



Spain's legal framework for RES and energy efficiency: successes & barriers

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Javier de Cendra

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5. Conclusions

1. The Legal Framework

1. Competences for RES in the Constitution

- State
- AACC
- Local Authorities

2. Law 54/1997, The Electricity Act

- Liberalization of electricity market
- Basic regulation of special regime
- Plans for promotion of RES

2. Targets and degree of compliance so far



Structure and evolution of installed capacity of RES (MW)

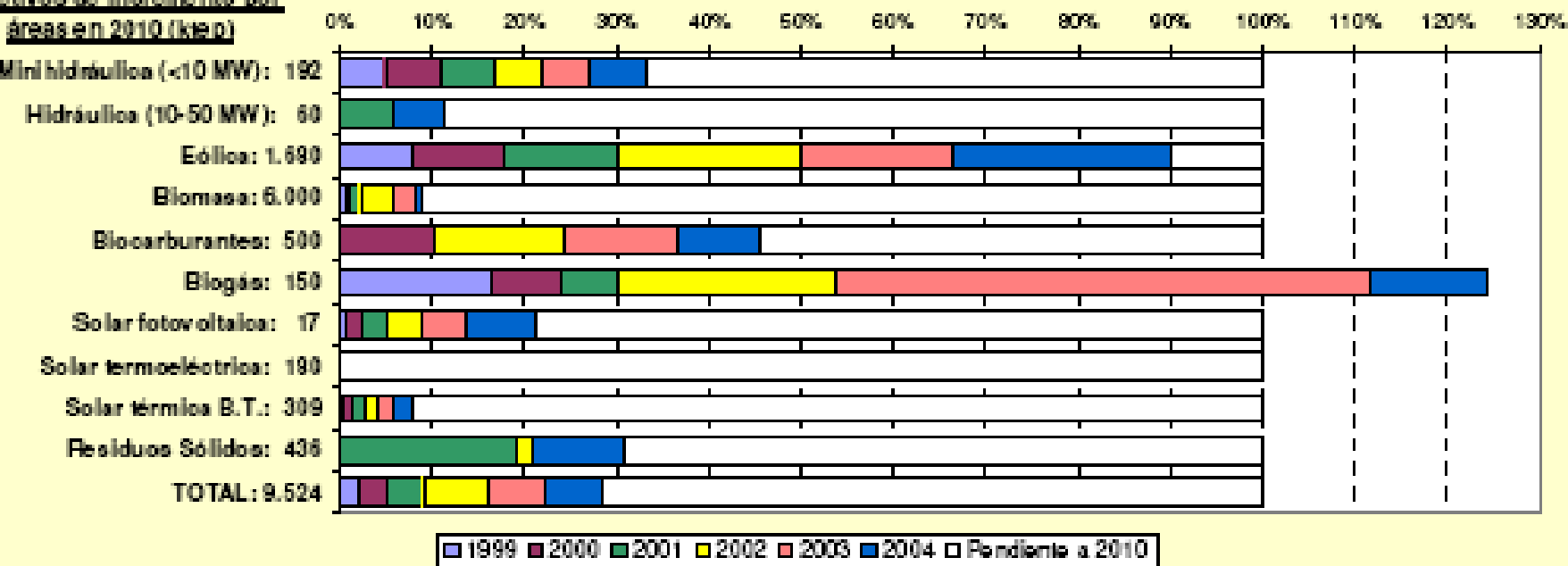
	2002	2003	2004	2005	2006	% 06/05
Renovables	7.065	8.481	10.956	12.605	14.039	11,4
Hidráulica	1.489	1.559	1.636	1.767	1.809	2,4
Eólica	4.950	6.220	8.442	9.890	11.140	12,6
Otras renovables	626	702	879	948	1.091	15,1
Biomasa	373	409	471	513	548	6,7
R.S. Industriales	168	170	178	178	195	9,7
R.S. Urbanos	79	114	213	224	249	11,2
Solar	5	9	16	33	100	200,6
No renovables	6.143	6.365	6.490	6.656	6.769	1,7
Calor residual	59	69	89	89	89	0,0
Carbón	69	69	69	69	69	0,0
Fuel-gasoil	1.321	1.323	1.325	1.325	1.325	0,0
Gas de refinería	210	210	210	210	210	0,0
Gas natural	4.484	4.695	4.799	4.964	5.078	2,3
Total	13.208	14.846	17.447	19.261	20.809	8,0

