

WORKSHOP ON BIOECONOMY

THE SPANISH STRATEGY

Dr Esther Esteban Rodrigo
Director of INIA

Workshop on the implementation of the European Strategy for the Bioeconomy

May 20th 2019

Direccion.general@inia.es



Integrated use of resources of biological origin

**How to put in practice:
Trough Value chain **creation** and
strengthening**

- **Classical value chains**
 - **New value chains**

Traditional value chains

FOOD



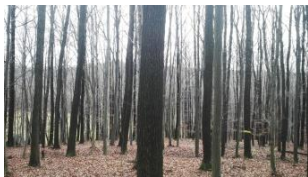
Sustainable

Efficient

Traditional value chains

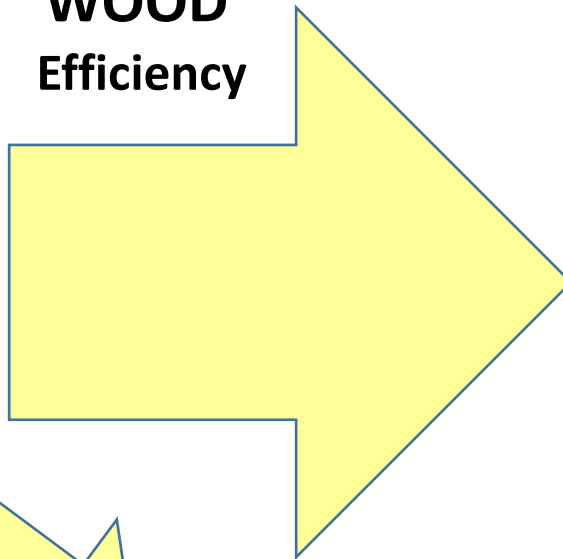
FOREST Value Chain

FORESTRY



**Sustainable
management**

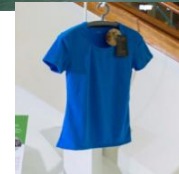
**WOOD
Efficiency**



**Environmental
services**



**Building
materials**



Textiles



Paper



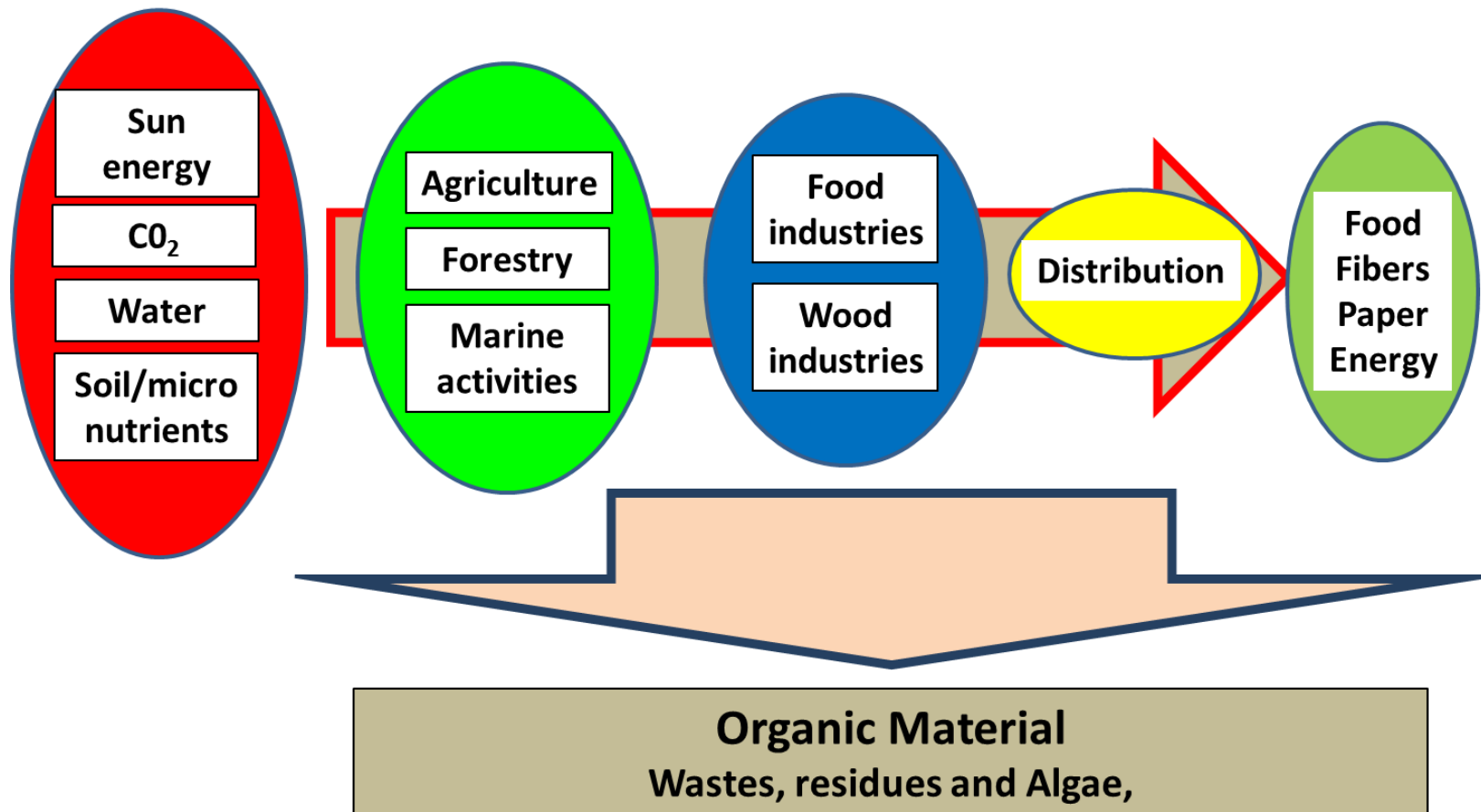
**Biomass:
bioproducts**



Heat / Energy

Integrated use of resources of biological origin

Residues from food / wood chain



Wastes and residues in Spain

Estimated Wastes and Residues in Spain

(PER 2020, 2011, Probiogas 2010)

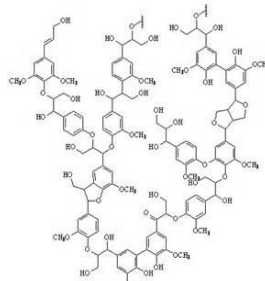
	M t/y	
• Biomass		Estimated Availability 60% collected and stored 96 M t/y
• Forestry residues	18	
