

ENERGY AND ENVIRONMENT IN SPAIN

IEA-Spanish IDR 2014

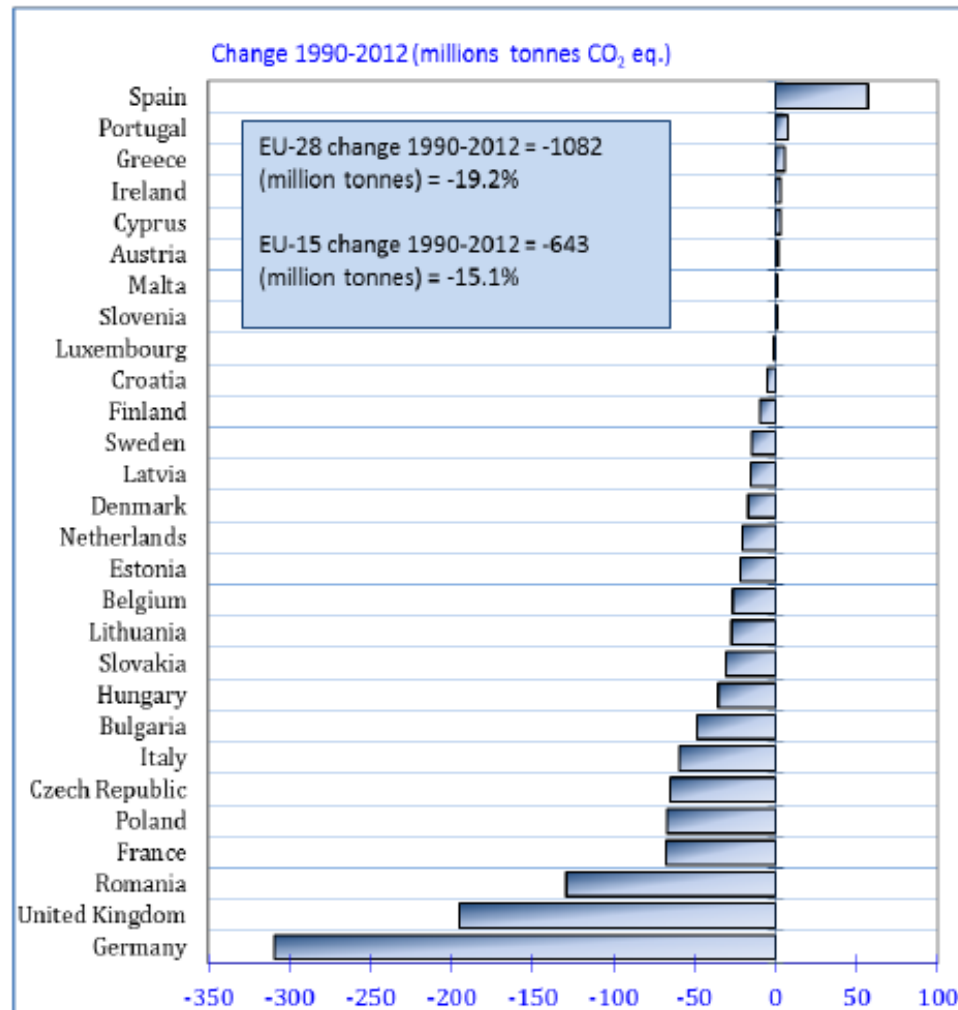
Madrid, 24th June 2014



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Spain fails to meet Kyoto 2008-2012, with a cost of € 800 million



