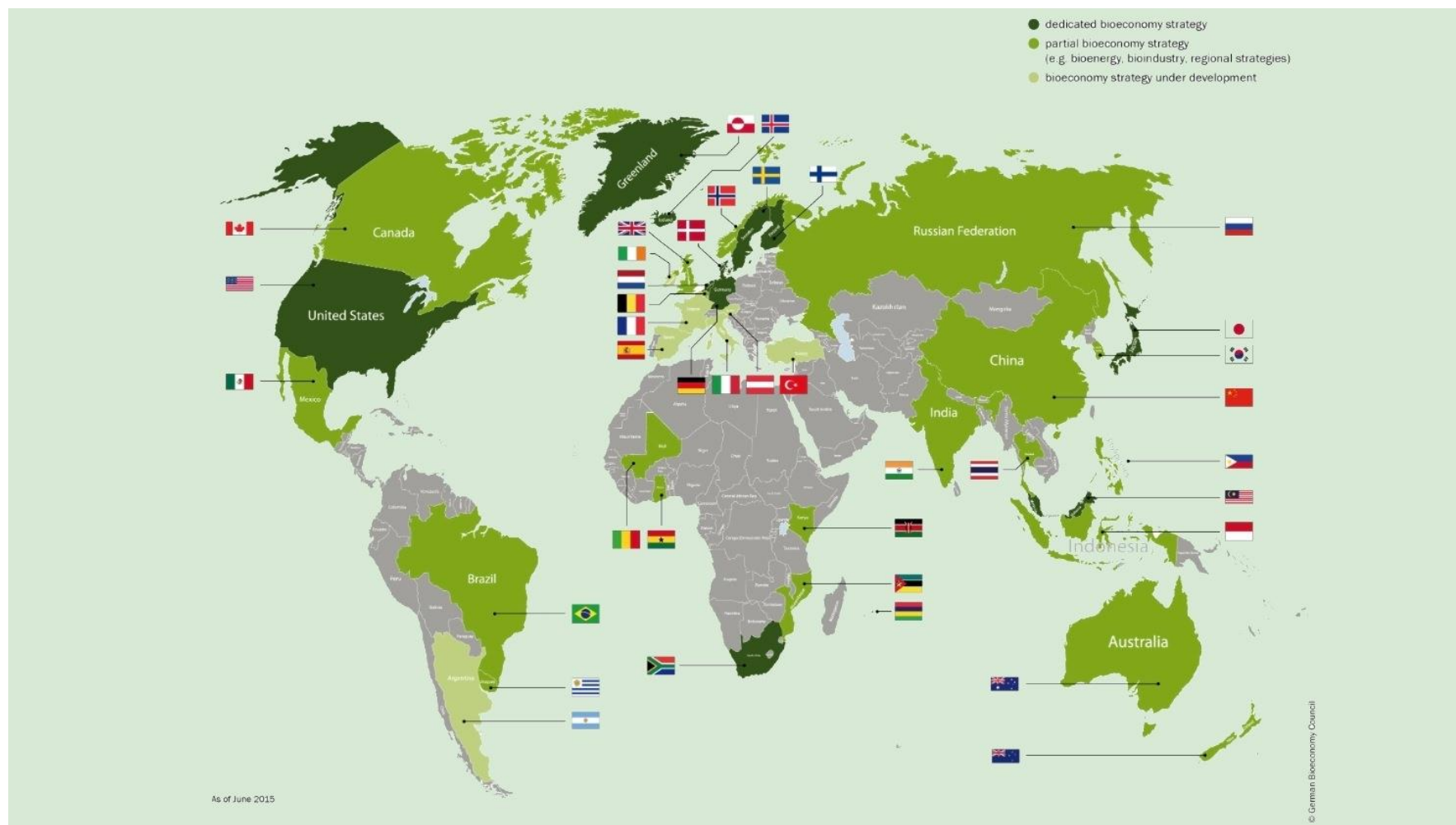


TOWARDS A GALICIAN BIOECONOMY STRATEGY



CASA - SCAR NATIONAL MEETING AT INIA - SPAIN
Alfonso Ribas (INGACAL) and Miguel Fernández (CTC)

