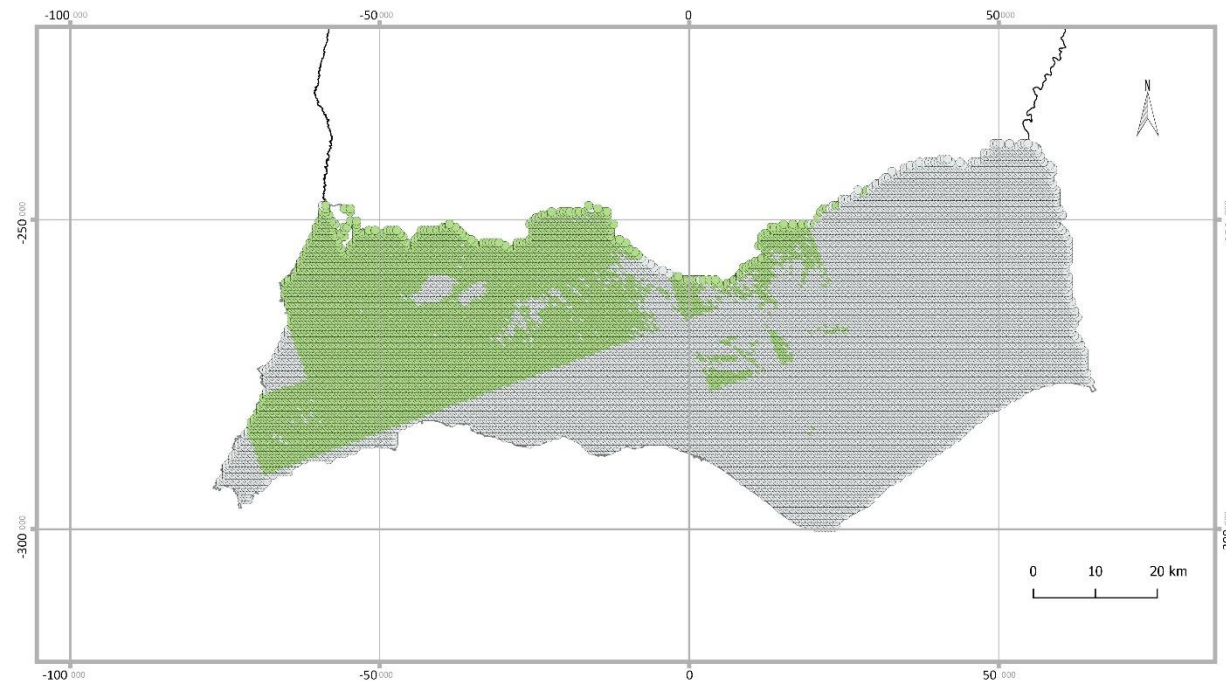
Aptidão Produtiva Eucalipto - Cenário Climático RCP 4.5 - Horizonte temporal 2030:

- Baixa
- Regular
- Boa

Sistema de Referência: ETRS89 PT-TM06

Fontes: Instituto de Conservação da Natureza e Floresta; Agência Portuguesa do Ambiente; Instituto Português do Mar e da Atmosfera; Faculdade de Ciências da Universidade de Lisboa; Carta Administrativa Oficial de Portugal (2016)