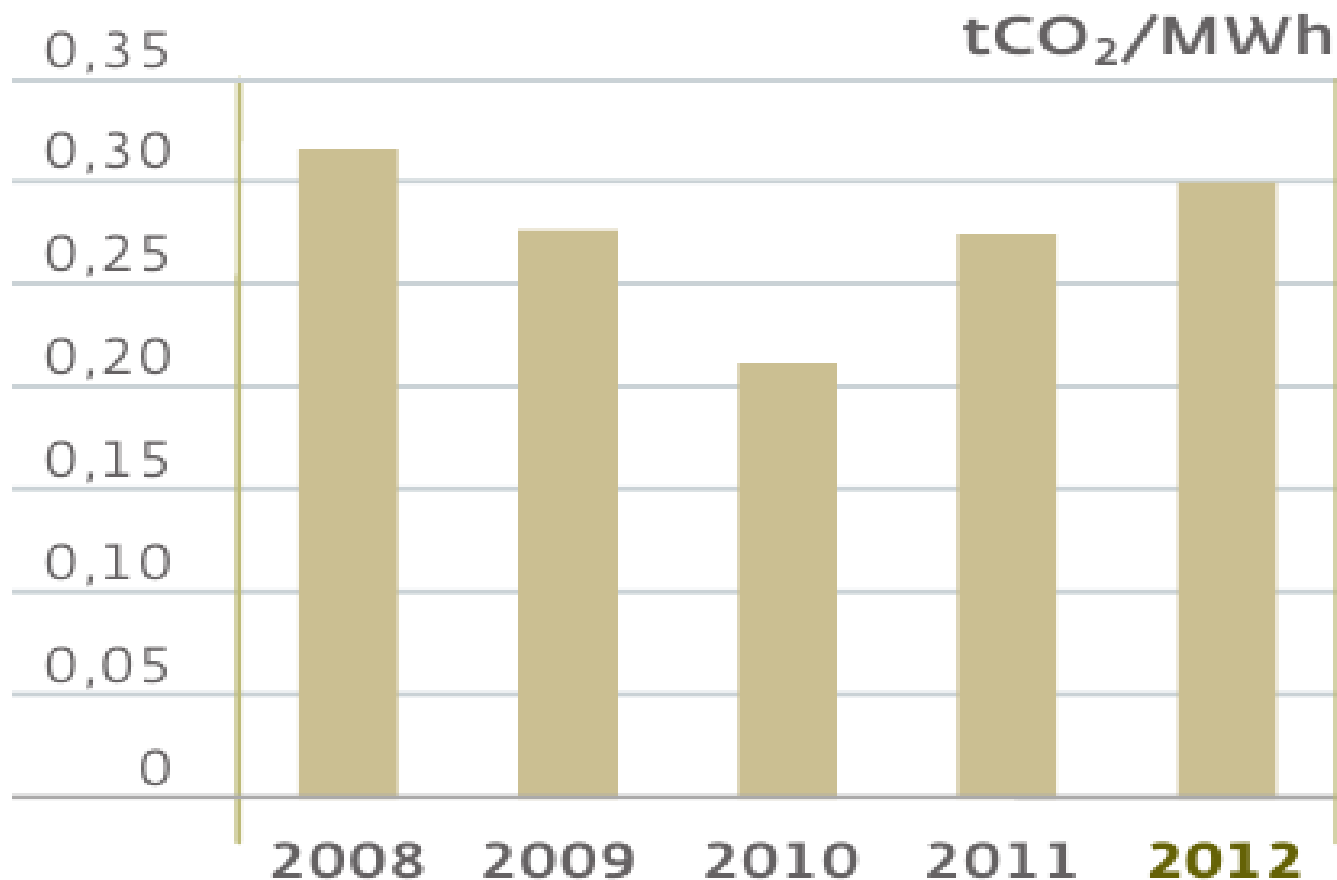
Source: EEA.