• Arable and permanent (trees) crop residues <ul style="list-style-type: none">• such as straw or husks, grass silage,• brash and arboricultural arising	30	
• Agro food wastes <ul style="list-style-type: none">• Inedible components: peel, skin, husks, cores, fish heads, pulps• Organic material from excess production or insufficient market• Wasted materials from food and drinks: wine, beer, cheese,• Food preparation: fat, cooking oils, food disposed of for safety reasons	31	
• Woody wastes, paper pulp, textiles, etc	6	
• Animal residues <ul style="list-style-type: none">• Manures and slurries• Animal bedding such as poultry litter	48	
• MSW (municipal solid waste) and Sewage sludge	26	
	<hr/> 159	

New value chains

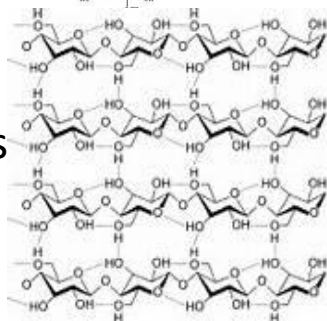
BIOMASS
Biological
byproducts

RESIDUAL BIOMASS TRANSFORMATION

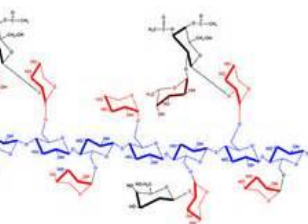
lignin



Cellulose



Hemicellulos



Proteins

Food products:

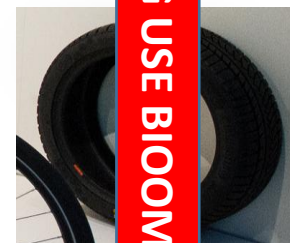
Feed products

Biomaterials:: composites,
binders,phenols

Bioproducts: sugars
and biomterials,

Biofuels

Energy



CASCADING USE BIOMASS



An opportunity and a necessity

- A society less dependent on non-renewable resources
- Consolidating the economic growth
- New technologies for more competitive companies
- Autochthonous resources