Degree of compliance with targets

Seguimiento Plan de Fomento de las Energías Renovables Evolución Datos Energéticos (1999-2004)

Sobre objetivos a 2010

Activos de incremento por áreas en 2010 (kwp)



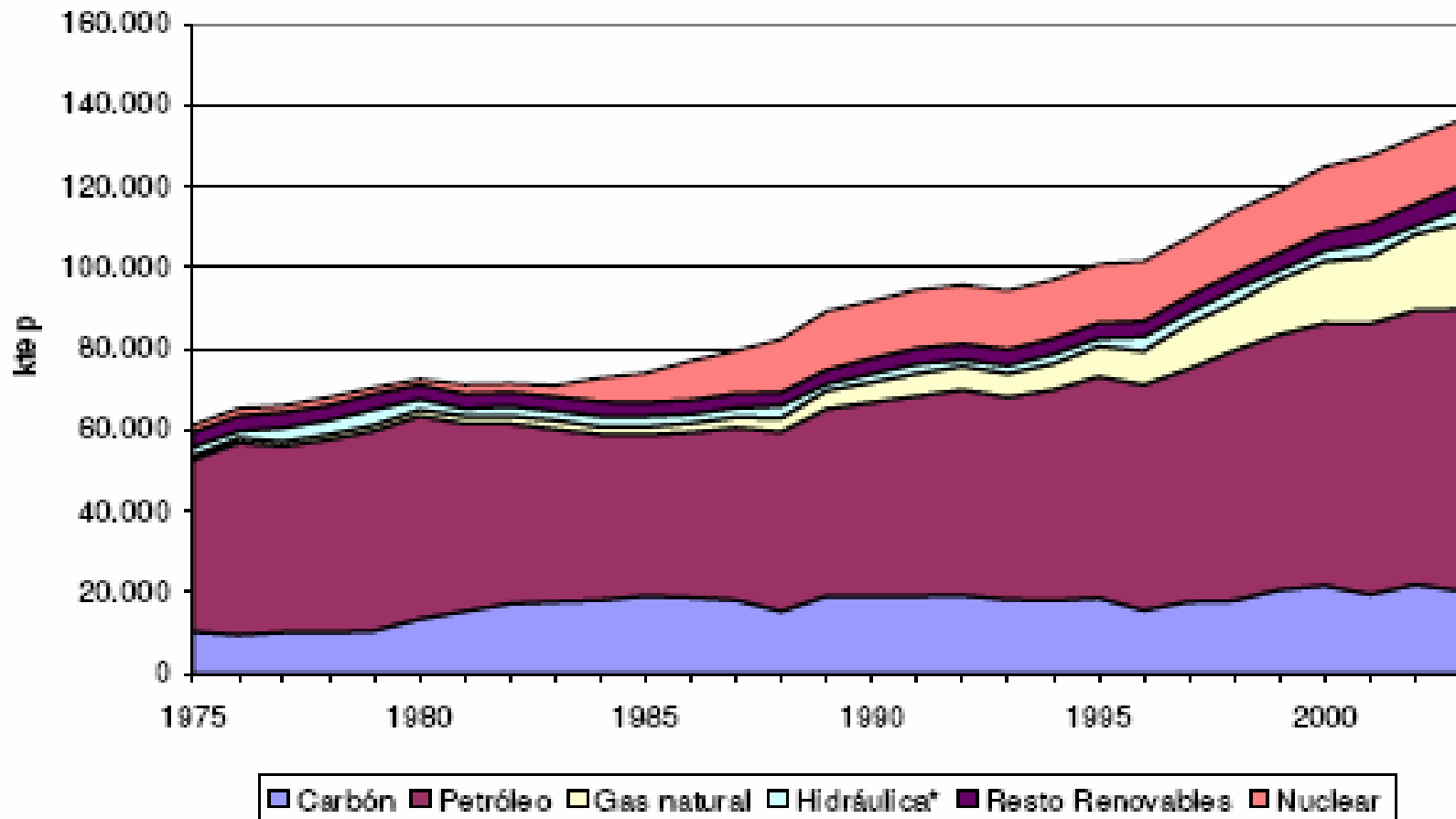
Degree of compliance with targets

Plan 1998 – 2010 (revisado en 2005)

- **Biomasa y Biogas:** 69 MW en 1998 -> 527 MW en 2006-> 2.274 MW en 2010
- **Eólica:** 884 MW en 1998 -> 11.100 MW en 2006-> 20.155 MW en 2010
- **Solar:** fotovoltaica 1 MW en 1998 -> 77 MW en 2006-> 371 MW en 2010
térmoeléctrica 0 MW en 1998 -> 0 MW en 2006-> 500 MW en 2010
- **Hydro < 50 MW:** 1.249 MW en 1998 -> 1.740 MW en 2006-> 2.200 MW en 2010
- **Residuos Sol. Urb:** 104 en 1998 -> 261MW en 2006-> 261 MW en 2010
- **Cogeneracion:** 3.674 MW en 1998 -> 5.869 MW en 2006-> 7.500 MW en 2010

Setting targets in context...

