

Andalusian Bioeconomy Estrategy

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Andalusia

Area: 87,597 km²

(17% of the Spanish area, 2% of the UE28 area)

Andalusian population (8,4 M)
represents **1.70%** of the EU28 total
population and **18.1%** of the Spanish
population

In **2014**, the Production of the
Agrarian Sector of **Andalusia**,
worth **10,627 million €**,
represented 2.6% EU-28 and
25.1% of Spain

The **agri-food industry** is the **first
industrial sector**. The value of the
agri-food production is around
14.000 M€, **17%** of Spanish total



Dehesa



Andalusian farming systems

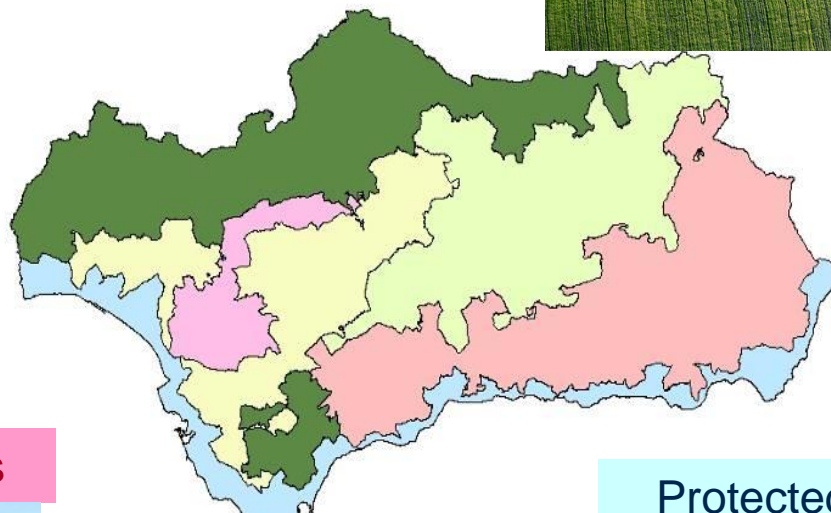
Extensive annual crops



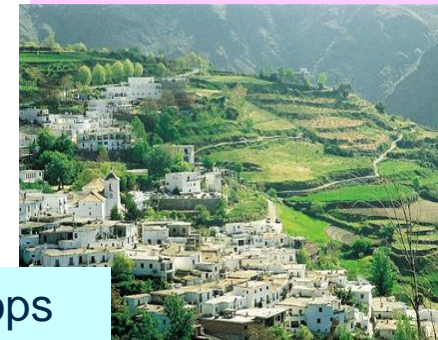
Olive



Berries



Mountain farming



Irrigation systems



Tropical crops



Protected crops



What is IFAPA?