Competitiveness of the productive sectors

The current economic activities

Estimated: 6,5% GDP and 9% working population

Agrifood Sector

5,59% GDP (2015)

- 2,42 % GDP primary production:: 890.000 farms
- 0,20 % GDP Fisheries: 5.025 operations
- 2,97 % GDP, food processing industry: 28.800 companies



17% of Spanish sales abroad



Forestry Sector

0,60% GDP (2015)

- 0,18 % GDP timber and cork
- 0,34 % GDP paper
- 0,08 % GDP other

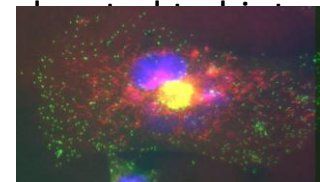
Biomass for energy

0,34% GDP (APPA2015)

- 176 biomass companies for energy and other purposes
- 47 Companies

Non-health biotechnology sector:((INE, 2015)

2.831 companies



Research in Bioeconomy

World position in:

- * Agr. & Biol Sciences: 7º
- * Environm Sciences: 8º
- * Biotech & Biochem: 9º

2.780 research projects in 2015

Articles in journals (2015)

- * 8.786 in Agr. & Biol Sc
- * 5.162 in Environm Sc
- * 3.499 in Biotech & Bioch