Wrong: coal burning broke downward trend in specific emissions

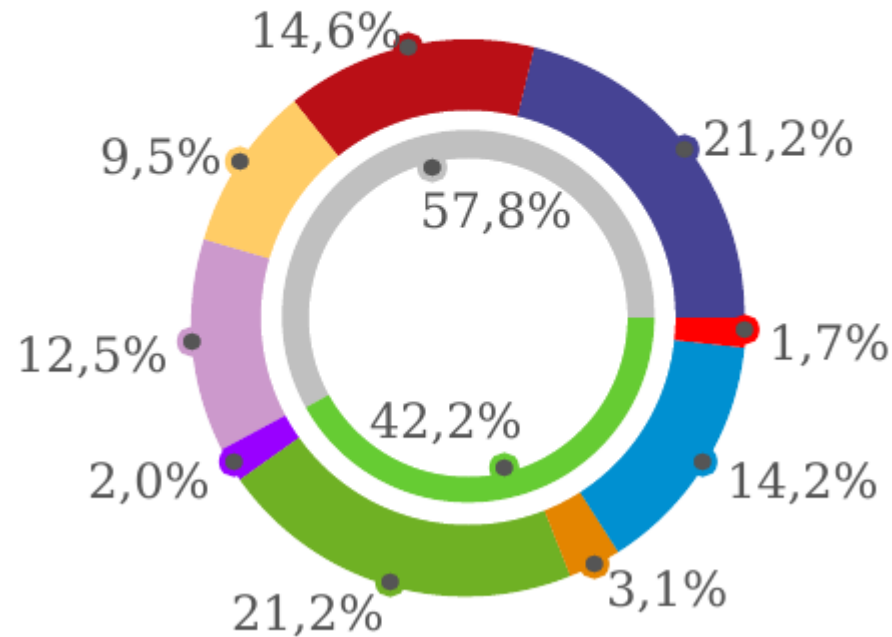
EVOLUTION OF CO₂ EMISSION FACTOR OF POWER GENERATION

→ Emission factor decreased in parallel to growth of renewable share. Since 2011 it rose again because of the regulation to subsidize national coal burning. And in 2012 the renewable moratorium was set

Data source: REE



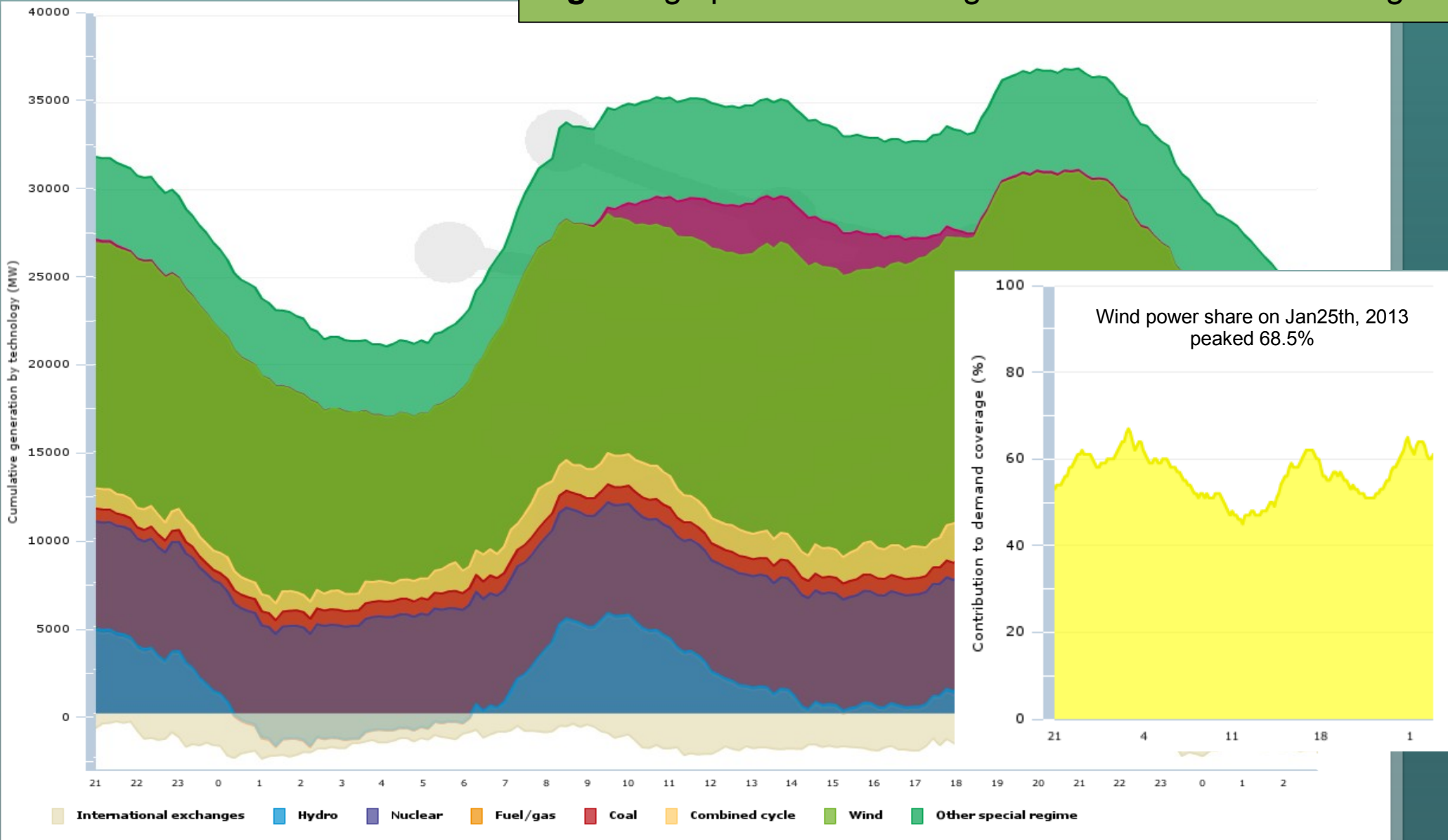
2013 electricity demand in Spain's mainland