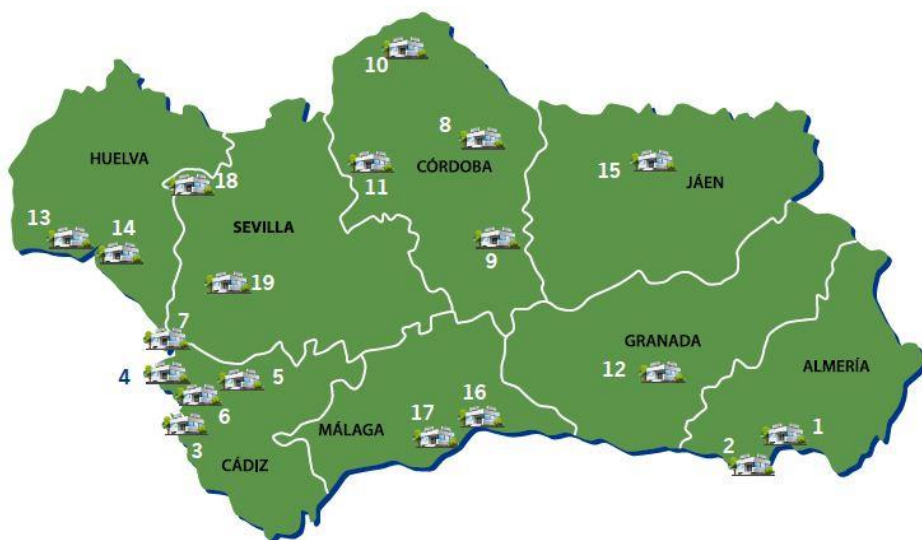
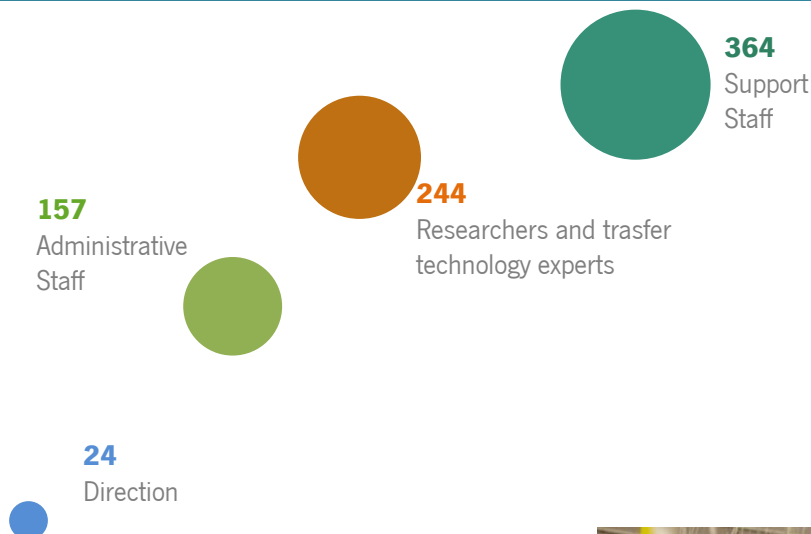
- The Agricultural and Fishery Research and Training Institute (IFAPA) is an autonomous organisation of the Andalusian Regional Administration.
- OBJECTIVE: Contribute to the modernization of the agricultural, fishing and food sectors through **applied research, innovation, transfer of technology, training and advisory services**, ensuring the sustainability of these productive sectors.



What is IFAPA?

- **800 employees** and a network of 18 centres throughout the Andalusian region. Close to the farms and the agri-business industry.
- **1.311 Has** for trials and experimentation
- **Agroindustrial facilities** (wineries, oil mills, ...)
- **Aquaculture facilities** (breeding, fattening, ...)
- **Germplasm banks** (olive groves, legumes, cereals, vine, strawberries, horticulture)

160



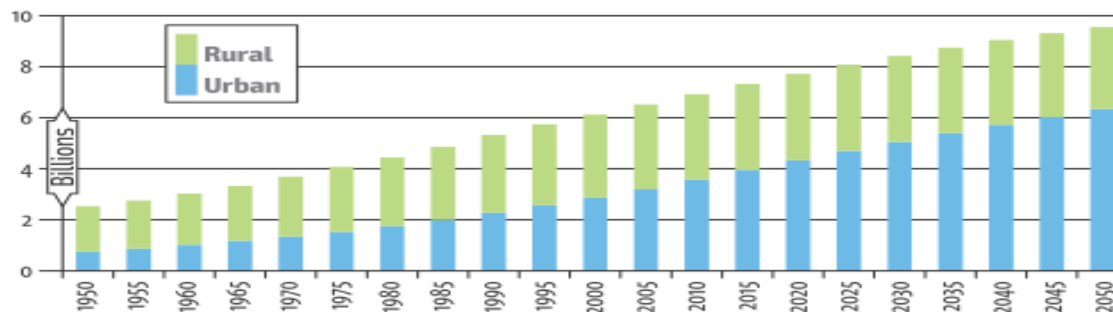
Trends and Challenges ahead: worldwide (FAO, 2017)

Trends

- Demand for food will grow (+50% in 2050). Ever higher increase in meat, fruits and vegetables
- Increasing food demand is worsening competition for natural resources, land degradation
- Climate change is jeopardizing crop and livestock production
- Globally one third of all food produced is lost or wasted
- Outbreak of transboundary pests and diseases of plants and animals is growing alarmingly

Challenges

- Sustainably improve agricultural productivity to meet increasing demand
- Ensure a sustainable natural resource base. Sustainable intensification
- Address climate change and intensification of natural hazards
- Make food systems more efficient, inclusive and resilient
- Prevent transboundary and emerging agriculture and food system threats



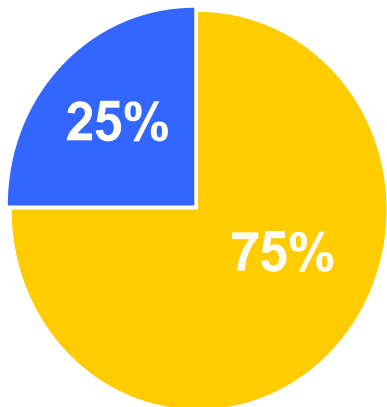
Source: UN, 2015.

