

Challenge 3. SUPPORTING WOOD AND BIOMASS MOBILIZATION
Section 3: Priority Challenges and actions for innovation in the forest sector

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**CENTRO DE INVESTIGACIONES
CIENTÍFICAS Y TECNOLÓGICAS
DE EXTREMADURA**

CICYTEX: What and where it is

- **Scientific and Technological Research Center of *Extremadura* (CICYTEX)**

CICYTEX was established to improve the coordination of research work related to agriculture, livestock farming, agri-food industry and the *dehesa**.

**CICYTEX head office:
Finca La Orden**

GOBIERNO DE EXTREMADURA
Consejería de Empleo, Empresa e Innovación



**Dehesas*: sparsely forested, Mediterranean grasslands of Southwestern Iberian peninsula

Objective

Helping the enterprise sectors of Extremadura to integrate the **R&D+i** results in their production procedures



Services



Training

Laboratory analyses

Technology transfer and diffusion

Technical assistance and consulting

Laboratory testing

Facilities

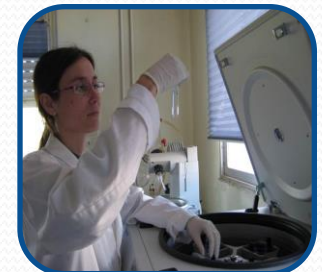
Experimental land fields

- 95 hectares of irrigated fields and 110 hectares of dryland fields
- 718 hectares of *dehesa*



Laboratories

- General
- Phytopathology
- Biotechnology
- In vitro culture
- Food quality
- Quality of products of Dehesa*



**Dehesas*: sparsely forested, Mediterranean grasslands of Southwestern Iberian peninsula

Pilot plants

- Meat products
- Vegetables and preserves
- Olive oil factories
- Milk products
- High pressure preserves
- Biofuels



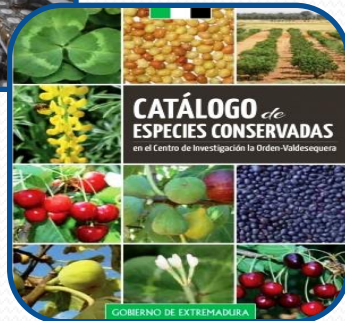
Equipment

- Agricultural machinery
- Seed building



Germplasm banks

- Pasture leguminous plants
- Lupinus
- Fig trees
- Medicinal and aromatic plants



Other

- Greenhouses
- Library
- Herbarium
- Fungal collection



Research lines



Hortofruticultura



**Oliviculture
and olis**



Viticulture



**Extensive
Farming and
Energy crops**



Phytopathology



**Animal
Production**



**Forest and
Pasture
Production**



Eucalyptus (*E. rostrata*) area

78.078 ha



Pure stands



Mixed stands dominated by red
Eucalyptus (*E. rostrata*)

