ANDALUSIA, MODEL DEMOSTRATOR REGION FOR SUSTAINABLE CHEMICAL PRODUCTION

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Agencia Andaluza de la Energía
CONSEJERÍA DE EMPLEO, EMPRESA Y COMERCIO

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CONSEJERÍA DE AGRICULTURA, PESCA Y DESARROLLO RURAL

JUNTA DE ANDALUCIA
CONSEJERÍA DE MEDIO AMBIENTE Y ORDENACIÓN DEL TERRITORIO

ANDALUSIA REGION

Member State: Spain

Area: 87,597 km²

(17% of the Spanish area, 2% of the EU 28 area, 4th region of the EU in terms of Surface area)

Population: 8,388 million inhabitants (2016)

(1.7% of EU 28 and 18.1% of Spain population)

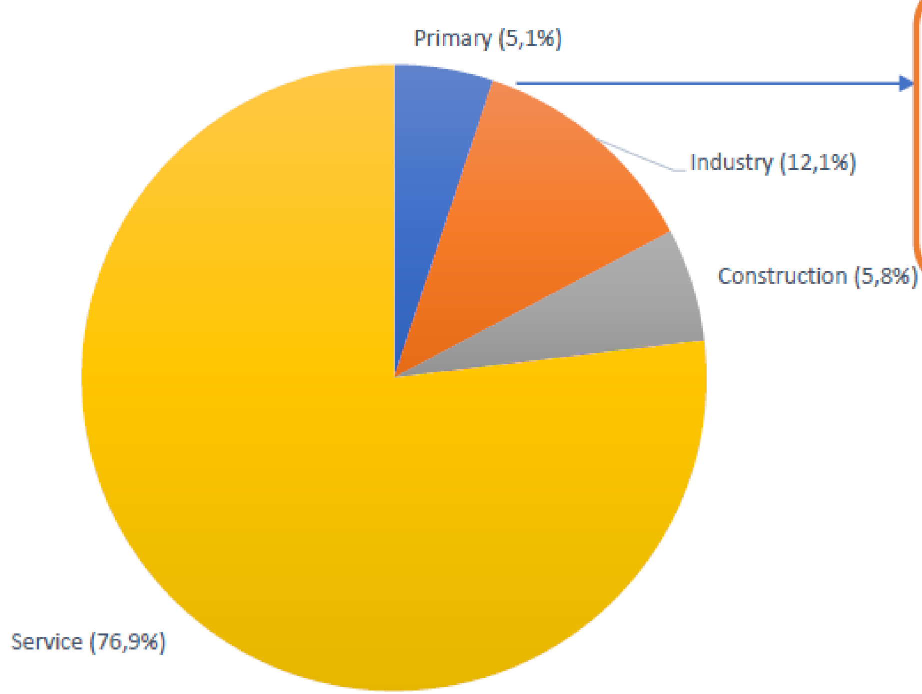
Andalusia has been **classified** as:

- a **Transition Region** for the 2014-2020 period as its GDP per capita is between 75% and 90% of the average GDP of the EU-28.
- an **Intermediate Region** according to the OECD classification because 32% of its population live in rural municipalities.

ANDALUSIA'S ECONOMY

Andalusia's GDP accounts for **153,072.1** million euro (2016) – 3rd Spanish region

Andalusia's GDP by sectors (2016)



Primary sector and agri-food industry represents **7.3%** of regional GDP (Gross Domestic Product)

CAPABILITY OF ANDALUSIA REGION

Promoting cooperation and synergies between these pillars

Chemical Industry

- Significant **economic importance** in Andalusia with 9,950 employees and 22,613 million € production value
- Production includes electricity generation, basic organic and inorganic production, copper metallurgy, paper pulp production and pretroleum refining, with wide possibilities for biomass use