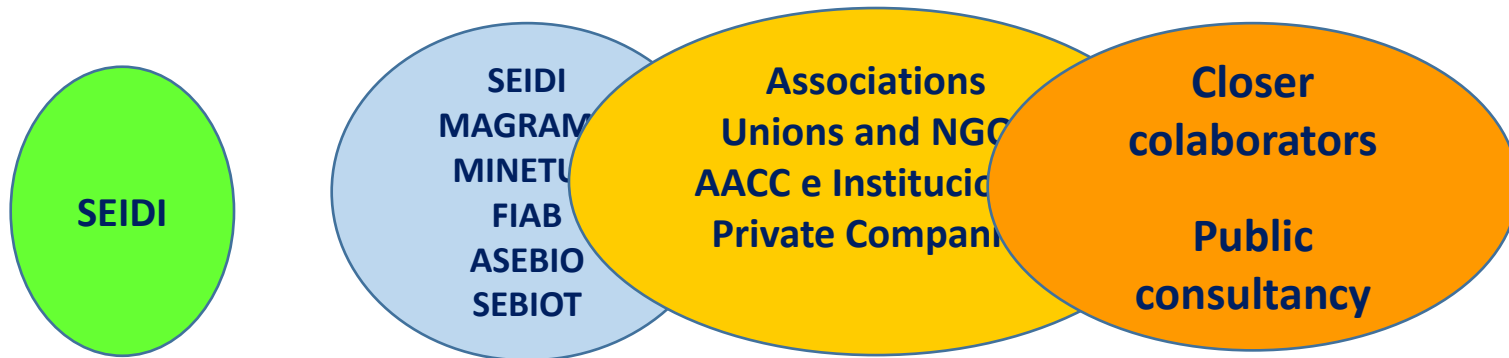
Innovation

22% of the agrifood companies invested in innovation in 2014

Great collaboration between companies, universities and OPIs



The Process of Design of the Strategy



Internal Working Group

Writing Working Group

First Draft and consultation

Public consultation

STRATEGY AND ACTION PLAN 2016

Beginning 2014

End 2014

1º semester 2015