May 10th - 11th 2017

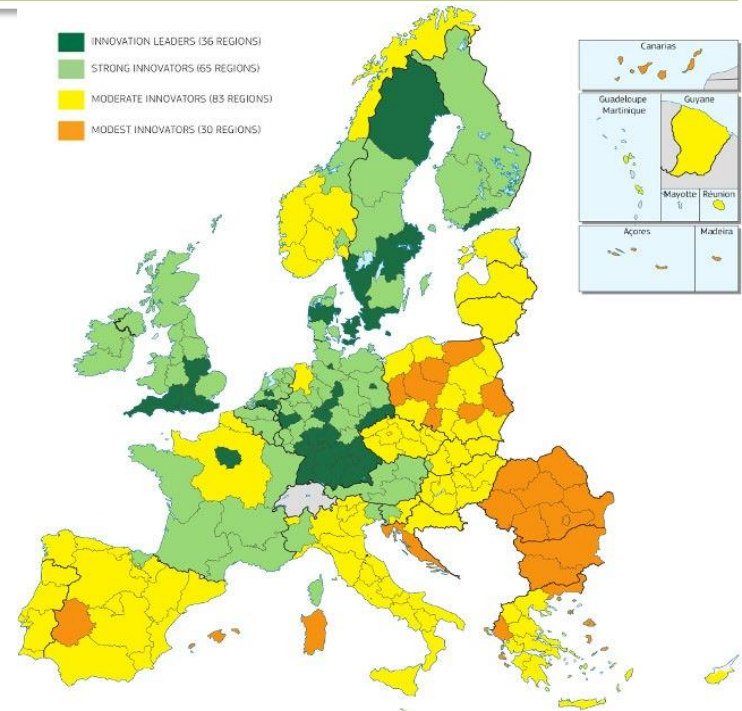
VENUE: INIA Conference Room - Main Building

1. TOWARDS A GALICIAN BIOECONOMY STRATEGY

According to the “Regional Innovation Scoreboard 2016” the Galicia Region is a moderate innovator. However, the region is being intensively involved in cooperation with Northern Portugal in the framework of the RIS3T

Some joint networks on bioeconomy related sectors such as agriculture, biodiversity, forestry and healthy foods has been created.

The origin and the interest of the region in the Bioeconomy is first of all based on its natural potential.



The Galician government is going to start in 2017 a specific bioeconomy strategy. The government has a big interest in bioeconomy, aeronautic industry and industry 4.0

1. TOWARDS A GALICIAN BOECONOMY STRATEGY

The agroforestry system is very important both for Galicia and Spain. For this reason, Galicia is leader in this sector.

In addition, the fishing sector, although produces a small percentage of added value for the Region, it however accounts a few more than half of total employment in the Spanish fishing and 10% of the EU28

Galicia is also important in forestry (Paper, heat, biomass). 2/3 of Surface of the región is forestry. 50% of Wood cuts in Spain