Legend for the donut chart:

- Non-renewable: Nuclear - Coal - Combined cycle - Cogeneration and others
- Renewable: Thermal renewable - Wind - Solar PV - Hydro - Solar thermal

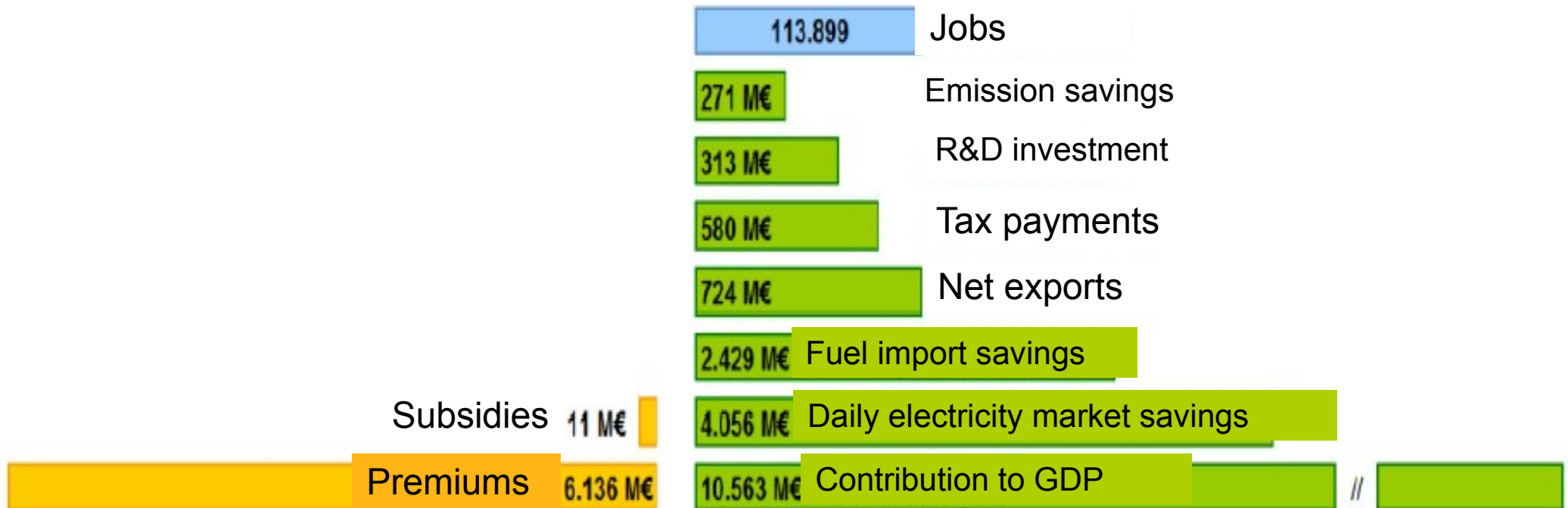
Source: Red Eléctrica Española



Date 2014-01-27 Consult selected date Help

Source: REE

Right: higher benefits than costs of renewables

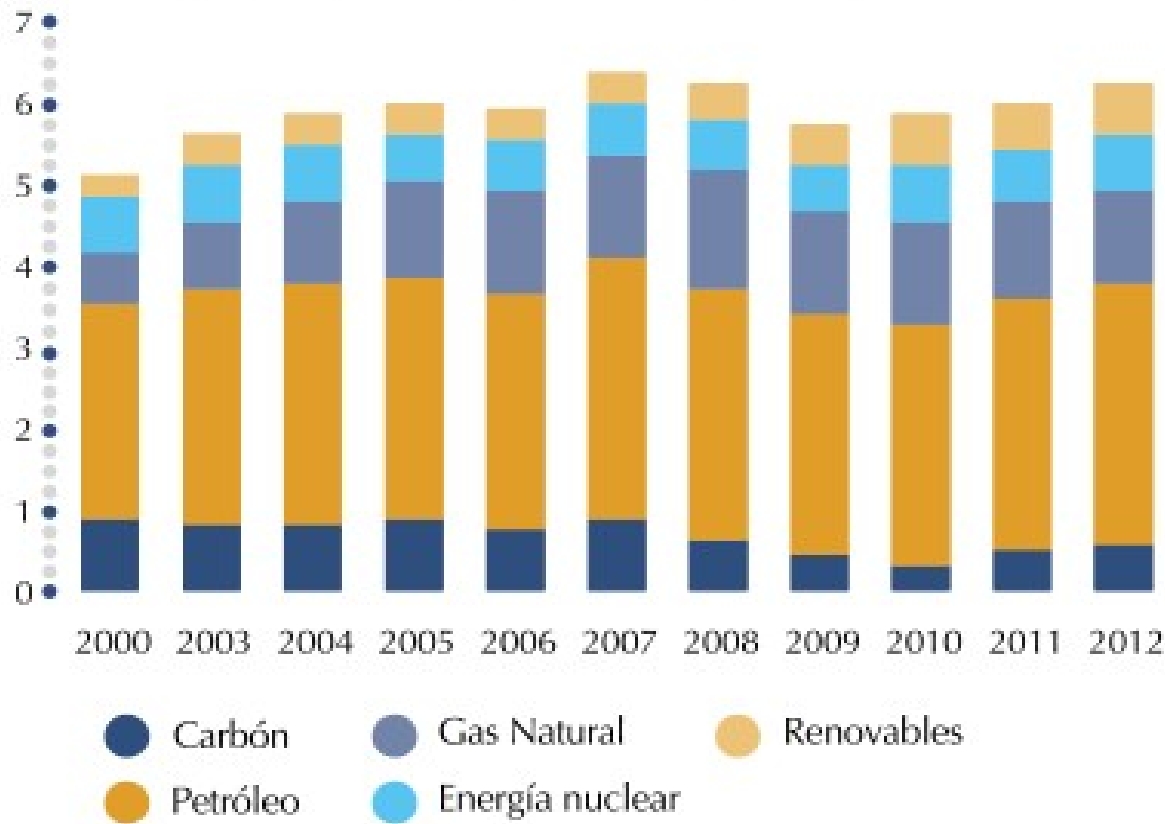


Source: APPA. Study of the Macroeconomic Impact of Renewable Energies in Spain. YEAR 2012

Primary energy mix Spain

Wrong: dirty energy share still too high

Consumo de Energía Primaria en España E_j



Energy mix 2012 Spain:

51% oil
19% gas
9,8% coal
11% nuclear
10% RE

Source: Observatorio Energía y sostenibilidad. Universidad de Comillas

- Spain has a significant share of electricity generated by renewable sources and has still a leading position in Europe in terms of installed renewables capacity.
- Is that too costly?
 - *30% of TPA paid by consumers is due to support for renewables*
- Spain strongly depends on energy imports (86%), fossil fuels are the main contribution in the mix
 - *Cost of oil, gas & coal imports in 2013: 57,162 M€*
- Transport and industry are the most significant energy-consuming sectors.
- In the electricity sector coal is still important, and government doesn't have a real plan for a phase out of coal capacity. Coal subsidies must finish in 2018.
- One of the oldest nuclear power plants in Europe (Garoña), yet is applying for life-time extension to 60 years