3º trimester 2015

4º trimester 2015

Definition and Scope of Bioeconomy

Set of economic activities

- Products
- Services

Use of resources of biological origin

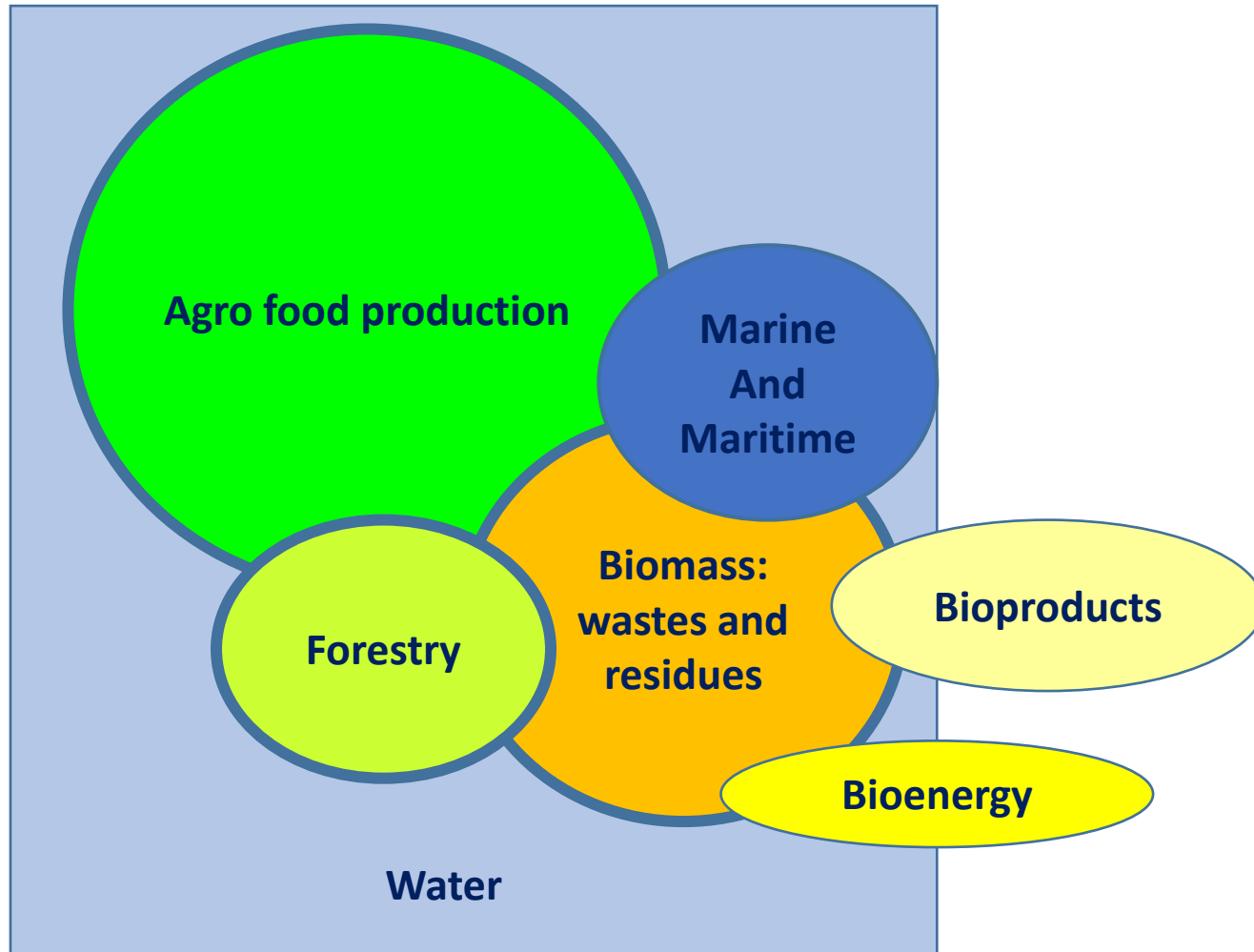
- Efficiency
- Sustainability

For the production and merchandising

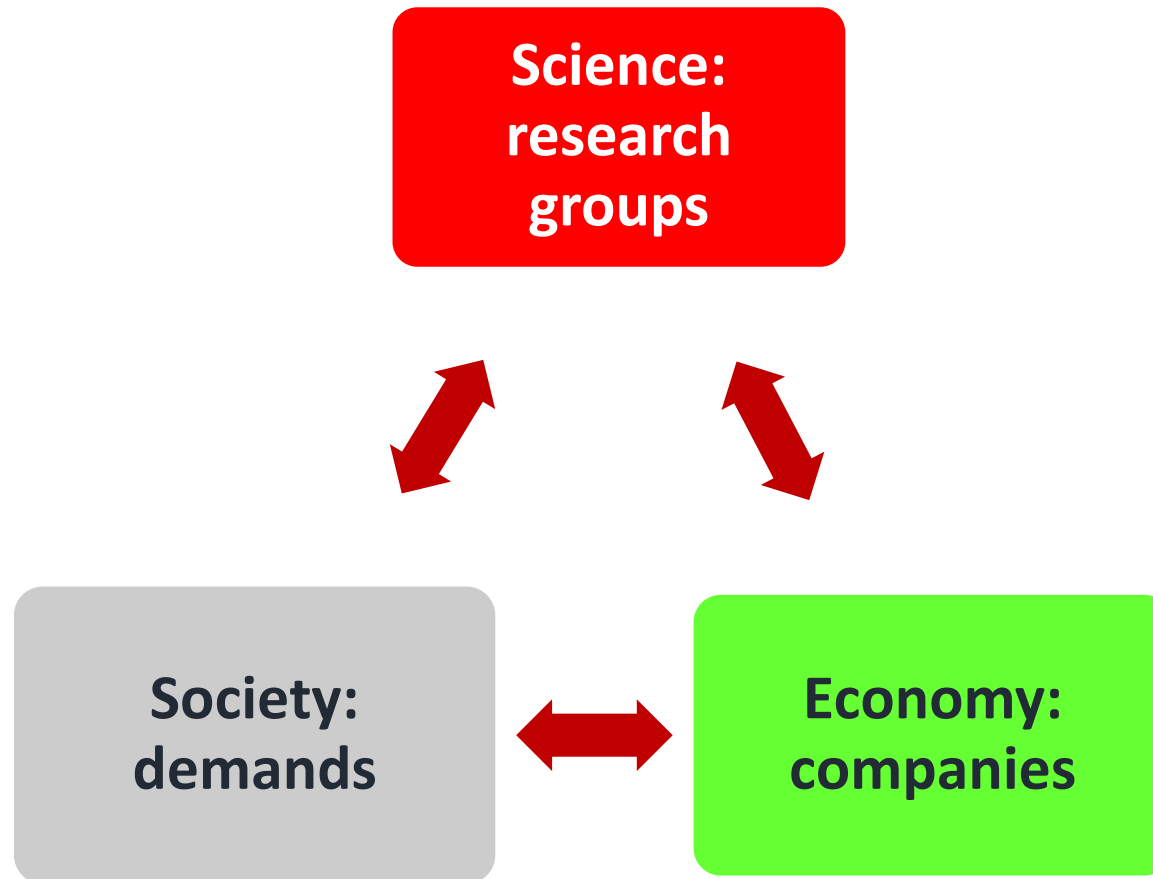
- Market food
- Forestry products
- Bioproducts
- Bioenergy