The región is developing an important wine sector in the last decades

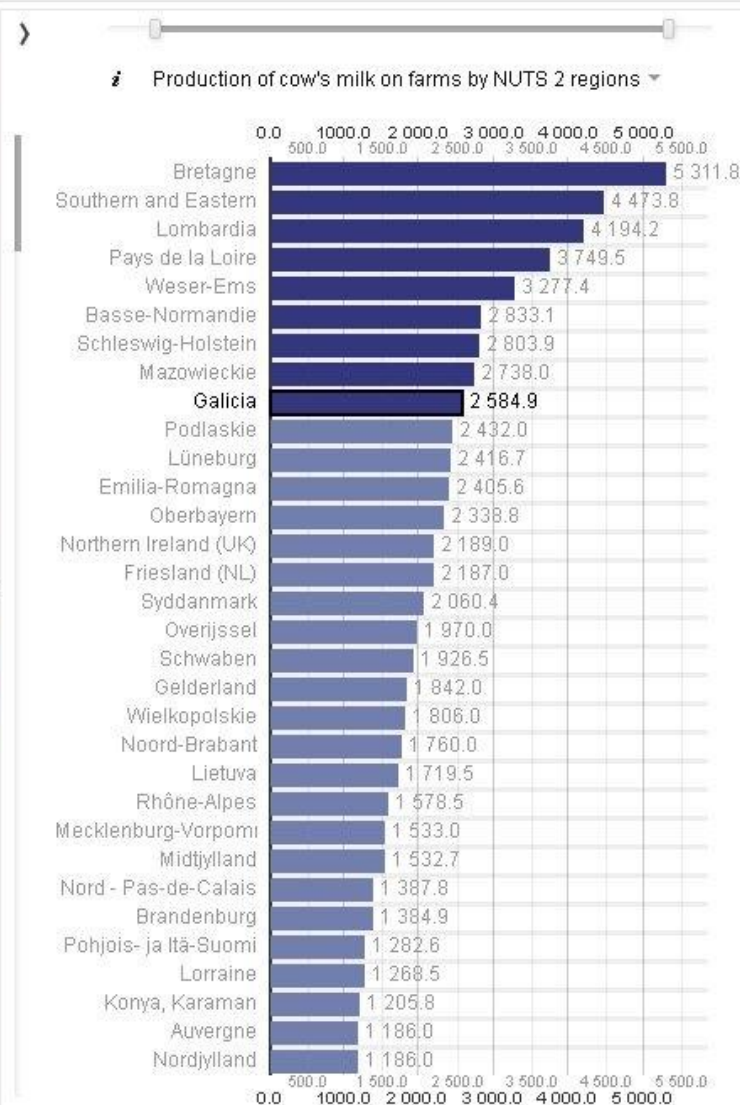
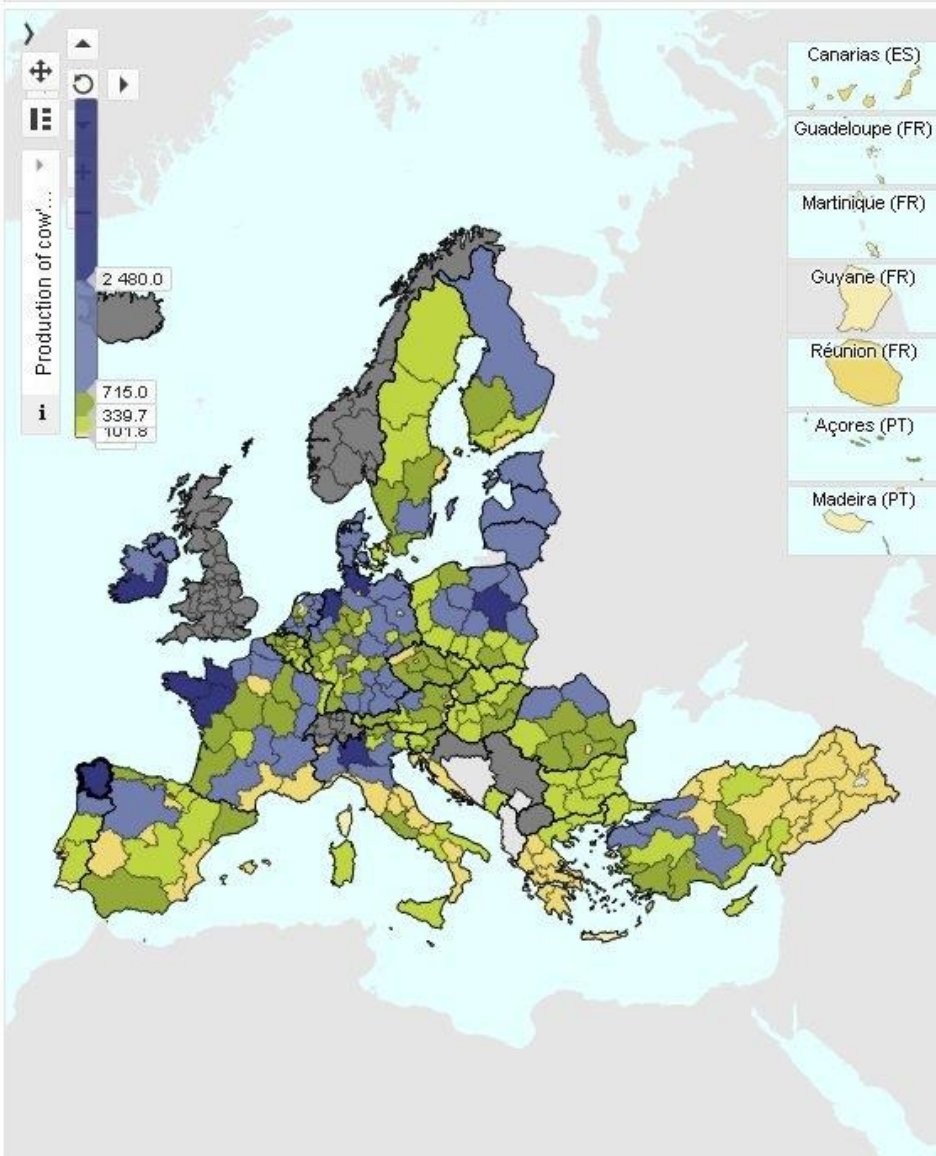
The agrofood industry is formed by 2.500 companies and it has turnovers of 4.600 millions of hired 21.000 people

No ultimately, Galicia is leader in cattle breeding for meat and milk in Spain. 40% Spanish dairy production.