Who's got the power

- Utilities in the association UNESA hold in Spain:
 - 70% of power generation
 - 97% of power distribution
 - 86% of power retail
- Who are they:
 - Iberdrola
 - Endesa → Enel
 - Gas Natural Fenosa
 - EDP
 - Eon
- Problems:
 - Too high concentration of “power”
 - Vertically integrated companies
 - Too much influence over Government: Revolving doors

Ignacio Sánchez Galán, presidente de Iberdrola, con...



Con estas amistades Iberdrola ha conseguido múltiples cambios legislativos que perjudican a todo el país pero benefician a su negocio

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Wrong: revolving doors

Former administration officials and politicians who are currently in Iberdrola.

Board of Directors

Ángel Acebes (PP), Non-executive director.

Georgina Kessel, ex Secretary of State for Energy during Calderon Presidency in Mexico.

Operations Committee

Fernando Becker (PP), Director General of Corporate Resources.

Fundación Iberdrola

Manuel Marín (PSOE), President.

Iberinco (branch Iberdrola)

Ignacio López del Hierro (kindred al PP), Member of the Executive Board.

Combined cycle gas power plants. Overcapacity

27 GW gas power generation existed in 2013, all of which was commissioned between 2002 and 2011.

The large new fossil capacities were hit by falling demand and growth in renewables.

In 2013 electricity demand showed a third consecutive annual decline.

Renewable capacity reached 32.9 GW in 2013, and their share in demand reached 42.4%, up from 31.9% in 2012.

While in 2008 gas power plants produced 95.5 TWh (32%), this fell to 42.5 TWh (14%) in 2012 and 28.9 TWh (10%) in 2013.



Overcapacity → lower generation → lower income for utilities

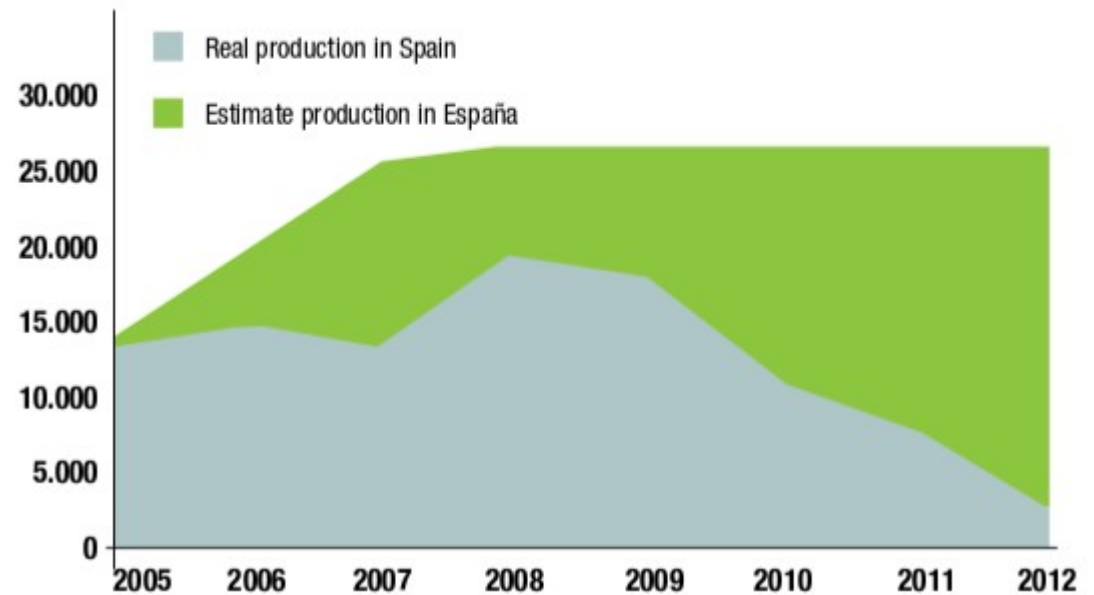
- At the end of 2013, capacity installed in Spain was 102,281 megawatts (MW). However, last year only 39.3% of this capacity was needed to cope with the highest peak of demand, recorded on Wednesday, February 27th when the country was affected by a Siberian cold wave. -Reported by Red Eléctrica España.
- In July 2013 Iberdrola asked for the closure of the third unit (800 MW) in their power plant at Arcos de la Frontera (Andalucía), while a few months later **Endesa (Enel) applied to build an additional 800 MW coal power plant in a nearby location.**
- Capacity payments: with the aim of covering the investment by UNESA utilities and due to the power surplus of combined cycles, these installations charge €20,000/MW over ten years. In 2011, capacity payments were €1.535bn