**which are respectful of the environment,
along with the development of rural areas**

Definition and Scope of Bioeconomy



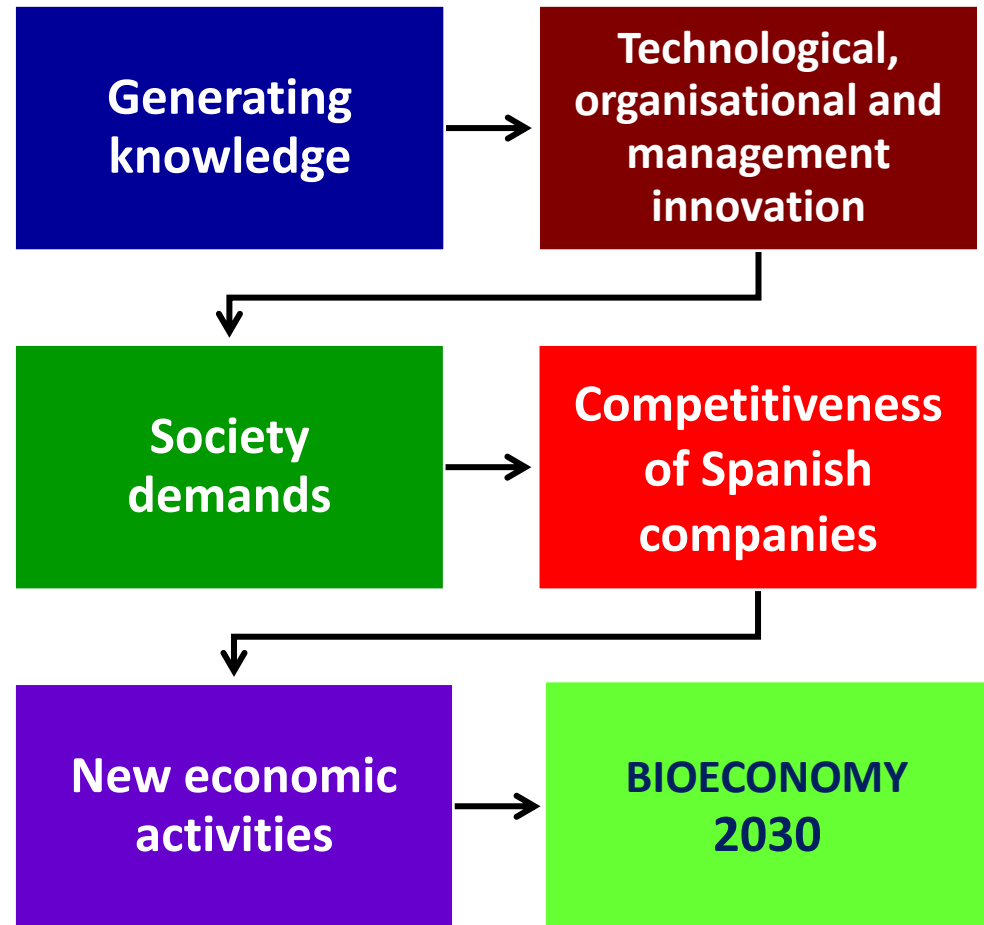
Definition and Scope of Bioeconomy



Strategic targets



Estrategia española
de Bioeconomía
Horizonte 2030



Operational targets

1. Collaboration between the Spanish administrations and the productive sectors

2. Interaction between the public and private Spanish and International science and technology systems and the productive sectors and their companies, stimulating the creation of multidisciplinary teams

3. Application of scientific know-how to the market and innovation

Operational targets

4. Identify limitations on bioeconomy expansion

5. Integrate all the backup tools for bioeconomy development

6. Facilitate the internationalization of companies, science and innovation

Operational targets

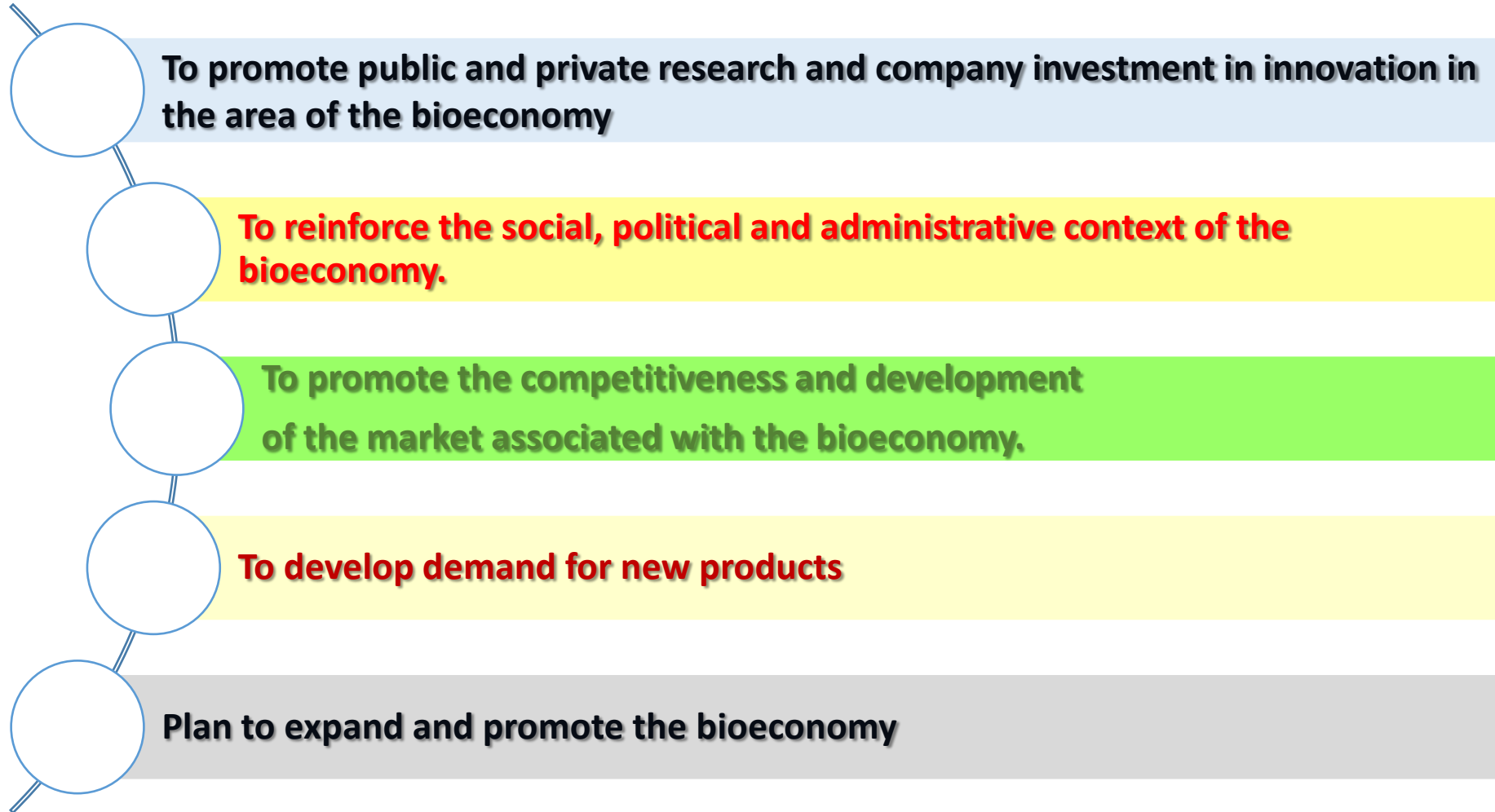
7. The generation and development of tools for employee education and training.

