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FUNDACIÓN CENER - CIEMAT

Sustainable aspects of bioeconomy
Spain



Gobierno
de Navarra

01 General data

- Population 46.507.760 (January 2014)
 - Male :22.874.155
 - Female: 23.633.605
- Area 505.964 Km²
- Unemployment rate 23.8% (October 2014)
- GPD at market price 1.022.998 Million € (2013)

Risk of population aging



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02 Biotechnology based companies

Some data (ASEBIO,2012)

- % in GDP of Bio-based companies: 7,8%
- Number employees: 202.976
- Number of companies: 3.070
- Biotechnologies users:
 - 68,5% food industries
 - 19,7% Healthy

*Sector on growing**High %: New SME based on R&D*

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Cíesmo



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02 Industry sector

VAB a coste de factores y empleo de los sectores industriales en España (2011)

Sector	VAB (M€)	Ocupados
Metalurgia	4.461,7	63.462
Productos minerales no metálicos diversos	6.096,8	117.406
Industria química y farmacéutica	11.399,4	119.981
Fabricación de productos metálicos, excepto maquinaria y equipo	10.606,6	251.091
Maquinaria y equipo mecánico	5.844,4	102.143
Material y equipo eléctrico, electrónico y óptico	5.161,6	96.601
Vehículos de motor	8.447,2	139.446
Material de transporte, excepto vehículos de motor (*)	3.290,4	39.629
Alimentación	15.841,5	311.877
Bebidas y tabaco	4.856,4	49.266
Textil, confección, cuero y calzado	3.969,9	123.144
Madera y corcho	1.768,7	57.484
Papel y artes gráficas	6.075,9	111.382
Caucho y materias plásticas	5.184,0	93.659
Industrias manufactureras diversas	3.392,3	104.782
TOTAL	96.396,9	1.781.353

NOTAS: (*) Suma de Construcción aeronáutica, Construcción naval y Material ferroviario.
Fuente: Minetur.

Source: PWC



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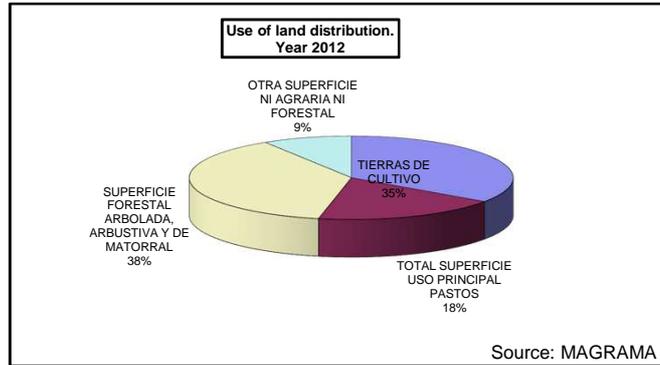
Cíesmo



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03 Land uses

Arable land 17 Mha
 Pasture 10, Mha
 Forest 19 Mha



40 % of forest surface (11,2 Mha) is National protected areas

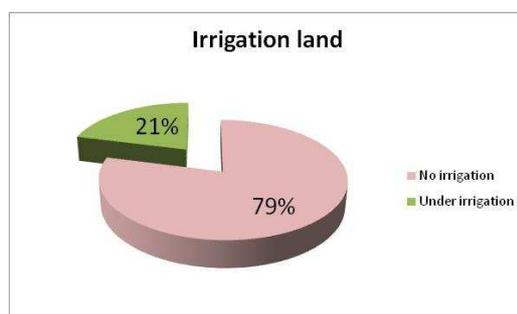


04 Crop land

Arable land :	
Herbaceous crops	8,7 Mha
Cereal	6,0 Mha
Feed crops	1,0 Mha
Sunflowers	0,7 Mha
Woody crops	4,7 Mha
Olive	5 Mha
Vineyard	1 Mha
Almond	0,5 Mha
Critics	0,3 Mha
Set aside land	3,8 Mha



04 Crop land

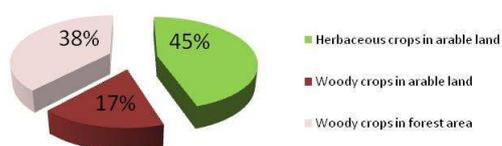


05 Biomass potential

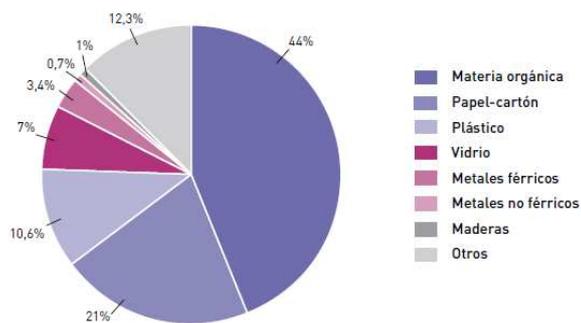
Potential Crops for Biomass assessment (IDAE)

Source	Biomass (t/año)	Biomass (toe/año)
Herbaceous crops in arable land	17.737.868	3.593.148
Woody crops in arable land	6.598.861	1.468.173
Woody crops in forest area	15.072.320	1.782.467
Total	39.409.049	6.843.788