Source: II Inventario Forestal
Cartografía: ICMC

Pinus pinaster area

105.314 ha



Pure stands



Mixed stands dominated
by *P. pinaster*

Source: II Inventario Forestal
Cartografía: ICMC

Pinus pinea area

11.664 ha



Pure stands

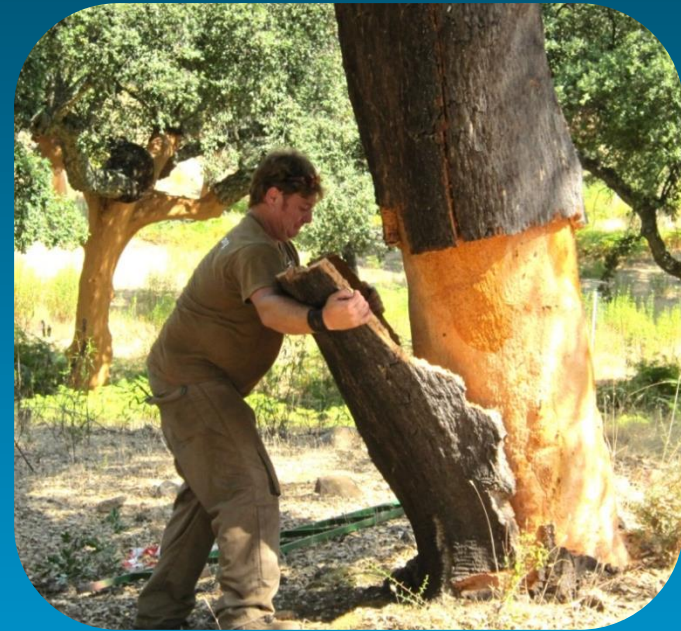
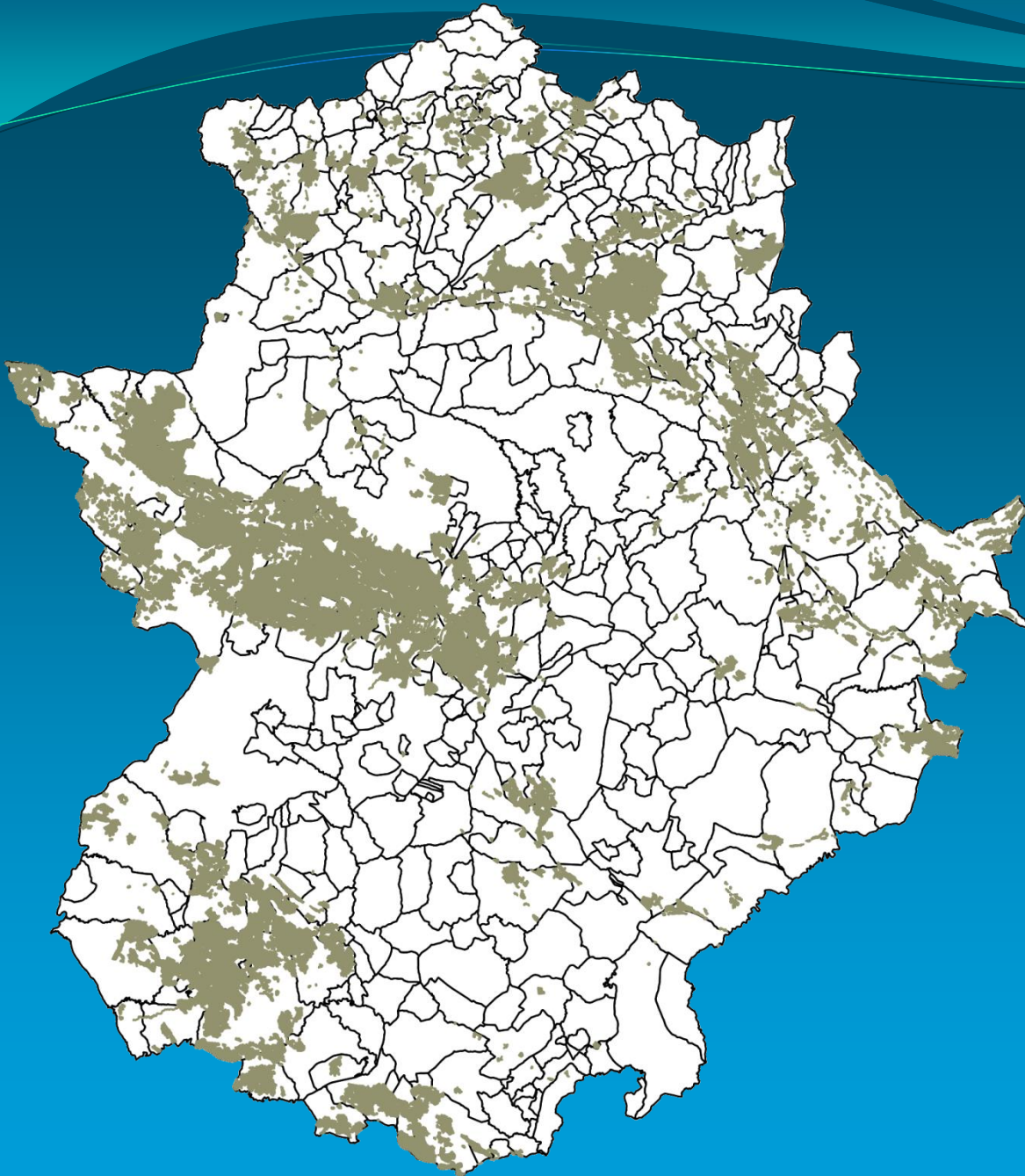