8. Knowledge, dialogue and social awareness of the bioeconomy, taking in all the scientific, social, economic and financial players and society in general.

9. Rural economic development and productive activities diversification

10. Creation of new markets

How to promote bioeconomy development?



Research and investment in innovation

1. Multidisciplinary alliances of researchers and companies, guaranteeing research that targets: H2020, State Plan, PDR, Regional Operating Programmes

2. Operational groups in the European Innovation Partnership (EIP) in rural development programs (PDR).

3. To develop models to facilitate the funding of pilot projects and demonstration plants, combining various public and private financial instruments

4. Analyze successful public-private collaboration models in generating business innovation based on public/private research

5. Annual conference on the bioeconomy

6. To promote knowledge of the bioeconomy among private financial institutions and risk- capital companies

7. To develop a repository of raw data on Spanish public research projects in the sphere of bioeconomy

8. To strengthen and enhance interaction between the structures and existing operating networks: technological platforms and campuses of excellence

Social, political and administrative context

Spanish bioeconomy observatory

- ☐ Follow –up group State Administration.
- ☐ Spanish Bioeconomy Strategy Management Committee :
 - Monitoring group.
 - Technical scientific support group.
 - Technological networks group.

Program for social divulgation and dialogue on bioeconomy

- ☐ Exchange of views
- ☐ Dissemination of knowledge
- ☐ Communication strategy. FECYC.
- ☐ Informal Bioeconomy Policy Group.

To generate a broad group of parties interested in bioeconomy matters

Research groups, companies, technological platforms, innovation agents, organizations and NGOs

Training in the bioeconomy field

- ☐ universities,
- ☐ Inside formal education system
- ☐ Outside formal education system.

Cooperation and international exchange

Competitiveness of the market

To develop the concept of social and environmental sustainability

To identify legal, administrative or other limitations to bioeconomy development: laws, administrative, etc.

To promote exports and internationalisation in the field of new bioproducts

To promote the development of chains of value

To analyse the standardisation and certification processes

To seek for alternatives to current productive and organizational models

Demand for new products

Identification of products and limitations

- ☐ On technologic
- ☐ On finance
- ☐ In demand

Innovative public procurement

Labelling system for bioproducts

Expansion and promotion



To compile and explain successes demonstrates the bioeconomy's possibilities.