Galicia is actually amongst the 10 first UE dairy production regions (Nuts-2 level). Together with Lombardía (N of Italy) are the only regions from the south of Europe forming part of this selected group

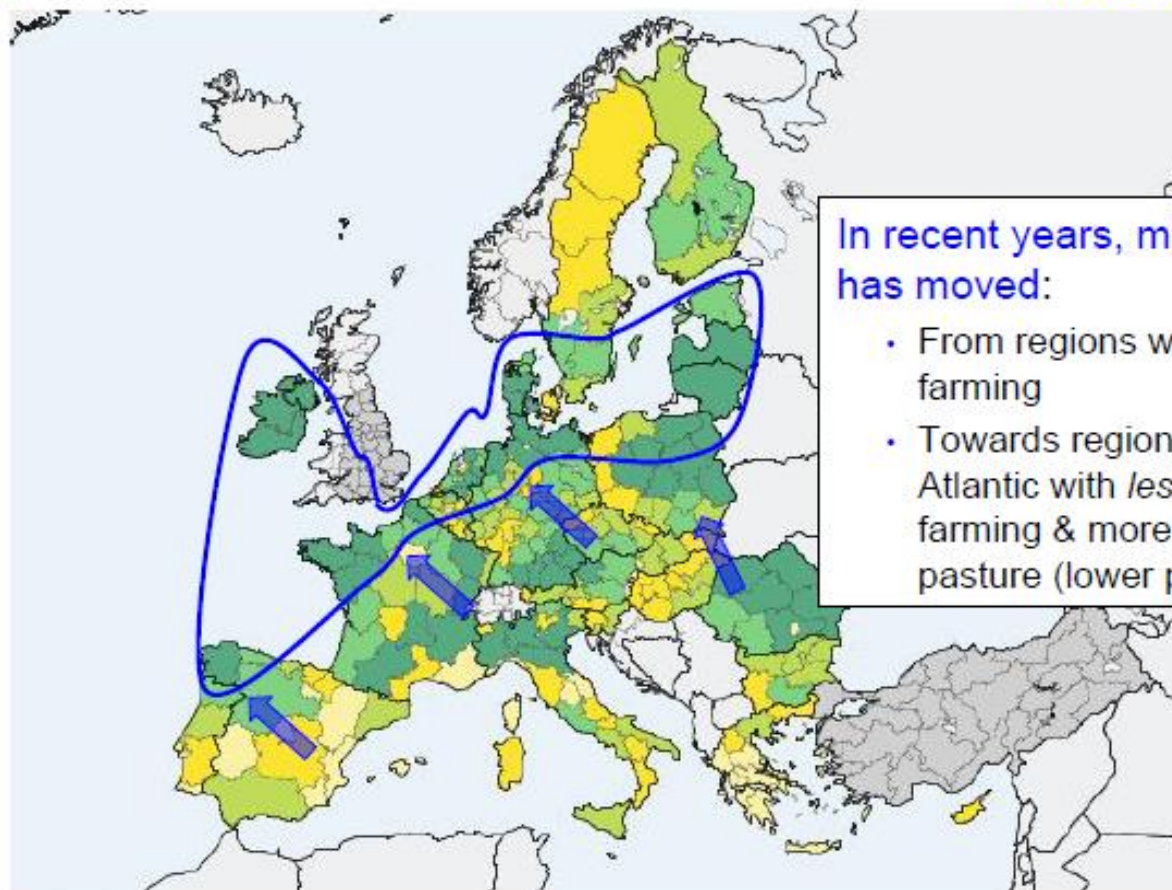
4. Galician dairy sector

Distribution plot Scatter plot **Bar Chart** Data Table



Regional movements in EU Milk Production

Movement continues to Atlantic regions with less intensive farming



In recent years, milk production has moved:

- From regions with *intensive* farming
- Towards regions around the Atlantic with *less intensive* farming & more land suitable for pasture (lower production costs)

Légende

0.0 - 13.9

13.9 - 37.1

37.1 - 76.4

76.4 - 133.0

133.0 - 964.0

N/A

Source: Eurostat

1. TOWARDS A GALICIAN BIOECONOMY STRATEGY

- **Bioeconomy Approach**

Agri-food, forestry, biomass, marine energy and resources, fisheries and aquaculture.