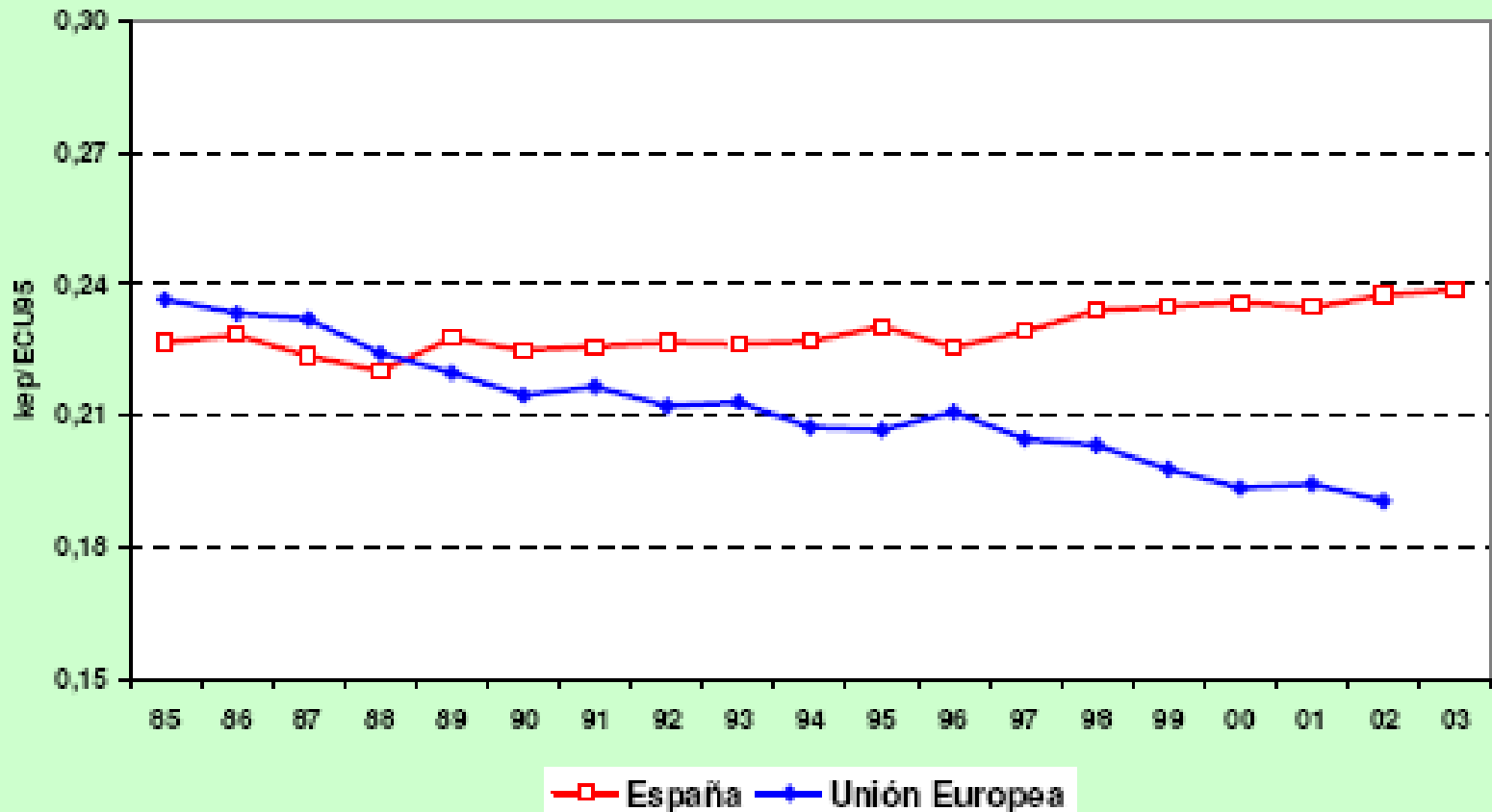
Evolution of consumption of primary energy 1975-2003



