

II Workshop 'Renewable Energies and Space'

REVIEW OF THE SPANISH BIOMASS SECTOR NEEDS IN THE SPACE CONTEXT

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About APPA

- National Association

- Represents more than 500 **producers**, businesses and other associations in the renewable energy sector

- Role:
 - Coordinate, represent and defend the interests of the Sector in politics, civil society and to the media
 - Participate in the development of Spanish energy and environmental policy
 - Participate in commissions:
 - Regulation
 - Industry
 - Economy



Other activities

- Representative in:
 - Spanish National Energy Commission
 - CIEMAT (Center for Environmental and Energy Technology Research)
 - Committee of Agents of the Electricity Market
 - Other public entities (Energy Agencies of the Spanish Regional Governments)

- Presence in Europe:
 - Member of:
 - ESHA → European Small Hydropower Association
 - EWEA → European Wind Energy Association
 - AEBIOM → European Biomass Association
 - EGEC → European Geothermal Energy Council
 - EU-OEA → Ocean Energy Association
 - Lobby EU institutions and European parliamentarians



APPA represents:

- Biofuels: Bioethanol and Biodiesel
- Biomass and Biogas**
- Geothermal Energy (High & Low Enthalpy)
- Hydropower
- Marine Energy
- Small-scale Wind Installations
- Solar Photovoltaic
- Solar Thermoelectric
- Wind Energy