- **Bioeconomy Policy Support**

I2C Plan (GALICIAN RESEARCH, INNOVATION AND GROWTH PLAN 2011-2015); Smart Specialisation Strategy of Galicia RIS3; Cross-Border Smart Specialisation Strategy of Galicia- Northern Portugal (RIS3T) Galician forestry Plan, Rural development program 2014-2020

- **Bioeconomy Ecosystem**

Galician Innovation Agency; Ingacal, CETECA, Campus do Mar; Institute of Agrobiological Research; UIMA; Compostela University; IBADER, Energylab; University of Vigo; IGAPE, Galicia Aquaculture Cluster; Food Cluster; Wood Cluster; Ministry of Rural Environment and Sea (IEO, CETMAR)

2. Bioeconomy – strategies, plans and projects

- **RIS3 Galicia (Regional Smart specialization strategy)** identifies 30 potential niches and among them (as bioeconomy related) are Food, Agriculture, Fisheries and Biotechnology and Energy, Environment and Services; 3 challenges and the first one responds to the bioeconomy needs and trends: **“Innovative management of natural and cultural resources”** including 5 priorities
 - (1) Valuation of maritime resources,
 - (2) Modernisation of aquaculture,
 - (3) **Modernisation of the agricultural and livestock, fishing and forest sectors,**
 - (4) Improvements in obtaining energy from natural resources,
 - (5) Modernisation of the tourism sector and the cultural industrie.
- **Rural Development Programme of Galicia 2014-2020** defines 6 priorities
 - (1) Knowledge transfer and innovation in agriculture, forestry and rural areas;
 - (2) Competitiveness of agri sector and sustainable forestry;
 - 3) Food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture;
 - (4) Restoring, preserving and enhancing ecosystems related to agriculture and forestry;
 - (5) Resource efficiency and climate;
 - (6) Social inclusion and local development in rural areas; and funds actions in priority sectors like agriculture and forestry.