Specific challenges in the Mediterranean region

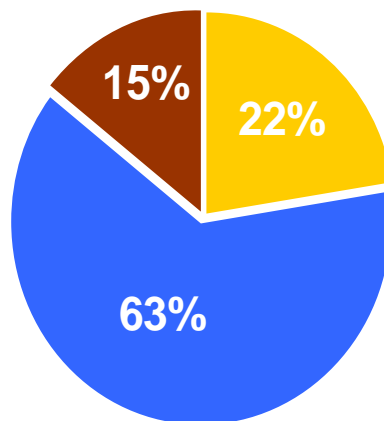
- MEDITERRANEAN SYSTEMS HAVE THEIR SPECIFIC CHARACTERISTICS
- Specific crops (olive, almond, vine, citrus etc)
- Specific agri-systems (dehesa, woody permanent pastures...)



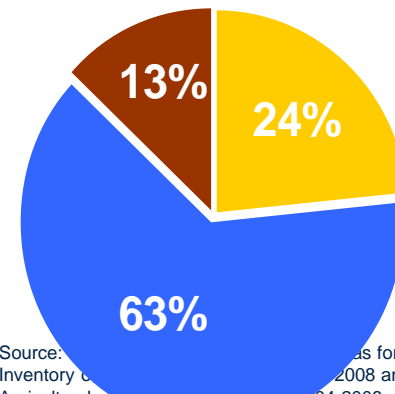
Cultivated area
3,183,567 ha



Final agricultural production 2013
9,831 mill €