Mixed stands dominated by Pinus pinea

Source: II Inventario Forestal
Cartografía: ICMC

Quercus suber area

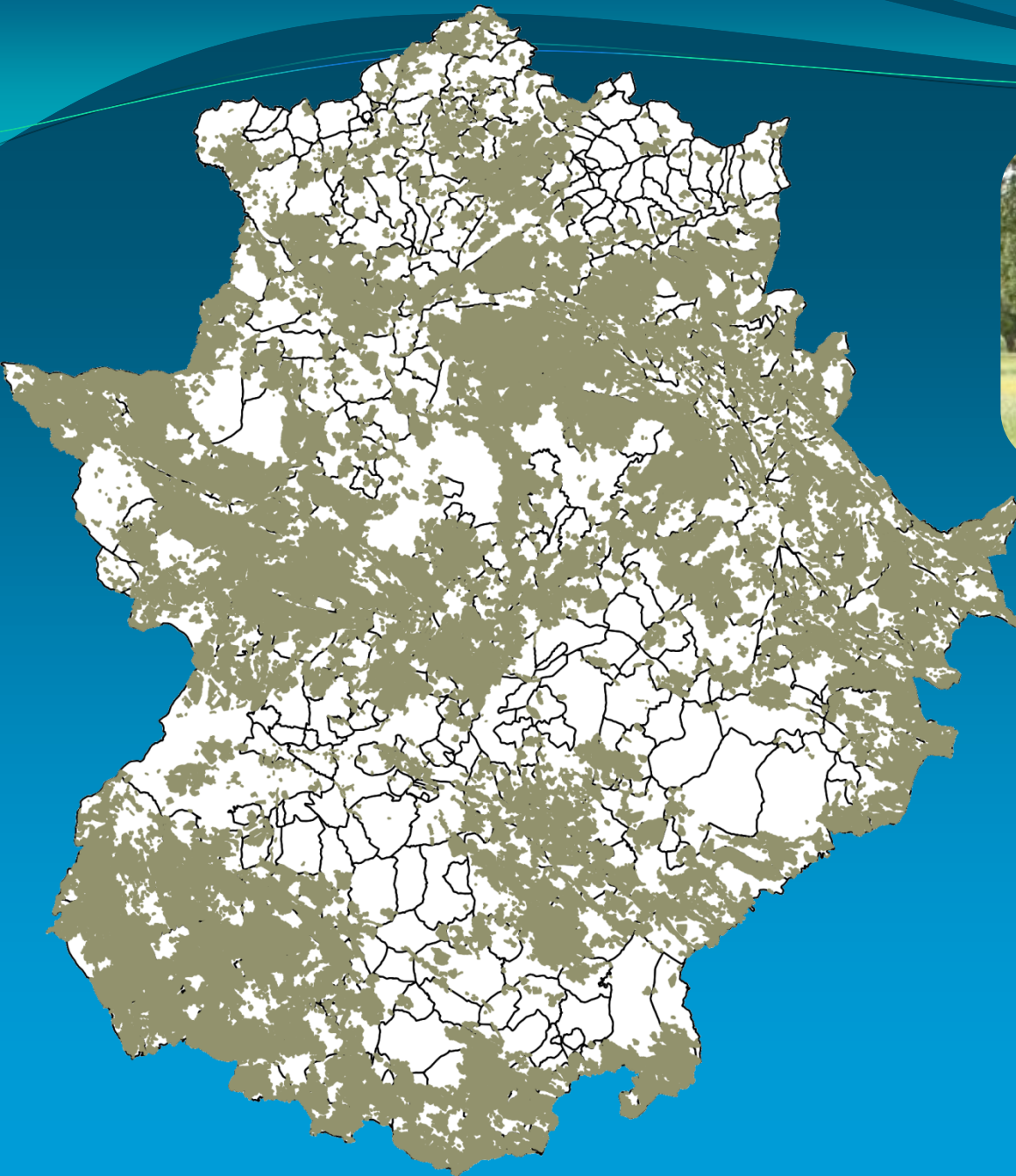
524.348 ha



Source: III Inventario Forestal
Cartografía: ICMC

Quercus rotundifolia area

1.611.809 ha



Source: III Inventario Forestal
Cartografía: ICMC

Dehesas: Sparsely forested. Southwestern Iberian Peninsula



Dehesas: Sparsely forested. Southwestern Iberian Peninsula. 1.300.000 has



Problems (I)

- Only part of Biomass from pruning trees is used, log wood, as biofuel. The rest is burning in the field.
- Do not burn in the field (Dehesa).
- No machinery and equipment adapted to collect this biomass



Dehesas: Sparsely forested. Southwestern Iberian Peninsula



Problems (II)

- Fossil fuel use in rural areas linked to Dehesa:
- Agroindustry Iberian pig.
- Residential heating....



Need to generate employment in rural areas.

Innovative Actions to overcome problems



Innovative Action (I)

- Biomass collection in Dehesa (olive pruning ...):
 - Adaptation of machinery and equipment
 - Transportation logistics and preparation of biofuel



Innovative Actions to overcome problems



Innovative Action (II)

- Improved processes of obtaining biofuels

Woodchips, pellets and briquettes



Innovative Actions to overcome problems



Innovative Action (III)

- Use of more efficient biomass boilers and environmental friendly
- Biomass boilers and gasifiers with high levels of efficiency and low emissions
- Adapted to local biomass



Innovative Actions to overcome problems



Innovative Action (IV)

- New bioproducts from dehesa and forest

Pinus pinaster. Resin: Food industry, solvents, glues...

Pinus pinea. Pine nuts...

Quercus suber. Cork: new bioproducts. Cork and rubber in rails

...



Innovative Actions to overcome problems



Innovative Action (V)

- Go to 100 % renewable energy in forest area

Biomass, solar energy ... instead of fossil fuel



Thank you very much



**Scientific and
Technological
Research Center of
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