Setting targets in context...

primary intensity in Spain and in the EU

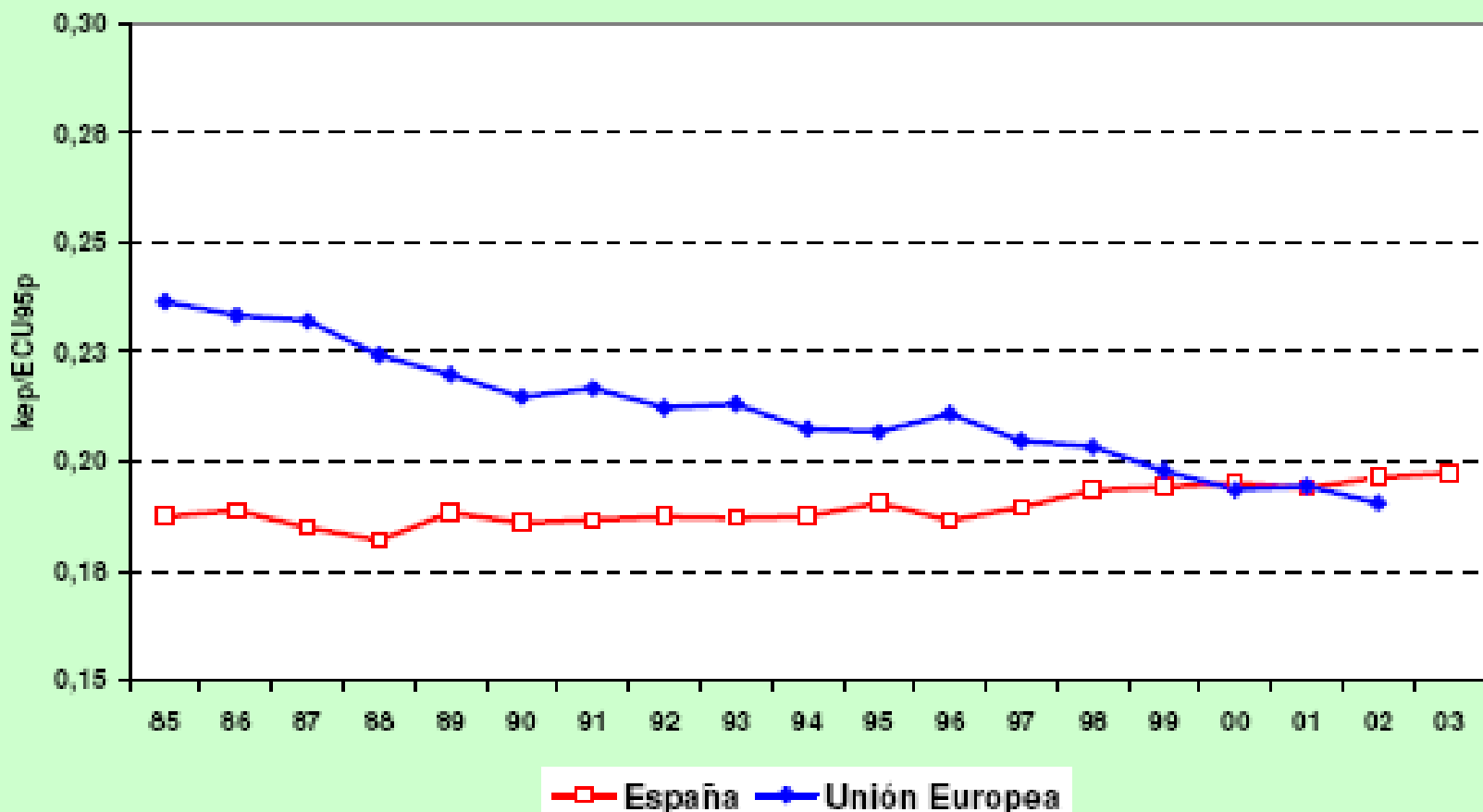
INTENSIDAD PRIMARIA EN ESPAÑA Y LA UNIÓN EUROPEA



Setting targets in context...