Biomass (t/year)



06 Municipal solid waste

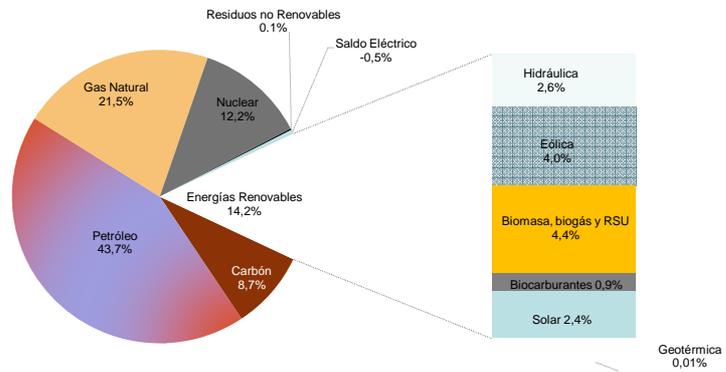


Composition of MSW



07 Energy consumption

Total primary energy consumption in 2013: 121.120 ktoe

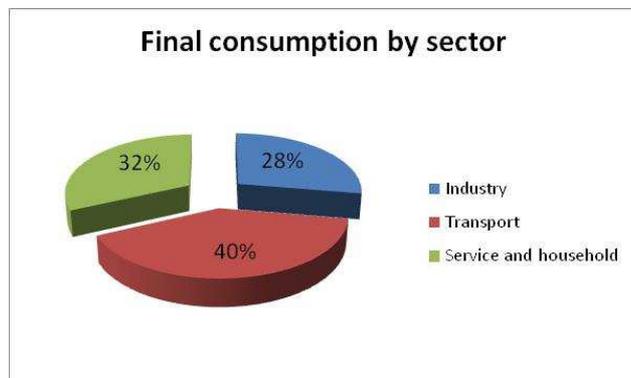


•6% less than the previous year



07 Energy consumption

Final consumption by sector



07 Energy consumption

Biomass for energy primary consumption in Spain

Biomass Potential (PANER-IDAE)	20 Mtoe
2010 Objectives	5 Mtoe
Real primary consumption	3,91 Mtoe
2014 Real primary consumption	5,3 Mtoe



08 Biomass plant list

Companies:

- Acciona
- ENCE

• No more power plant in the last year



10 Biofuels plant

http://www.biodieselspain.com/plantas_listado.php

Some of them are closed
Only the ones located in
harbour



11 Biofuels certification

- Sistema de Información para la Certificación de Biocarburantes/ Information system for the Biofuels certification (SICBIOS- CNMC)

Order ITC / 2877/2008, of 9 October, establishing a mechanism for promoting the use of biofuels and other renewable fuels for transport, Article 6 refers to the **National Energy Commission** is established as the responsible entity the issuing of biofuels, managing **the certification mechanism and the monitoring and enforcement of the obligation for biofuels in Spain** and in his second final provision authorizing it to issue the necessary circulars to that effect.

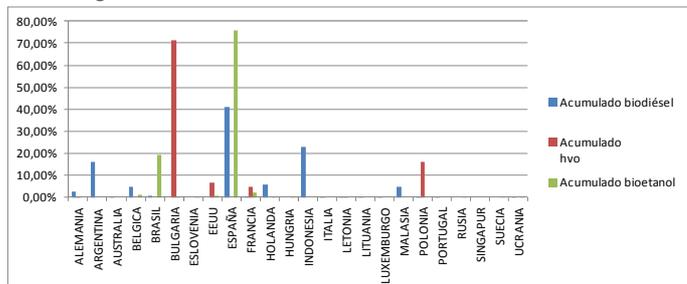
REMARKS:

- But not a real sustainability certification scheme.
 - Declaration of producers/users to control the commitment of mandatory objectives.
 - There is a tool to calculate GHE: Calcu-GEI
 - Not trazability
- Only one private company has developed its own voluntary scheme. ABENGOA
- National standardization Comite AEN/CTN – 303 . Mirror CEN TC 383 , but until no not standard only technical specification



22 Biofuels feedstocks

Biofuel origin



Feed stock origin

Source: CNMC

Feedstock	Biodiésel (%)	HVO (%)	Bioetanol (%)
ESPAÑA	1,95%	0,00%	9,71%
ARGENTINA	17,94%	0,00%	0,00%
INDONESIA	55,64%	51,24%	0,00%
MALASIA	10,92%	33,69%	0,00%
UCRANIA	0,21%	0,00%	52,23%
BRASIL	2,31%	0,00%	27,38%



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12 Biofuels feedstocks

- Feedstocks for biofuels (2013)