Agri-food Industry

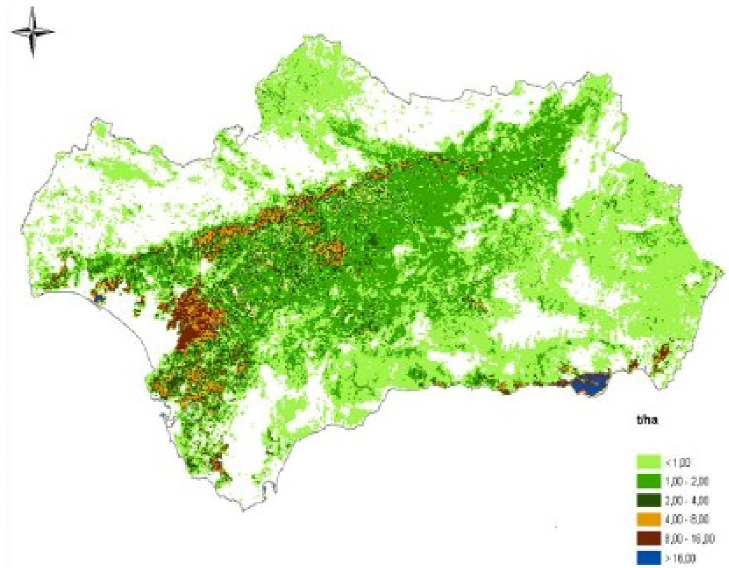
- One of the main **economic drivers** of Andalusia: 9,831 million € production value
- **5.700 enterprises**, organised in cooperatives
- Environmental sustainability based on **subproducts and agricultural waste** use will be a priority according to the Strategic Plan for Agroindustry in Andalusia 2016-2020

Knowledge ecosystems and stakeholders involved

- Andalucía has **outstanding technology centres and university research groups**.
- The **Andalusian Development and Innovation and Energy Agencies** are cross-cutting tools of the Regional Government to promote competitiveness, innovation and sustainable energy development.

BIOMASS POTENTIAL OF ANDALUSIA

	Tonnes
Cotton	226.014
Rice	526.183
Strawberry	214.744
Fruit trees	457.791
Sunflower	604.150
Greenhouses	1.217.461
Maize	680.419
Olive groves	1.859.840
Other cereals	523.754
Beetroot	200.522
Tomatoes grown outdoor	45.927
Wheat	1.322.777
Vines	116.898



Main biomass and investment sources

- Olive biomass
- Intensive horticulture biomass
- Seaweed production

Main uses of biomass

- Thermal power station
- Biogas
- Composting
- Animal feed

MORE EFFICIENT TECHNOLOGIES AND BIOMASS USES THAT CREATE ADDED VALUE ARE REQUIRED

INVESTMENT CAPACITY
THE SUSTAINABLE CHEMICAL PROJECT

Project portfolio
5 VALUE CHAINS, 30 PROJECTS AND 24 COMPANIES

Main Initiatives address:

- Use of vegetable waste for bioethanol production and high added value products
- Biomass pyrolysis for biofuels, bio-oils and fertilizers
- Recovery of nutrients from solid and liquid biomass fractions
- Use of olive and other vegetable waste for nutraceutical production.
- Olive grove agroindustry waste recovery for composting
- Production of biologically based polyurethanes
- Use of fruit waste as livestock feed
- Production of activated carbon prepared from agricultural waste
- Manufacture of natural pigments from vegetable waste
- Manufacture of pellets from wood waste
- Algal biomass with CO2 as raw materials for bioproducts

ENABLING FACTORS TO INVESTMENTS

Raw materials availability	• Abundance of agricultural biomass and appropriate conditions for algae production
Infrastructures	• Good existing communication infrastructures and logistical centres in some cases
Financing	• Public support sources through various EU funded regional programmes
Workforce	• Available and qualified • Wide specialised scientific community
Supporting institutions	• Good involvement and coordination. • Participation of ten public institutions in the project. • A Bioeconomy Strategy is under preparation
Regional markets	• Development of traditional markets (bioenergy, composting), but not advanced biorefineries • Capacity of the agri-food industry to include new processes for by-products.
Entrepreneurship	• Broad business environment, but with great uncertainties for long-term investment due to economic recession.
Political support	• There are many public support programmes, although a strategic overview of these investments is needed.

BARRIERS TO INVESTMENTS

Improvement of chemical industry commitment to bioproducts development

Need to develop financial instruments better oriented to the complexity of these projects (multidisciplinary, risks, innovative, new markets...)

Market volability due to petroleum products, the need to adapt regulatory frameworks that promote bio-based products (e. g. biofertilizers, among others).

Coordination of regulatory frameworks of certain areas that represent constraining factors for the development of projects

If you want to go fast, go alone.
*If you want to go far, **Go together***