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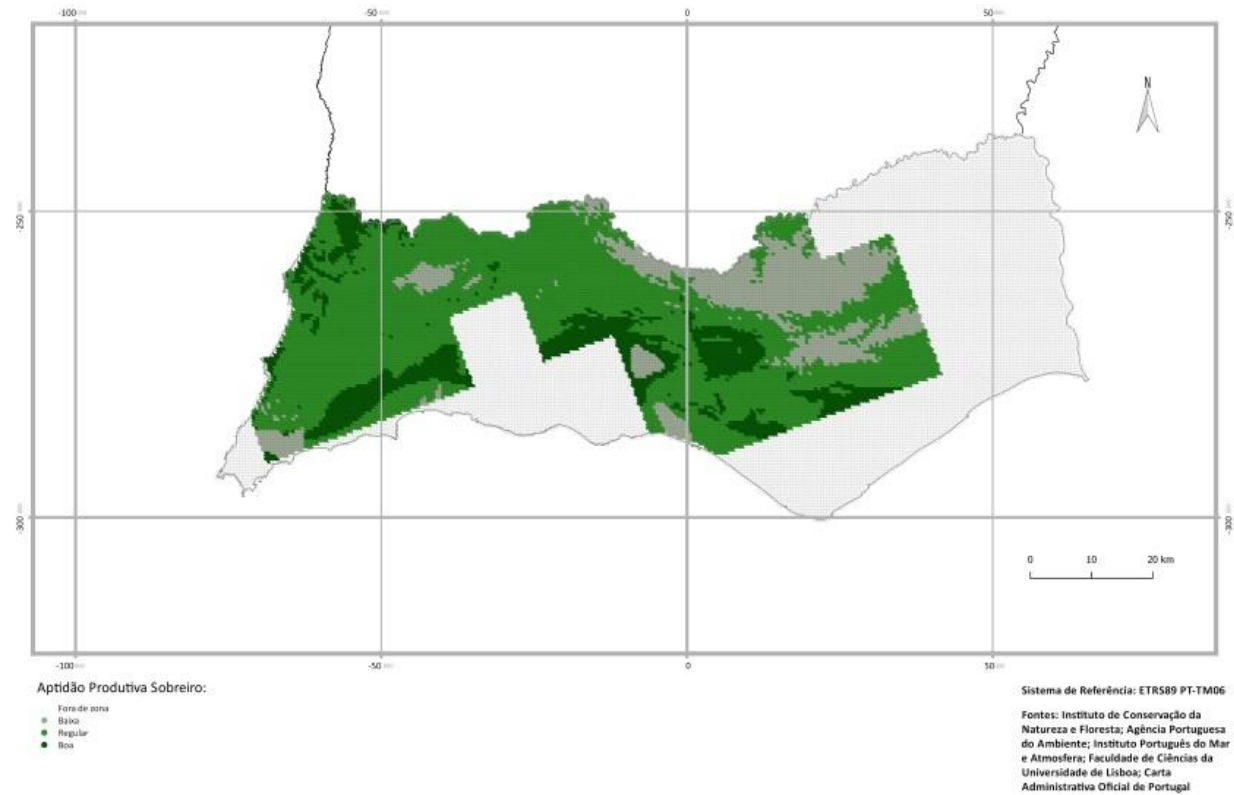
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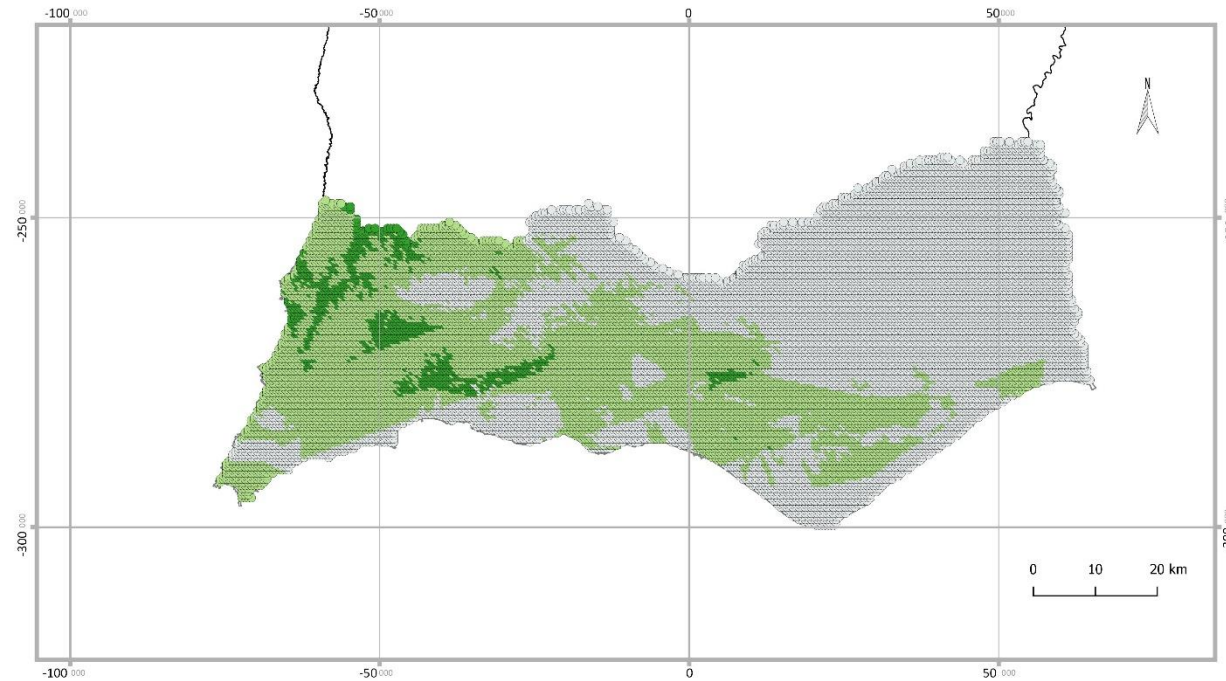