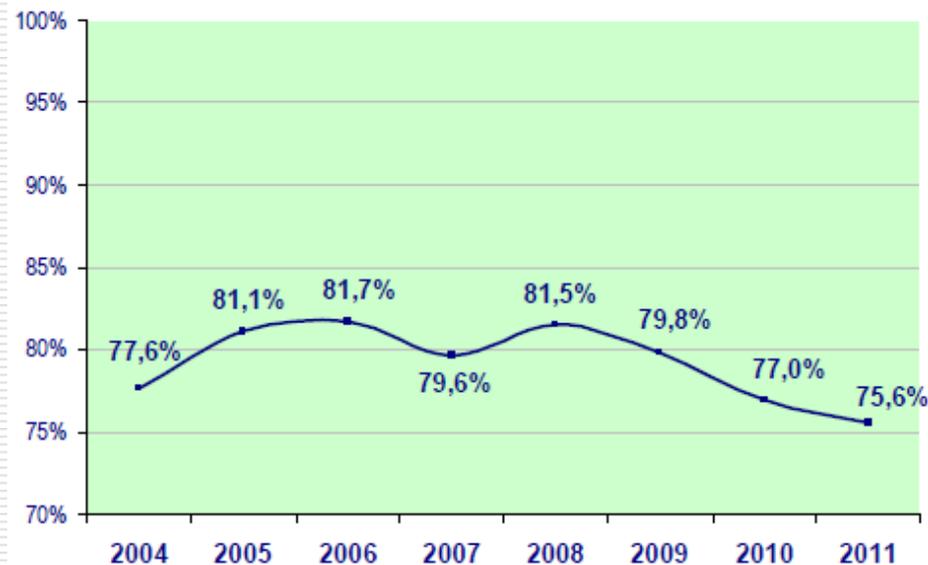


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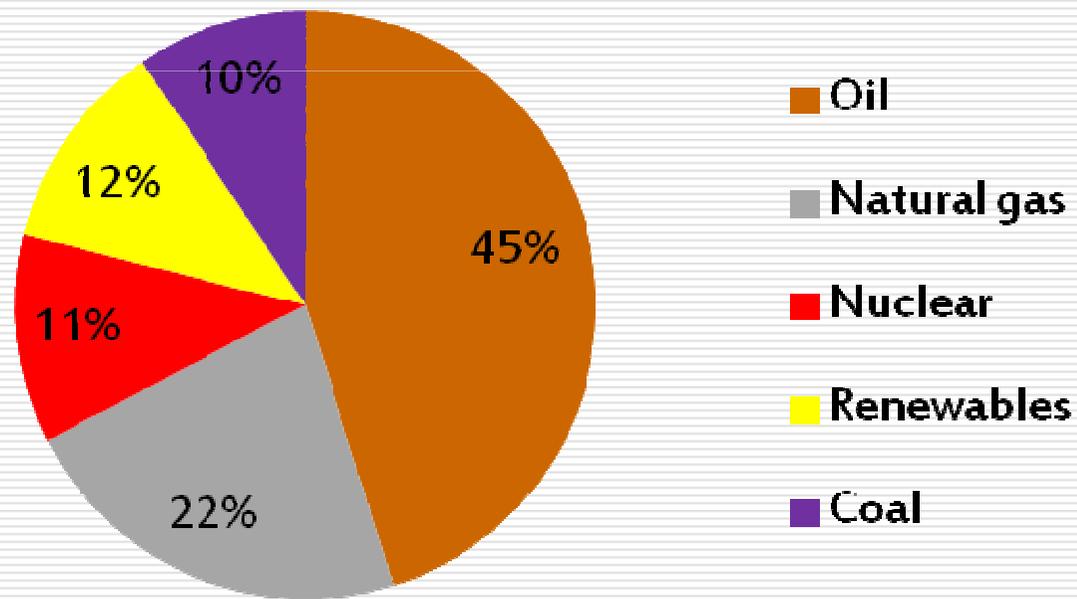
Features of the Spanish energy sector

- ❑ Spanish energy policy in the last decade has been centered on the promotion of domestic renewable energy sources
- ❑ Other forms of low-carbon generation, such as nuclear power, haven't been encouraged. However the electricity system relies on nuclear plants and on fossil fuels to a significant extend
- ❑ Spanish electricity sector is based on fossil fuels → High external energy dependence, close to the 75%. Evolution of the external energy dependence (period 2004 – 2011):



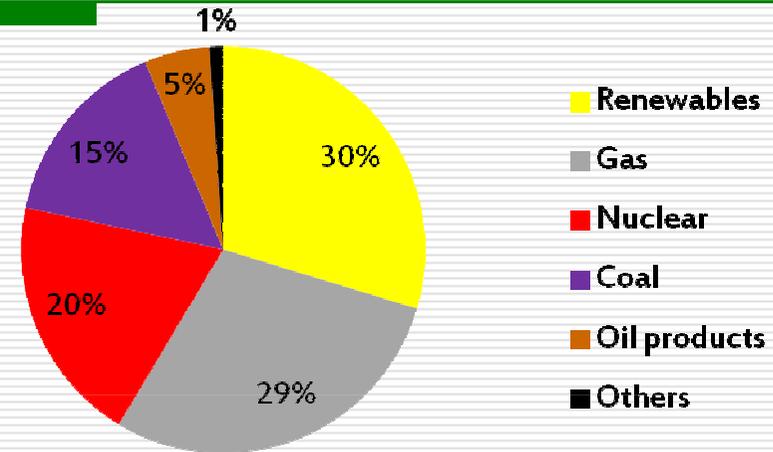
Features of the Spanish energy sector

- Primary energy structure (2011):