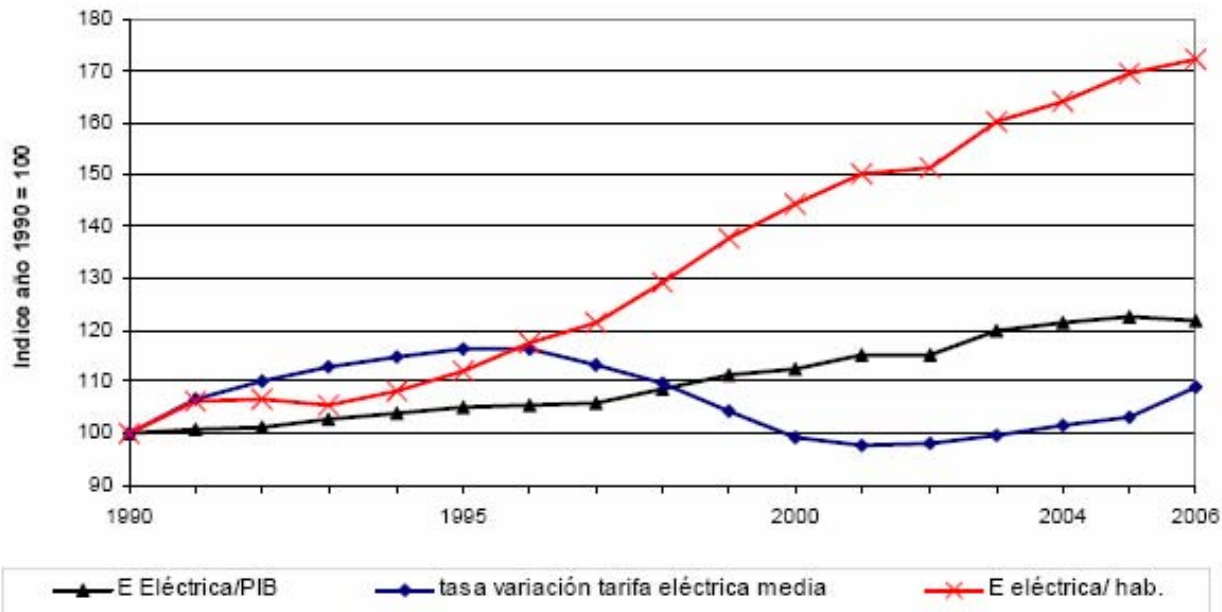
Primary energy intensity/power purchasing parity EU and Spain

INTENSIDAD PRIMARIA — PARIDAD DE PODER DE COMPRA EN ESPAÑA Y LA UNIÓN EUROPEA



Setting targets in context...

Growth in electricity consumption in relation to price, economic growth and population



Fuente: Subdirección General de Planificación Energética

Figura 3.2. Evolución del consumo eléctrico en relación con su precio, la economía y la población

Expected evolution in installed capacity and production of RES electricity

Tecnología (MW)	2006	2008	2011	2016
Eólica	11.233	14.980	22.000	29.000
Solar	106	530	940	2.000
Resto Renovable	2.808	4.120	5.310	6.180
Total Renovable	14.147	19.630	28.250	37.180
Cogeneración	6.784	7.000	7.370	7.990
Total Régimen Especial	20.931	26.630	35.620	45.170
% sobre Potencia instalada total	26,5%	32,0%	36,9%	39,6%

Tecnología (GWh)	2006	2008	2011	2016
Eólica	22.831	31.000	47.000	62.000
Resto	27.807	34.800	45.500	62.500
Total Régimen Especial	50.238	65.600	92.500	124.500
% sobre Producción total	19,2%	23,1%	30,0%	36,5%

3. The new climate change strategy

3.1. Renewable sources of Energy

- Targets: 12 per cent—2010; 20 per cent 2020; 30 per cent electricity
 - Measures to promote generation and consumption of RES
 - Incentives to biomass, thermal and photovoltaic solar
 - Small photovoltaic installations (access to grid, connection, and administrative permits)
 - Hydrogen
 - Improve stability of legal framework for special regime
 - Elimination of coal based boilers in 2012
- Modify tariff system of electricity to increase role of demand
- digital measuring equipments
 - introduction of green certificates

3. The new climate change strategy

3.2. Energy efficiency

- Target: 2007 Target: 4.7 per cent reduction in primary energy consumption+2 per cent reduction in BAU scenario annually
- Measures (selected):
 - Exploration of possibility of basic energy efficiency law
 - Information campaigns
 - Modifications of tariffs structures
 - Taxation in transport