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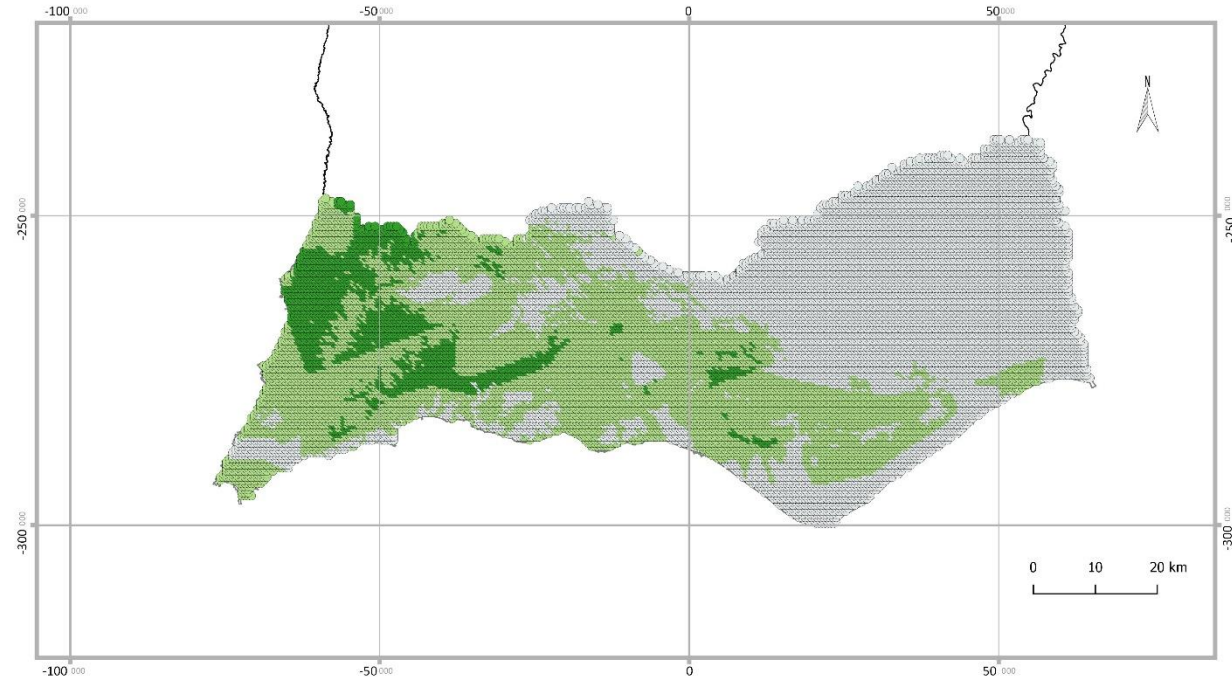
Aptidão Produtiva Sobreiro - Cenário Climático RCP 4.5 - Horizonte temporal 2050:

- Baixa
- Regular
- Boa

Sistema de Referência: ETRS89 PT-TM06

Fontes: Instituto de Conservação da Natureza e Floresta; Agência Portuguesa do Ambiente; Instituto Português do Mar e da Atmosfera; Faculdade de Ciências da Universidade de Lisboa; Carta Administrativa Oficial de Portugal (2016)

MAPPING the evolution of species' productivity



Aptidão Produtiva Sobreiro - Cenário Climático RCP 8.5 - Horizonte temporal 2030:

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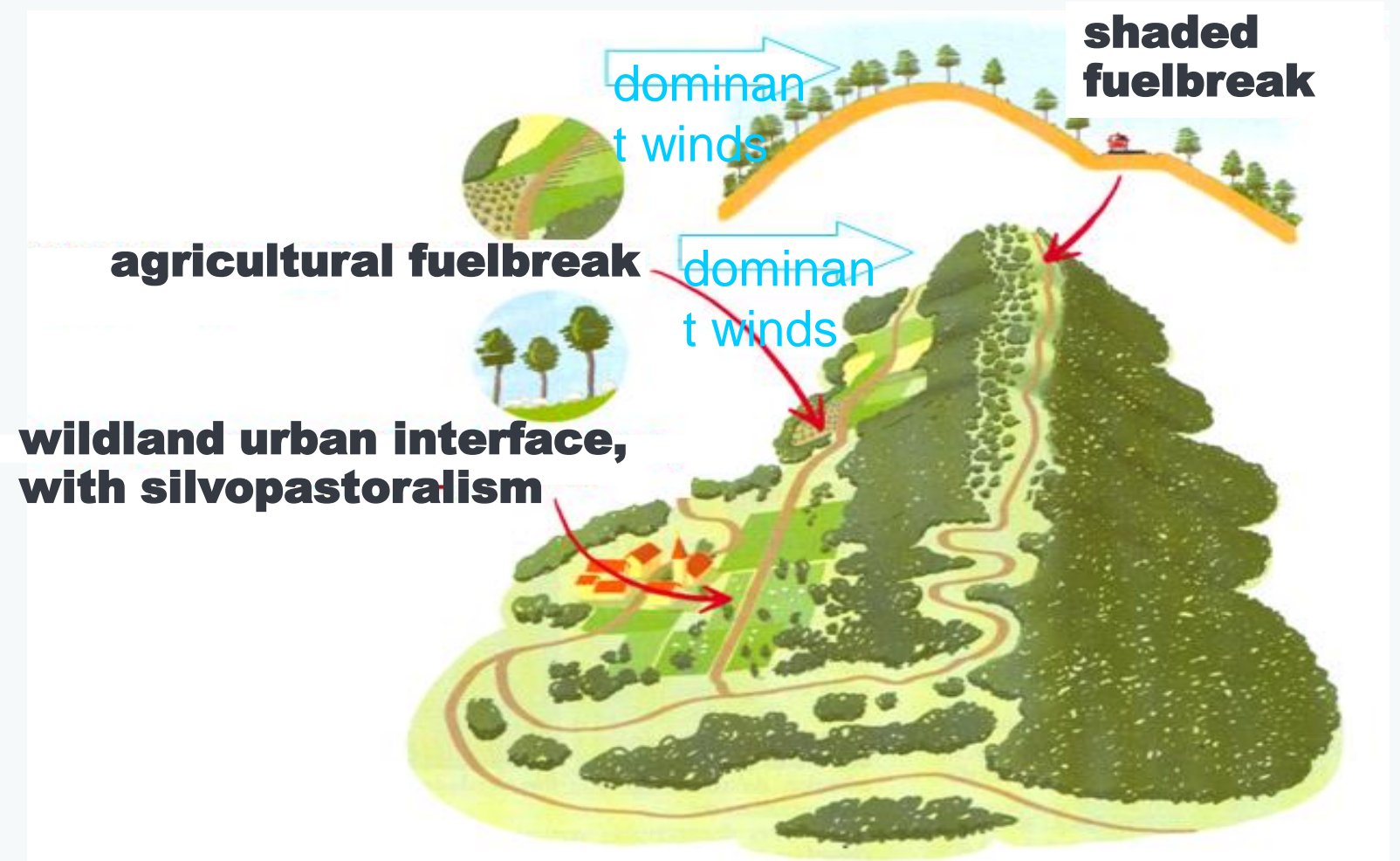
Challenge: integrated land use planning