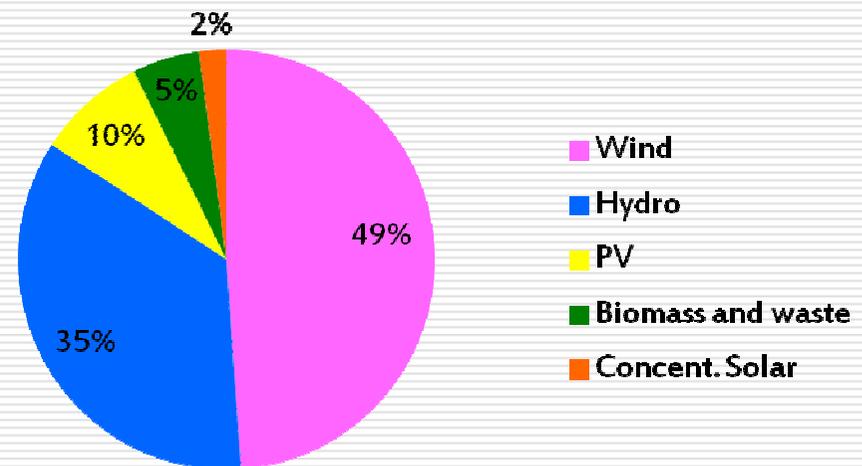


Features of the Spanish energy sector

□ Electricity production mix 2011



□ Renewable electricity production mix 2011



Level of Biomass target achievement in Spain

- ❑ Renewable Energy Plan 2005-2010 target for BIOMASS: **1,317 MW**
- ❑ Renewable Energy Plan 2005-2010 target for BIOGAS: **250 MW**
- ❑ July 2012 (source: National Energy Commission, CNE)
 - Biomass: **573 MW installed** ▶ 43% target ⇒ **lacking 744 MW**
 - ❑ Growth rate: 5 MW/month
 - ❑ Months estimated to reach 100% target: 156 months (= 13 years)
 - Biogas (b.7): **222 MW installed** ▶ 89% target ⇒ **lacking 28 MW**
 - ❑ MW mainly from landfill ($\frac{2}{3}$), not biogas from anaerobic digestion in biodigester