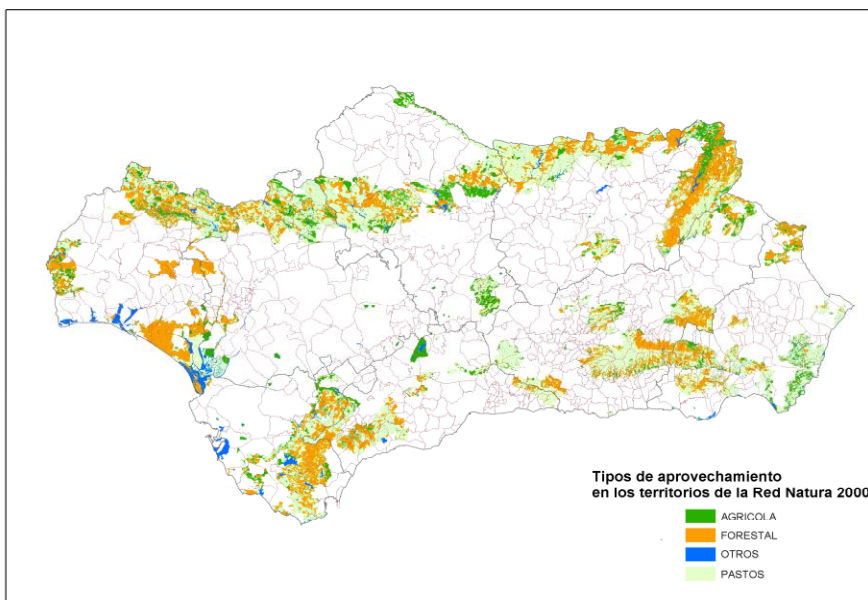
Jobs
260,000 AWU



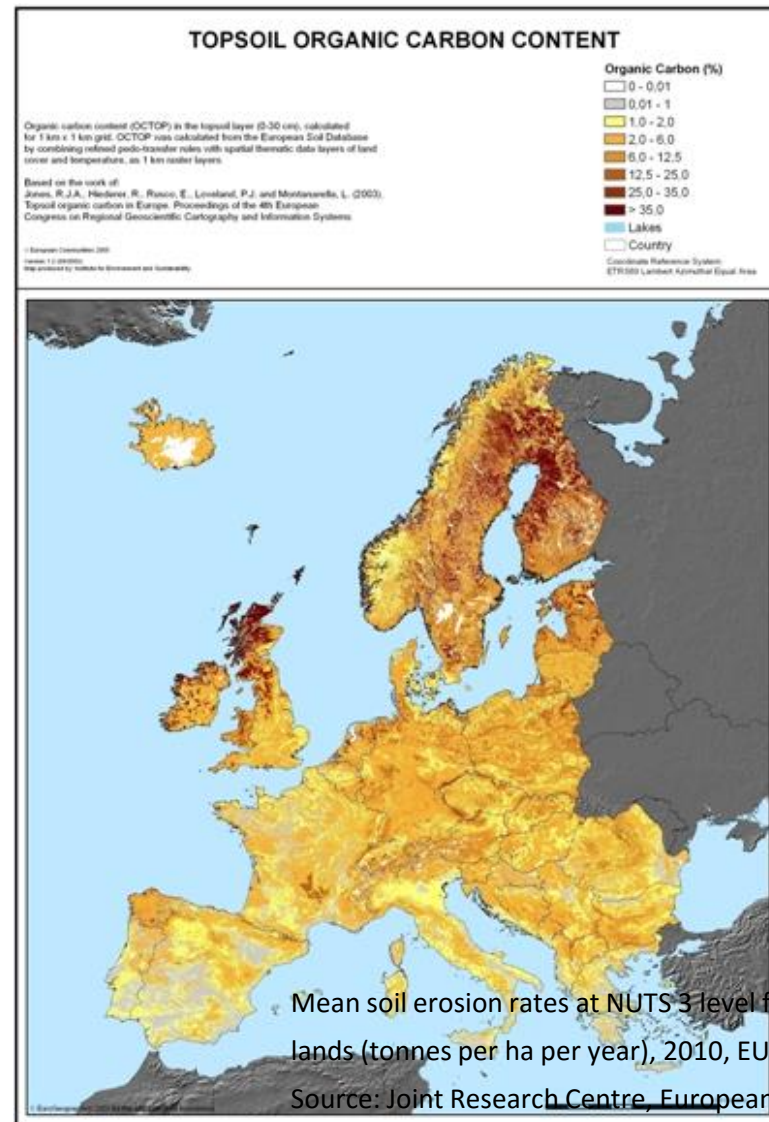
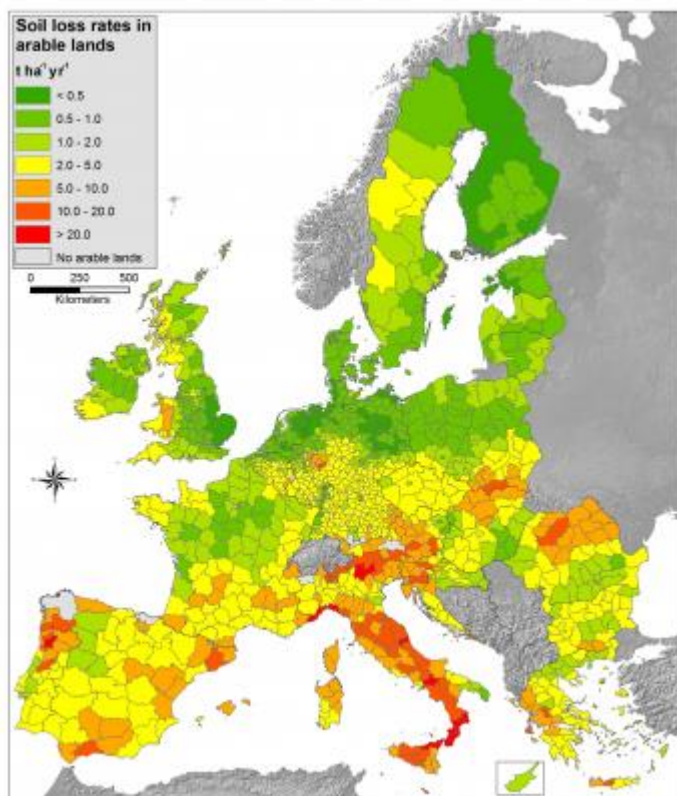
Source: ... for 2015. Data from the Inventory of ... 2008 and Yearbook of Agricultural and ... 2004-2008. Regional Ministry of Agriculture and Fisheries. Agricultural census 2009, Spanish Ministry of Agriculture and Rural and Marine areas