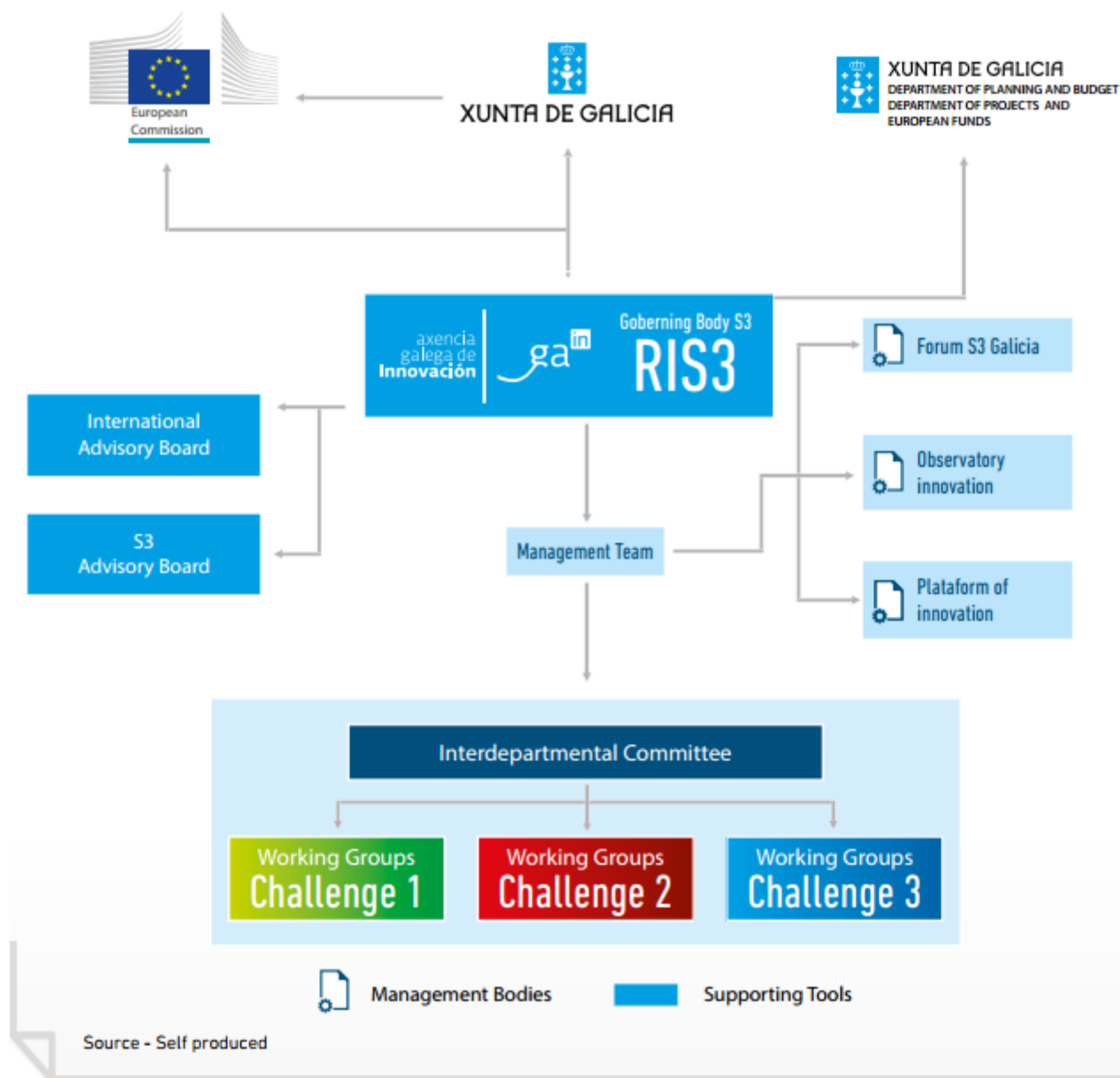
FEADER:
Europa inviste no rural

2. Bioeconomy – strategies, plans and projects

- **Galician network of clusters.** Among bioeconomy related: INNOTECH Strategy Plan 2016-2019 (Wood Cluster); The Strategic Plan of the Galician Food Cluster 2016-2020 (Food Cluster) and actions of vertical and horizontal character (among the last one are technology monitoring and specialized training in aquaculture, etc.)
- **Cross-Border Smart Specialisation Strategy of Galicia- Northern Portugal (RIS3T)** establish strategic collaboration bioeconomy related areas such as Biomass and marine energies and resources and agri-food and agri- environmental systems.
- **Galicia-Industria 4.0 Competitiveness Agenda aims the sectoral hybridisation.** The sectorial agenda focus on strategic sectors (among bioeconomy related are Agrifood products, Sea and aquaculture, Renewable energy, Wood / Forestry, Naval/Maritime industry, Natural stone), on emerging and of high potential (bioeconomy related are biotechnology and ecoindustry) and on support of the new industry (such as enabling technologies).



Fig. 34. Management Structure for the Smart Specialisation Strategy in Galicia



GALICIA S3 CHALLENGES AND PRIORITIES: Bioeconomy

CHALLENGE 1

New model for innovative management of natural and cultural resources based on innovation

Modernisation of traditional Galician sectors by introduction of innovations that provide higher yield and efficiency in use of endogenous resources and their reorientation towards alternative high added value uses in energy, aquaculture, drug, cosmetic, food and cultural activities.

- **Modernisation of Primary Sectors**
 - Valorisation of Sea
 - Development of Aquaculture
- **Biomass & Marine Energies**
 - Tourism & ICT

CHALLENGE 2

New industrial model based on competitiveness and knowledge

Increase the technological intensity of the Galician industrial sector through hybridisation of Key Enabling Technologies.

- Diversification of Driving Sectors
- **Enhanced competitiveness through clean technologies/Eco-innovation**
- **Knowledge-based economy through ICT & KETs**