Spanish Biomass sector in the EU

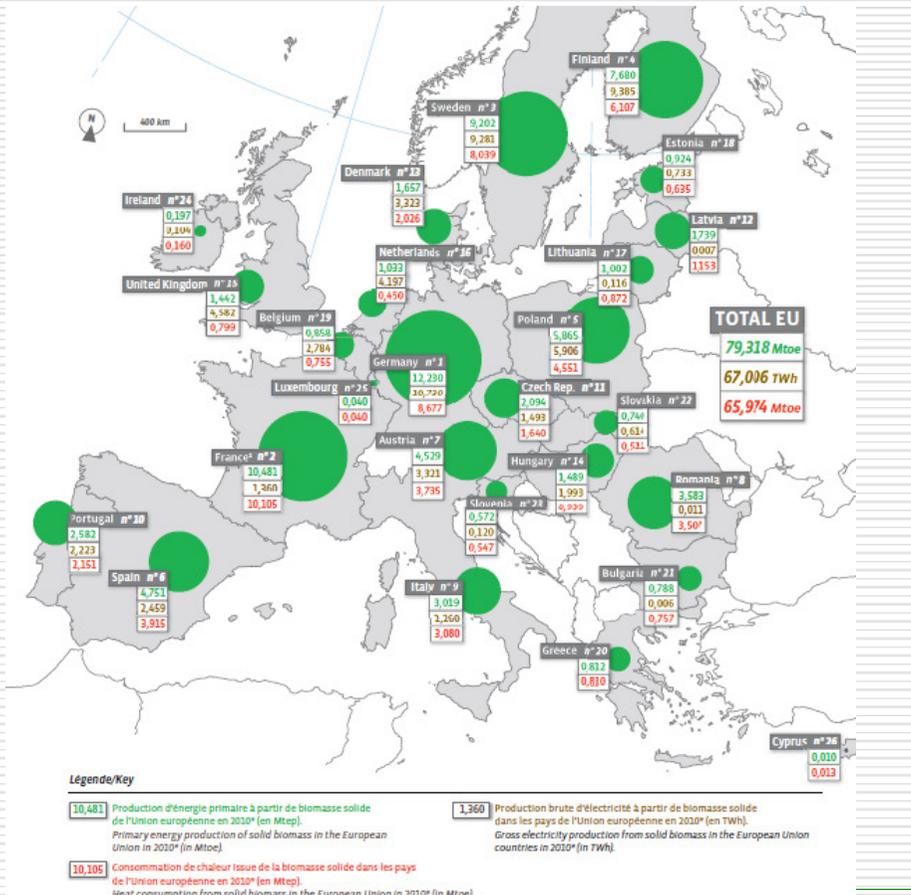
SPAIN



3rd position in European ranking by biomass potential

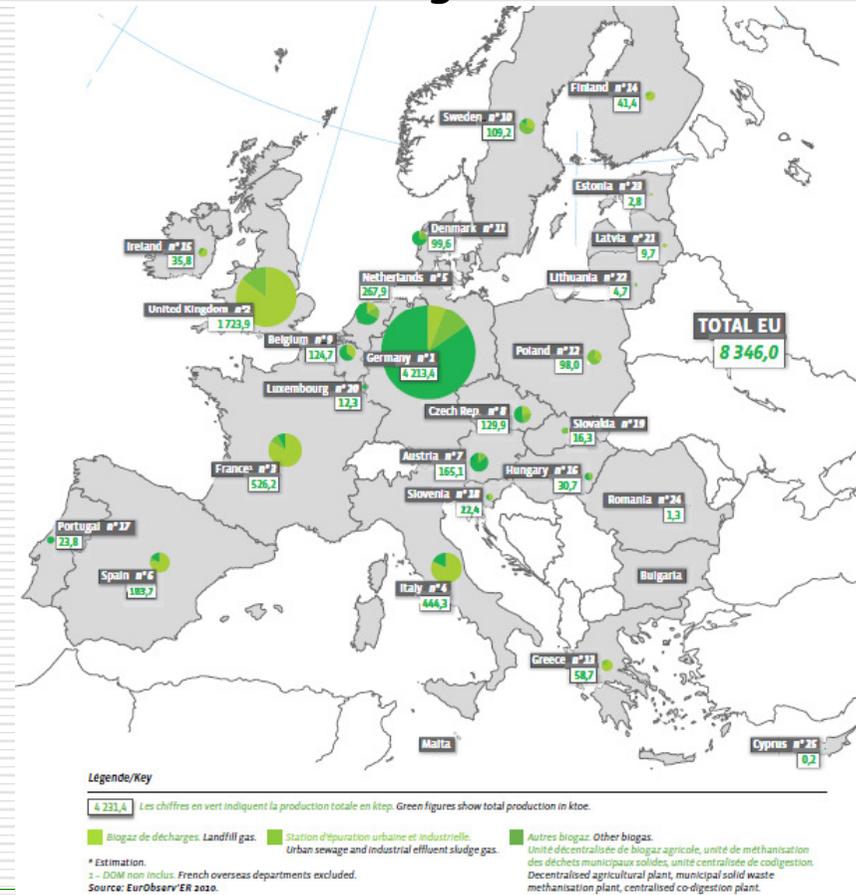
Breeding a number of pigs comparable to Germany

Solid biomass



Source: Solid Biomass Barometer – Eurobserv'er (November 2011)

Biogas



Source: Biogas Barometer – Eurobserv'er (November 2010)



Biomass strategic advantages

CONTRADICTION!

In Spain → biomass resources availability is guaranteed (huge potential). Focused on energy generation (thermal + electricity) biomass brings exceptional characteristics, such as:

- **ENERGY:** dispatchable and economically feasible for the Spanish power system
- **ENVIRONMENT:** wastes recovery (tool against fires, pollution) + reduction of GHG emissions
- **SOCIETY & ECONOMY:** job source + national wealthy source (Spanish industry and technology) + rural revitalization + alternative for cracked economies