To promote potential R+D+i programmes related to the bioeconomy:

- **At the national, regional and international levels**
- **Autonomous Communities and locally**



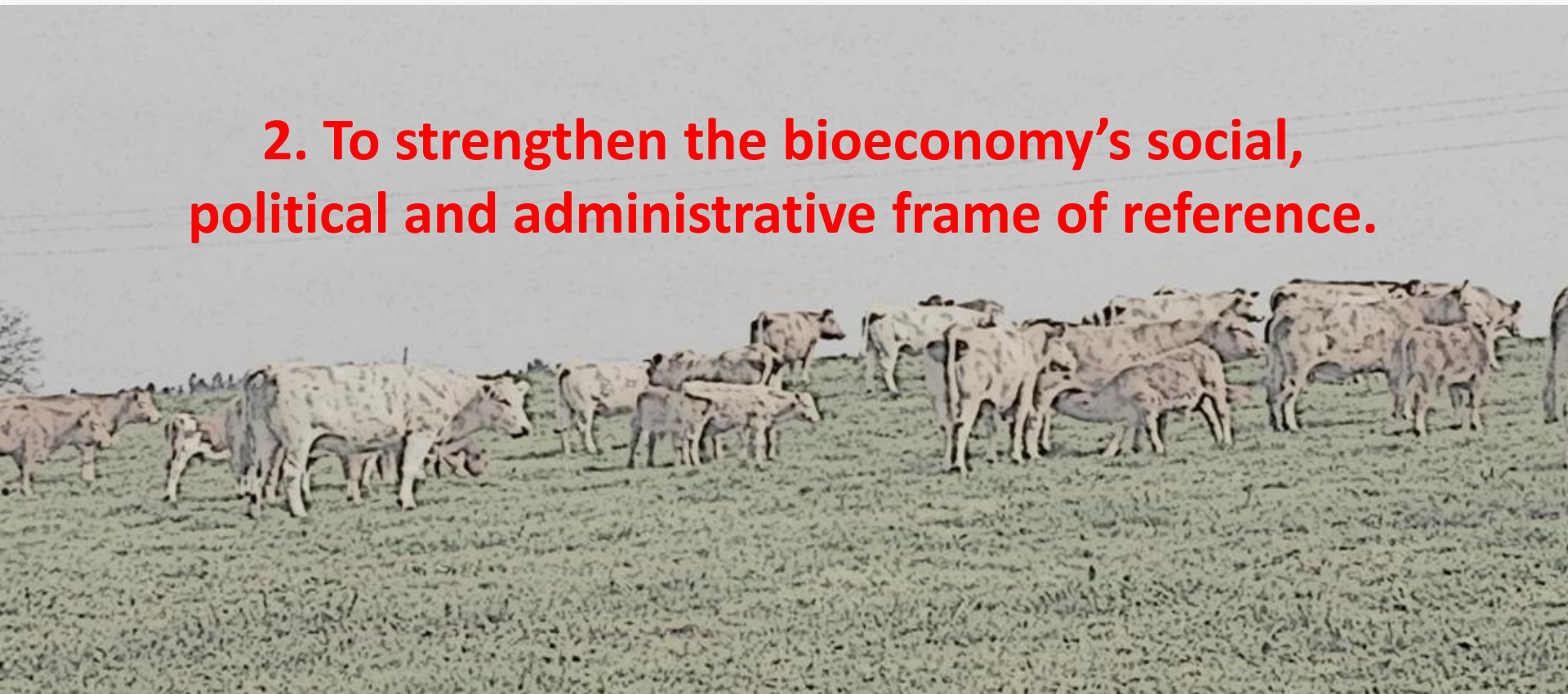
Linking Spanish successes to similar measures articulated in another international sphere.



Action Plan 2016-2017

1. To promote public and private research and investment in innovation in the area of the bioeconomy.

2. To strengthen the bioeconomy's social, political and administrative frame of reference.



Action Plan 2018

- 1. Promotion of public and private research and investment in innovation.**
- 2. Strengthen social, political and administrative sectors.**
- 3. Competitiveness and market development**
- 4. Development of new products**
- 5. Expansion of the bioeconomy**
- 6. Development of indicators**



Thank you