New paradigm in Portugal at an early stage of development

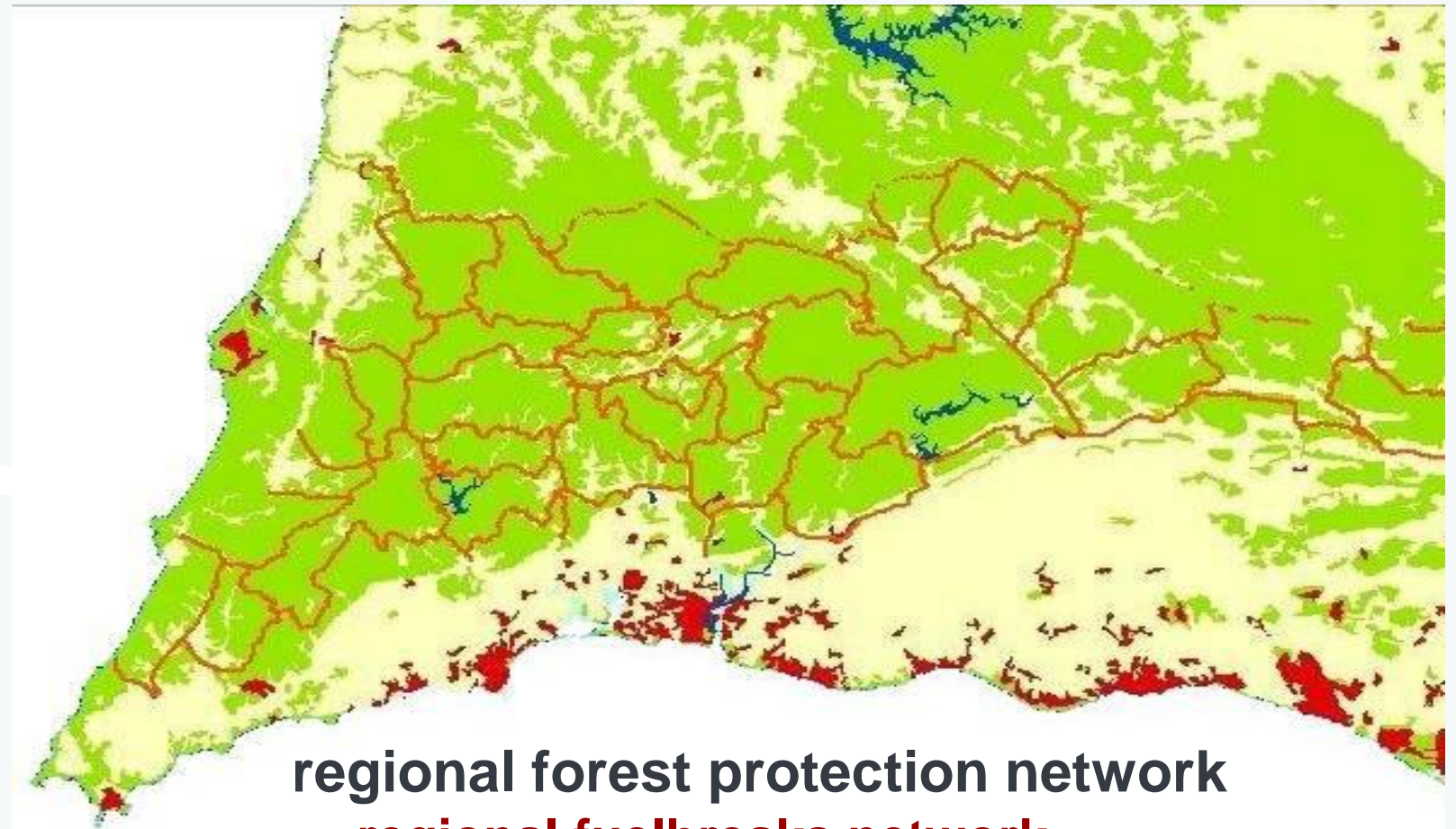
2020 – 2021

A program for transforming the landscape

Challenge: integrated land use planning



Challenge: integrated land use planning



regional forest protection network
- regional fuelbreaks network

MAIN MESSAGES

- Forests and landscape, in Portugal and Europe, are the result of millennia of human intervention
- Adapting to Climate Change and improving Biodiversity in existing (and future) forests will also require an approach at the landscape level
- Forest Policy Instruments (and institutions and governance) have evolved over many years to reflect new knowledge and better face main constraints and threats
- Climate change scenarios may be used to predict species or ecosystems evolution, but it is difficult to include a very long time perspective in today's decision making (i.e. 2080)
- Forest owners and managers will probably engage more easily in not too drastic adaptive measures allowing for a flexible approach
- **We have to manage our forests in an UNCERTAIN context, step by step**



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