CHALLENGE 3

New healthy lifestyle model based on active ageing of population

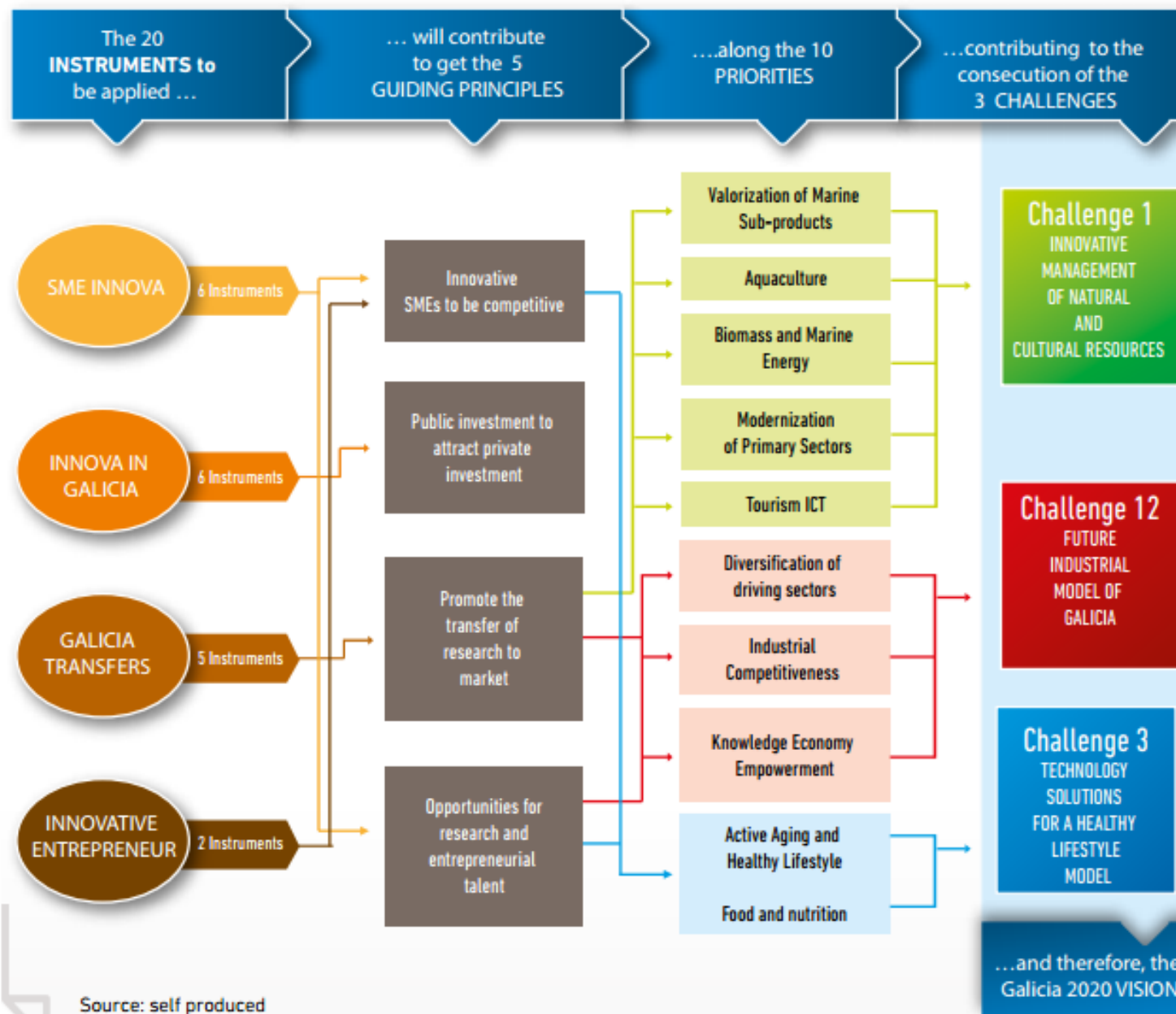
Position Galicia in 2020 as a lead region in Southern Europe that offers knowledge intensive products and services linked to a healthy lifestyle model: active ageing, therapeutic application of fresh and marine water resources and functional nutrition.

- Development of Active Aging Sector
- **Food & Nutrition for healthy living**

galicia

P.1.4. PRIMARY SECTORS MODERNISATION

Priority 1.4	Modernisation of the Galician primary sectors (agriculture, fishing, livestock and forestry) aimed at sustainable improvement of the efficiency and profitability indicators for operations and creation of innovative products and services.
S3 Strategy Type	Modernisation
General Description	<p>The aim of this priority is to increase competitiveness and productivity in the production and transformation of Galicia's natural resources from a bio-economic and environmental perspective, improving the efficiency and profitability indicators for operations with a view to sustainability, and generating new products, processes and services that are more intense in terms of knowledge and new technologies, ensuring the conservation and sustainable exploitation of natural resources.</p> <p>The areas for improvement related to this priority must be related to all the stages of the productive chain, structured mainly around innovation for optimising the use of resources (fertilizers, concentrates, pesticides, water, energy, genetics or marine ecosystem), increasing the land used by operations, improving their economic management, creating new products and marketing channels, reducing and monitoring environmental risks and energy efficiency increase, advancing in the comprehensive fight against pests, and disease control or reducing contamination of water and air from Greenhouse Gases and protection and sustainable exploitation of water resources (rivers and ground waters). In addition, from a transversal point of view, activities of conservation, restoration and spare of the environment and territorial balance will be implemented, contributing to improvement, modernization and enhancement of natural resources and their uses..</p>



3. BIOECONOMY ECOSYSTEM



There is wide variety of bioeconomy-related stakeholders, due to the important role of primary activities in the Galician economy. Research and innovation in agriculture, forestry, fisheries and aquaculture is not new to Galicia or its Universities. To boost the Galician bioeconomy and the R&I in bioeconomy in Galicia Region, following bioeconomy stakeholders are considered as relevant:

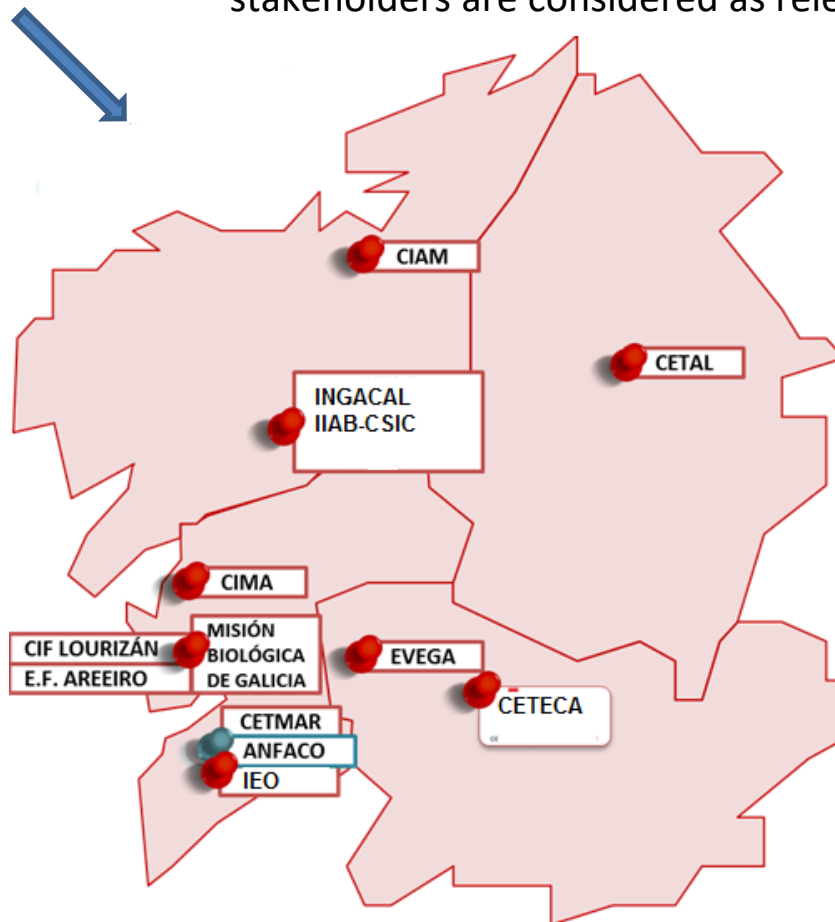


Fig. 18: Relevant agents for Challenge



Source: self produced based on data collected from the inventories drawn up by the Working Groups

Galician dairy sector

Challenges in the post-quota era for Galician dairy farms:

- a) Forage production capacity
- b) Minimization of milk production costs
- c) Avoid negative environmental impacts
- d) Explore the positive differentiation of milk production systems and milk products
- e) Maintain the occupation of rural territory with dairy farms of increased resiliency

Galician dairy sector

Main strengths:

- a) Human resources: there is a broad group of dairy farms with a technological level comparable with that of developed dairy areas in the UE.
- b) Agro-climatic conditions: High potential for the forage production in rainfed conditions.

Weakness: Need to reorient the production towards land-based systems

- Structural limitations: reduced total farm utilizable agricultural area (UAA), fragmentation, difficulties to increase land area by renting.
- Dominancy of a productive model with high dependence of imported feed commodities, very vulnerable to volatility of raw materials and dairy products.
- High intensification in a small part of the Galician territory with potential negative effects on soil, water and atmosphere.
- In parallel, abandonment of vast extensions of land with a high potential for forage production.

5 main research issues

Implantation in Galicia of the crop of variety of linen rich in omega 3. Essay of new strategies of incorporation to wool feeding of the ruminants (FEADER 2008/31)



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y el doble de **OMEGA 3**



Procedente de GANADERÍAS GALLEGAS SOSTENIBLES

5 main research issues

DAIRY SECTOR

Areas of activity:

- Valorization of whey to produce functional foods, improve the broiler diet in ecological and to produce bioethanol.
- Using milk composition as a potential tracer of feeding systems (Milk from pasture differentiation)
- Application of emerging technologies and nanotechnology to obtain food for populations with special needs (elderly and people with allergies and food intolerances).
- Projects focused on optimizing meat aptitude of dairy cow, new feeding strategies for ruminants and improvement of animal health status, as well as the quality of its products.
- Projects to involve dairy industries in networks of innovation and Agro-food technological development, and in advanced services of internationalization.



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MEAT SECTOR AND OTHERS

Areas of activity:

- Nutritional and differentiated quality projects.
- Agri-food production, environment and territory projects.
- Product technology, process and food packaging technology projects.
- Food safety and hygiene projects.
- Economic research and market research projects.
- Galician agricultural product quality policy: protected geographical indications (PGIs) and protected designations of origin (PDOs)



THANK YOU FOR YOUR ATTENTION

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