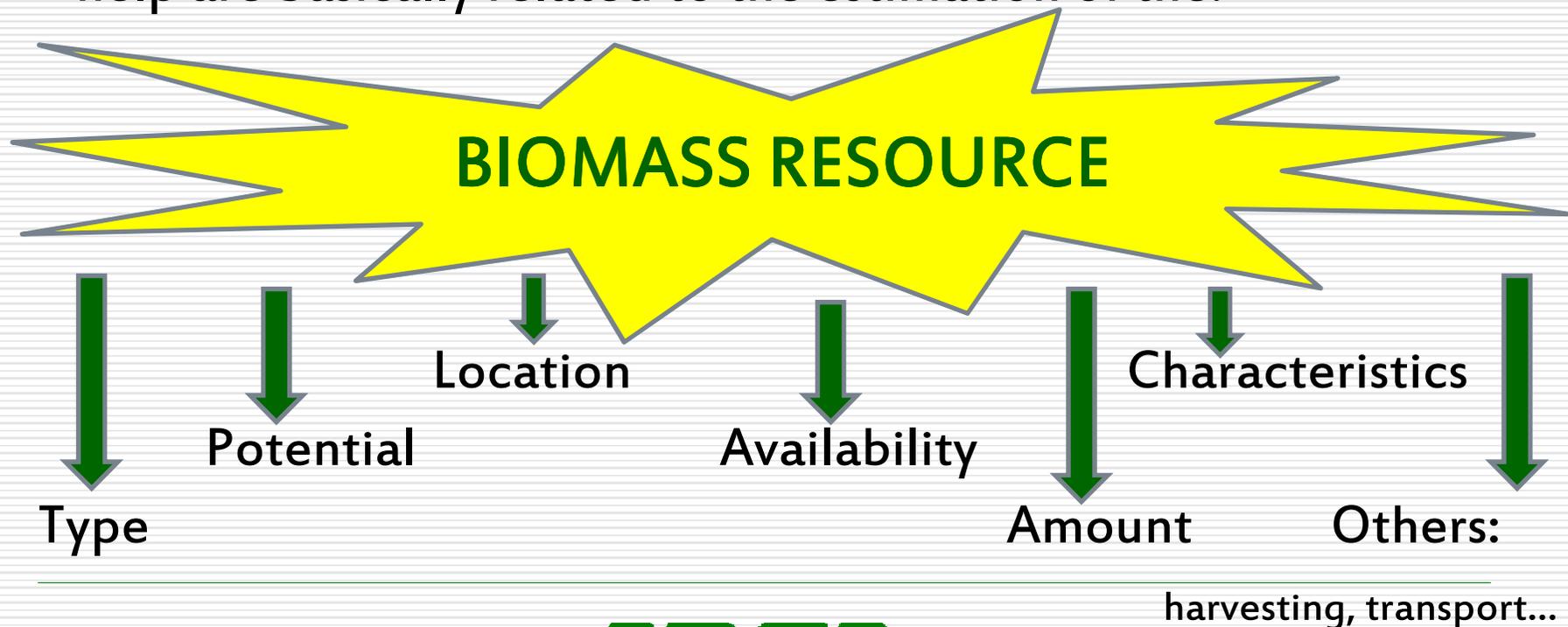
Unfortunately nowadays...

- The **Spanish biomass sector suddenly stop** their development in Spain, due to:
 - The Spanish energy sector remain in a state of flux. It has been subject to a number of interrelated market and regulatory 'shocks' in recent years that have affected its performance and are also likely to shape future developments
 - The Spanish electricity market continues to be characterized by complex and increasingly controversial public policy challenges:
 - 27 January 2012 → Royal Decree 1/2012, which suspended 'until further notice' FiT for newly installed generators of renewable power (the Government decreed a moratorium on renewable energy)
 - Sept. / Oct. 2012 → new Draft Law (Bill) to introduce 6% tax on all domestic energy production



Proposals to the ESA

- Avoiding the present situation, and hoping it could be back on the normality in the least possible time, the needs the **Spanish bioenergy** sector could have where space technologies could help are basically related to the estimation of the:



Proposals to the ESA

- Any information should be provided in different scales to facilitate the resources management, which must be done at a local, regional and even a national levels
- Also I would be quite helpful to have available:
 - Satellite Communication
 - Satellite Navigation
- Some lines of work:
 - Following the traceability of biomass ⇒ Certification
 - Assessment of forest lands & agronomic crops annual growth in order to predict biomass availability for the plants supply

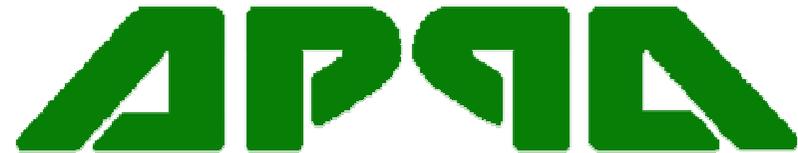


Proposals to the ESA

- Optimization of biomass logistic supply chains by means of the application of navigation systems linked to logistic hubs & transport flows
- Explore the possibility of continuous monitoring and quantification of CO₂ emissions and absorption in forests
- Study of the carbon content of soil and vegetation in order to determine if life cycle is carbon neutral (punctual and historic evolution)
- Determine biodiversity criteria by its origin using remote sensing tools



GRACIAS



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