Dry farming **Irrigation farming** **Stockbreeding**

2,6 Mha hectares of the Andalusian area are included in the Natura 2000 Network (**about 30% of the total of the region**)



Specific challenges in the Mediterranean region: environmental problems



Mean soil erosion rates at NUTS 3 level for arable lands (tonnes per ha per year), 2010, EU-28

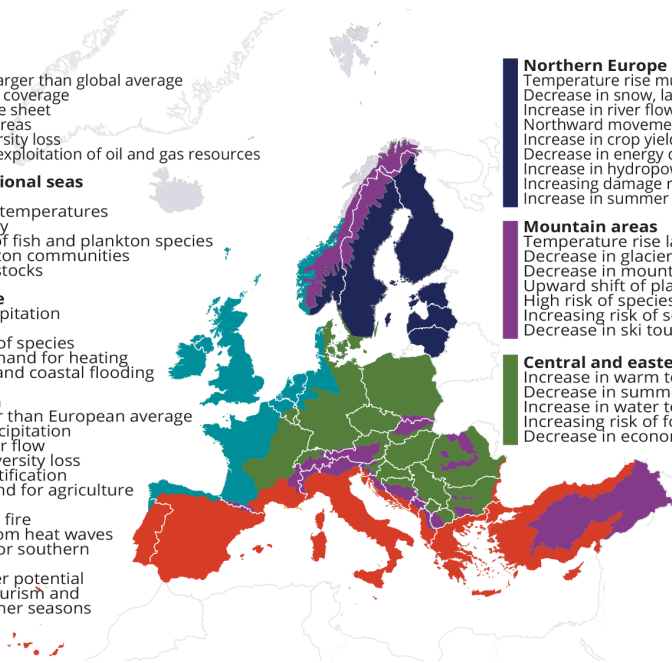
Source: Joint Research Centre, European

Commission

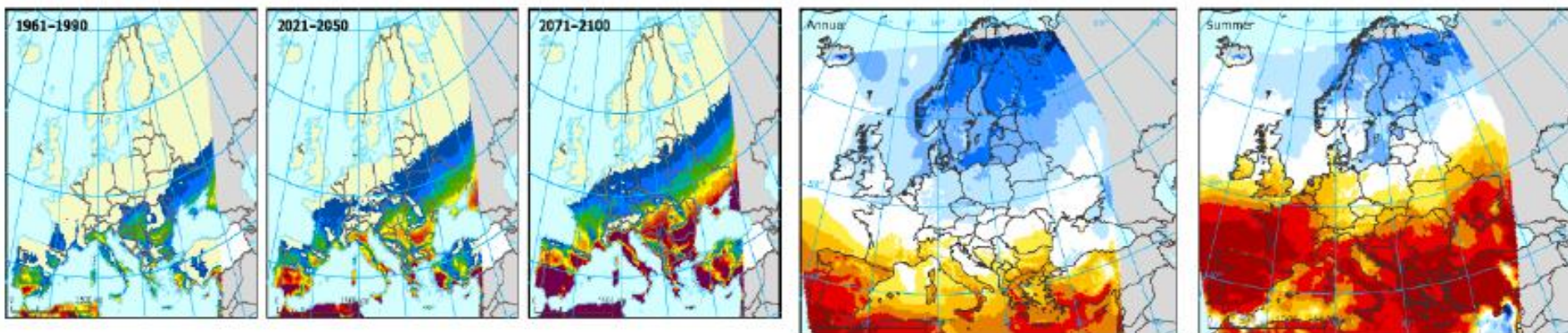
Specific challenges in the Mediterranean region: climate change