Feedstock	Biodiésel (%)	Acumulado hvo (%)	Bioetanol (%)
A. ANIMAL	0,00%	4,45%	0,00%
A. COLZA	8,45%	0,00%	0,00%
ALCOHOL VÍNICO	0,00%	0,00%	1,13%
A. FRITURA	2,43%	0,00%	0,00%
A. GIRASOL	0,00%	0,26%	0,00%
A. OLIVA	0,08%	0,00%	0,00%
A. PALMA	67,55%	95,29%	0,00%
A. SOJA	21,49%	0,00%	0,00%
CAÑA AZÚCAR	0,00%	0,00%	21,26%
MAÍZ	0,00%	0,00%	76,48%
REMOLACHA	0,00%	0,00%	0,06%
SEM. DE CEBADA	0,00%	0,00%	0,15%
SEM. DE TRIGO	0,00%	0,00%	0,91%



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13 Legislation: Electricity generation

1. Royal Decree-Law 9/2013, adopting urgent measures to guarantee the financial stability of the electricity system
 2. Law 24/2013, on Electricity Sector
 3. Royal Decree 413/2014, dated on 6 June, regulating electricity production from renewable energy sources, cogeneration and waste
 4. Ministerial Order IET 1045/2014, dated 16 June, approving the remuneration parameters for standard facilities, applicable to certain electricity production facilities based on renewable energy sources, cogeneration and waste.
- Change in the subsidiary system:
 - From a from *feed in tariff* to *additional remuneration based on investment and operation cost based on efficient and well managed and a reasonable rate of return*



14 Legislation: Biofuels

1. Order ITC/2877/2008 establishing a support scheme for biofuels and other renewable fuels for transport
 2. Resolution dated 8 July 2013, by the Secretary for Energy, updating for 2013 values used in calculation formulas of compensatory payments related to the biofuels obligation fulfillment, included in Order ITC/2877/2008
 3. Law 1172013, to support entrepreneurs and boost economic growth and job creation (establish mandatory goals for biofuels for 2013 and coming years)
 4. Resolution dated 27 December 2013, by the Secretary of State for Energy, updating the annex ITC 28/77/2008
 5. Order IET/822/2012 governing the allocation of biodiesel production volumes for computing compliance with mandatory biofuels targets
 6. Order IET/2736/2012, amending Order IET/822/2012 governing the allocation of biodiesel production volumes for computing compliance with mandatory biofuels targets.
 7. Resolution dated 24 January 2014,, by the Secretary of State of Energy, publishing the definitive list of plants or production units with an allocated productions quantity of biofuels
- Selection process of biodiesel plant in order to allocate production quotas for the mandatory target
- ⇒ *A way to push the local production*



15 Research and development

State Plan for Scientific and Technological Research and Innovation 2013-2016

Biotechnology Strategic action:

- Line 1. Biotechnology for health.
- Line 2. Agricultural and Food Biotechnology.
- Line 3. Industrial Biotechnology.
- Line 4. Bioenergy and biofuels development.
- Line 5. Environmental Biotechnology.
- Line 6 Systems Biology, Synthetic Biology and Nanobiotechnology.
- Line cross aimed at the generation of tools and methods that can be applied to a wide range of thematic objectives.



15 Research and development

Peer Review of the Spanish Research and Innovation System

Recommendations

1. A reform of the public research system so that it can increase its productivity, **quality level and relevance to the needs** of the Spanish **economy and society** (Chapter 2);
2. The upgrade and expansion of **innovation capacities in the private sector** in view of changing the economic specialisation towards more value-added, more knowledge-intensive activities (Chapter 3);
3. A better exploitation of the R&I potential present all around the country through the creation of **national-regional synergies** in resources and policies (Chapter 4).



16 Legislation: Biofuels

- Ministry
 1. Ministerio de Agricultura, Alimentación y Medio Ambiente. Ministry of Agriculture, Food and Environment. www.magrama.gob.es
 2. Ministerio de Economía y Competitividad. Ministry of Economy and Competitiveness. www.mineco.gob.es/
- Governmental bodies
 1. CNMC. Comisión Nacional de los Mercados y de la Competencia. National Market and Competence Commission. www.cnmc.es/
 2. CNE. Comisión Nacional de Energía. National Energy Commission.
 3. CDTI. Centro de Desarrollo Técnico Industrial. Centre for the technical and industrial development. www.cdti.es/
 4. IDAE. Instituto para la Diversificación y Ahorro de la Energía/Energy diversification and save Institute. www.idae.es/
- Statistic
 1. INE. Instituto Nacional de Estadísticas. National Statistic Institute. www.ine.es
- Industries association
 1. APPA – Asociación de Productores de Energías Renovables/ Renewable producers association www.appa.es
 2. ASEBIO- Asociación Española de Bioempresas. Spanish Biocompanies Association. www.asebio.com/es



17 GAP

- High area of arable land
- No so big crops yield. Irrigation is needed for higher yields
- Important food industries. High amount of waste (olive oil, juice, preserved food)
- Biomass export to other EU countries. (Better prices), but at the same time import for Biofuels production.
- Low subsidies in renewable electricity sector . STOP promoting
 - *Biomass is the eternal promise*
- Not possibilities of financing investment. Crisis but also changes in subsidy framework .
- No continuity of R & D between changes in government
- Better coordination in R& D between central and regional governments
- Young biotechnology companies growing