Gráfico 3

Real and estimated production (*) of Iberdrola gas plants in Spain 2005-2012. (In GWh)

(*) The same annual functioning hours as 2005.

Source: Iberdrola annual reports. Drawn up by Iberdrola



Renewables support in Spain

Legal framework	<ul style="list-style-type: none"> > Royal Decree-Law (RD-L) 9/2013 of 12/07/2013, adopting urgent measures to guarantee the financial stability of the electricity system > Law 24/2013, of 26/12/2014, that regulates the electricity sector in Spain > The new system will provide incentives on installed capacity and operations, but only if the plant meets certain standard conditions still to be established by the Government > RD-L 9/2013 repeals the previous regime for renewables¹ > Until the parameters of the new system are defined the previous system is in place, but the amounts received from the electricity market will be eventually balanced out
Price mechanism	<ul style="list-style-type: none"> > The parameters of the new system will be defined for each operating plant according to commissioning date, technology, etc. The operating plant will receive two types of incentives above the pool price earned in the market: <ul style="list-style-type: none"> • Incentive on the standard value of the initial investment • Incentive on the standard operating cost [Opex] (only when the standard costs are above the average pool price)
Length of mechanism	<ul style="list-style-type: none"> > Until the end of the asset's regulatory lifecycle, which is pre-defined for each standard technology
Value of mechanism	<ul style="list-style-type: none"> > Initial "reasonable" pre-tax profitability for RES assets set at 7.4%² > Major revisions of the incentives by the Government scheduled every 6 years (regulatory period), minor revisions every 3 years
Future changes in legislation	<ul style="list-style-type: none"> > Approval of regulatory development (royal decrees and ministerial orders) of RD-L 9/2013 still pending > Separation of conventional generation and special regime no longer in place > New builds could be registered and awarded the specific remuneration regime based on standard parameters

¹ Express repeal of, inter alia, Royal Decree (RD) 661/2007 and RD 1578/2008.

² Before taxes (approx, 5.4% after taxes) according to 10-years Spanish treasury bonds plus 300 basic points.

Source: Fact Book Renewable Energy-April 2014

What's wrong with the energy reform

- New support system for renewables risks bankruptcy for thousands of investors (62,000 families invested in PV)
 - Retroactivity
 - International files against Spain
 - Delocalisation, job loss
 - No international experience in such a system
 - Loss of international leadership
- Efficiency penalised
 - Higher weight for fixed term in tariff
 - Support system no longer based on real electricity fed into the grid
 - No efficiency or renewable targets
- Regulation for self-consumption still pending: a very negative one long announced → blockade
- Loss of main factor for emission reductions (beyond economic crisis, that nobody wants)

Government wants to allow fracking and deep-water oil drilling in Canarias, Baleares and Valencia.

If successful, oil to be found in Mediterranean waters would equate just half a year of demand

How does that match with the IEA analysis that over two-thirds of today's proven reserves of fossil fuels need to still be in the ground in 2050 in order to prevent catastrophic levels of climate change?



Renovables 2050

Un informe sobre el potencial
de las energías renovables
en la España peninsular

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Hope: a sustainable energy system is feasible

Energía 3.0

Un sistema energético basado en inteligencia,
eficiencia y renovables 100%

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Energy [R]evolution



**Renovables
100%**

Un sistema eléctrico renovable
para la España peninsular y su
viabilidad económica.

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Thank you very much

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