- Arctic**
 - Temperature rise much larger than global average
 - Decrease in Arctic sea ice coverage
 - Decrease in Greenland ice sheet
 - Decrease in permafrost areas
 - Increasing risk of biodiversity loss
 - Intensified shipping and exploitation of oil and gas resources
- Coastal zones and regional seas**
 - Sea-level rise
 - Increase in sea surface temperatures
 - Increase in ocean acidity
 - Northward expansion of fish and plankton species
 - Changes in phytoplankton communities
 - Increasing risk for fish stocks
- North-western Europe**
 - Increase in winter precipitation
 - Increase in river flow
 - Northward movement of species
 - Decrease in energy demand for heating
 - Increasing risk of river and coastal flooding
- Mediterranean region**
 - Temperature rise larger than European average
 - Decrease in annual precipitation
 - Decrease in annual river flow
 - Increasing risk of biodiversity loss
 - Increasing risk of desertification
 - Increasing water demand for agriculture
 - Decrease in crop yields
 - Increasing risk of forest fire
 - Increase in mortality from heat waves
 - Expansion of habitats for southern disease vectors
 - Decrease in hydropower potential
 - Decrease in summer tourism and potential increase in other seasons

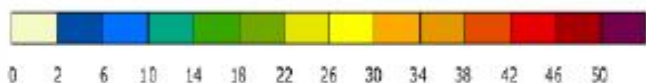
- Northern Europe**
 - Temperature rise much larger than global average
 - Decrease in snow, lake and river ice cover
 - Increase in river flows
 - Northward movement of species
 - Increase in crop yields
 - Decrease in energy demand for heating
 - Increase in hydropower potential
 - Increasing damage risk from winter storms
 - Increase in summer tourism
- Mountain areas**
 - Temperature rise larger than European average
 - Decrease in glacier extent and volume
 - Decrease in mountain permafrost areas
 - Upward shift of plant and animal species
 - High risk of species extinction in Alpine regions
 - Increasing risk of soil erosion
 - Decrease in ski tourism
- Central and eastern Europe**
 - Increase in warm temperature extremes
 - Decrease in summer precipitation
 - Increase in water temperature
 - Increasing risk of forest fire
 - Decrease in economic value of forests



European Environment Agency

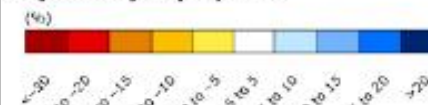


Number of combined tropical nights (> 20 °C) and hot days (> 35 °C)



No data
Outside coverage

Projected changes in precipitation

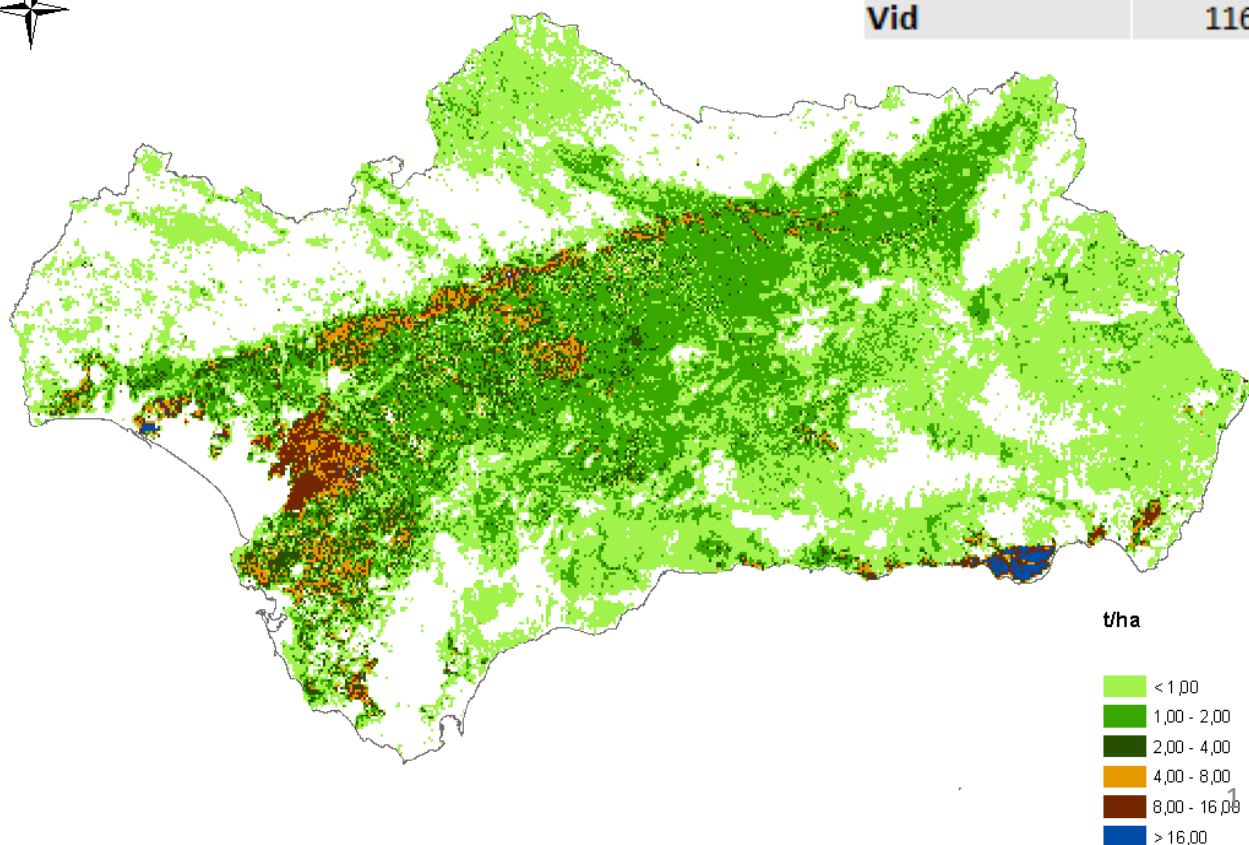


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Biomass as an opportunity

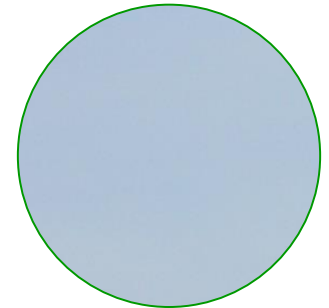
	toneladas
Algodón	226.014
Arroz	526.183
Fresa	214.744
Frutales	457.791
Girasol	604.150
Invernaderos	1.217.461
Maíz	680.419
Olivar	1.859.840
Otros cereales	523.754
Remolacha	200.522
Tomate aire libre	45.927
Trigo	1.322.777
Vid	116.898

- Significant biomass potential in terms of agricultural biomass (extensive areas of olive groves, fruit and vegetables in the region). The biomass potential amounts to 3.955 ktoe of which 1.322 area agricultural waste, 1.023 industrial waste and 322 forest waste
- Important concentration of the feedstock.
- Availability of other interesting waste streams such as paper & pulp, sewage sludge, plastics and MSW (waste).



Biomass as an opportunity

- Large amount that is not currently use and therefore available
- The **olive oil biorefinary complex** is well developed and the pomace oil is being used for different high-value applications.
- In **horticulture and forestry** waste streams only less advanced conversion options are operational in Andalusia



830
Olive mills



Olive oil
Olive pomace
paste

38 extraction
plants



Pomace oil

Andalusian Bioeconomy Strategy

- Strategy of the whole Government: 4 departments involved
- Now in process of elaboration.
- The **overall objective** of the strategy will be the growth and sustainable development of Andalusia by promoting actions aimed at encouraging the production of renewable biological resources and processes.
- **Specific objectives:**
 - To improve the **sustainability and competitiveness of the agri-food, fisheries and forestry sectors**, encouraging the use of innovative practices that develop a circular economy.
 - Promote the **competitiveness of industries that work with biological resources**, promoting innovation, knowledge generation and technology transfer.
 - To promote the **reuse of resources, water, gases, nutrients** and the use of vegetal residues to obtain other products, uses or energies.
 - Favor **research, innovation** and training related to the bio-economy.
 - To **reinforce inter-administrative coordination**, and synergies with other plans and work programs.

Andalusian Bioeconomy Strategy

1. Introduction and definitions.
2. Description of the productive systems of Andalusia with repercussions in bioeconomics.
3. Description and evaluation of the existing biotechnology and bioenergy industries in Andalusia.
4. Evaluation and characterization of the potential of biomass resources in the agricultural, livestock, fisheries and agroindustrial sectors of Andalusia and its possible evolution.
5. Identification of the **logistics necessary** in Andalusia for the use of the resource flows that allow the stable supply chains.
6. Definition of research priorities aiming at multidisciplinary and multisectoral participation.
7. Drawing up an **inventory of research and innovation** activities, the centers and infrastructures available in Andalusia with competencies in these activities.
8. Creation of the **Andalusian Bioeconomics network** to improve synergies and dialogue between the Public Administration, researchers and civil society to facilitate the coherence of the policies adopted.
9. Proposals and measures of development and promotion of the different links that make up the processes of bioeconomy.
10. Description of indicators that allow to evaluate the progress and impact of the bioeconomy throughout the development of the strategy.

Model demonstrator region in Europe to lead the way towards a sustainable chemical production in Europe



Andalusia (Spain),



Groningen-Drenthe (The Netherlands)



Kosice (Slovakia)



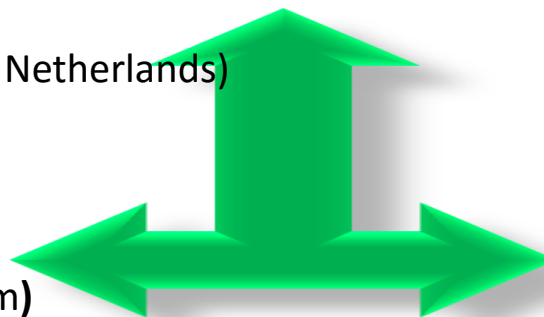
Scotland (United Kingdom)



South and Eastern Ireland



Wallonia (Belgium).



EU Sustainable
Chemicals
Support Service

- The 6 regions have been selected from **28 applicants** from EU regions
- They will receive advisory support from the '**European Sustainable Chemicals Support Service**' (ESCS), led by the European Commission and CIRCE (Center for Intelligent Research in Crystal Engineering).
- The aim is **to encourage investments in sustainable chemicals production** in Europe that will contribute to the development of the circular economy, for example by taking advantage of domestically available feedstock such as biomass, waste or CO₂.



Bringing added value to agriculture and forest sectors by closing the research and innovation divide

AGRIFORVALOR

Video: <https://www.youtube.com/watch?v=PBal-z5z3Ls>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 696394



S3P AGRIFOOD

Thematic Partnership on TRACEABILITY AND BIG DATA

PROGRAMA DE DESARROLLO RURAL DE ANDALUCIA 2014-2020 (FEADER)



UNIÓN EUROPEA

Fondo Europeo Agrícola de Desarrollo Rural

SUBMEDIDA 4.2. APOYO A LAS INVERSIONES EN TRANSFORMACIÓN Y COMERCIALIZACIÓN O DESARROLLO DE NUEVOS PRODUCTOS AGRÍCOLAS.

- Cuantía máxima de la ayuda: 5.000.000 euros

- Intensidad de la ayuda:

Hasta el 31/12/2017	Pequeñas empresas y microempresas: 35% Medianas empresas: 25%
Desde el 1/1/2018 hasta el 31/12/2020	Pequeñas empresas y microempresas: 30% Medianas empresas: 20%

SUBMEDIDA 16.1. APOYO PARA LA CREACIÓN Y EL FUNCIONAMIENTO DE GRUPOS OPERATIVOS DE LA AEI EN MATERIA DE PRODUCTIVIDAD Y SOSTENIBILIDAD AGROALIMENTARIA

OPERACIONES	GASTO PÚBLICO TOTAL PERIODO 2014-2020 (Euros)	INTENSIDAD AYUDA	CUANTÍA MÁXIMA AYUDA (Euros)
16.1.1. Ayudas a la creación de grupos operativos de la AEI.	1.250.000	100%	5.000
16.1.2. Ayudas al funcionamiento de los grupos operativos de la AEI.	12.550.000	100%	300.000
16.1.3. Ayudas al funcionamiento de los grupos operativos de la AEI en el sector del olivar	5.594.591	100%	300.000

Se han identificado 33 Grupos Operativos relacionados con este proyecto de Química sostenible a través de la convocatoria año 2016.

MEDIDA 19. INICIATIVA LEADER – GRUPOS DE DESARROLLO LOCAL



THANK YOU VERY
MUCH
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