4. Actions and remaining barriers...



4.1. Legal barriers (1)

1. In the generation market
 - 1.1. Within the special regime for RES
 - 1.1.1. Changes in coverage
 - 1.1.2. Changes in the economic regime
 - 1.2.3. Rights and obligations of RES producers
 - 1.2. Compensation of stranded costs
 - 1.3. The capacity guarantee

4.1. Legal barriers (2)

1.1 Changes in the special regime (RD 667/2006)

1.1.1. Coverage:

- Co-generation, non-consumable RES, waste
 - Many more groups and subgroups
 - New**: co-firing
 - New**: Co-firing of biomass in cogeneration
 - New**: installations with more than 50 MW of installed capacity
 - New**: Marine wind parks
 - New**:Hybrids for solar (biomass and fossil fuels)
 - New**: mineral products with high content in sulphur and ashes

4.1. Legal barriers (3)

1.1.2. Changes in the economic regime of the special regime: still a ‘feed-in-system’, the most efficient according to the European Commission, but...

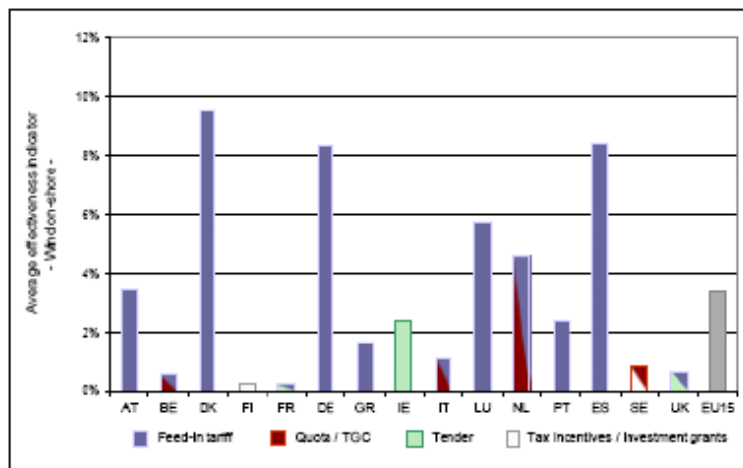


Figure 5:
Effectiveness indicator for wind onshore electricity in the period 1998-2004. The relevant policy schemes during this period are shown in different colour codes.

4.1. Legal barriers (4)

Changes in economic regime (RD 667/2007)

-New: higher premiums to biomass, biogas, wind, thermal solar, and cogeneration

Incremento de la retribución a tarifa:

- Biomasa: 6%(res.ind forest), 56% (res.agrícolas y forestales), 118% (cultivos energéticos)
- Biogas: 16% (biogas vertedero), 40% (biodigestión)
- Eólica: 6%
- Solar: fotovoltaica 0%(< 0,1 MW) y 82% (0,1-10 MW)
térmoelectrica 17%
- Hydro < 50 MW: 0%
- Residuos Sol. Urb: 0%
- Cogeneracion: 1-10 MW: 26% (gas natural), 57% (gasóleo y GLP), 43% (fuel oil)
10-25 MW: 74% (gas natural), 121% (gasóleo y GLP), 101% (fuel oil)
25-50 MW: 81% (gas natural), 135% (gasóleo y GLP), 113% (fuel oil)

- New**: System to set premium: ‘floor and ceiling’ system
- New**: Elimination of incentive to participate in wholesale market

Previous regime:

Payment to RES under regulated tariff: $A+B$
(cEur/kWh)

(A =Production costs; B : Premium)

Payment to RES producers in the market: $A+B+C$
(C =incentive for participating in market)

Current regime: $A+B \Rightarrow C$ has been eliminated

4.1. Legal barriers (5)

1.1.3. Changes in rights and obligations of RES producers

- New**: elaboration of program and penalties for deviations
- Exclusion from market for ancillary services
- Non-manageable RES no right to remuneration for guaranteed capacity. Violation Electricity Act!
- Authorization&connection small installations

4.1. Legal barriers (6)

1.2. Compensation scheme for stranded costs

- Strong distortions in the wholesale market
- Finally eliminated in 2006

1.3. Payment scheme of the capacity guarantee

- Strong distortions in the wholesale market
- Non-manageable RES excluded

4.1. Legal barriers (7)

2. In the consumption side

2.1. The regime for guarantees of origin

2.2. The electricity tariff

2.3. New regulation on measuring equipment

2.4. Measures to promote energy efficiency

2.4.1. Buildings: Technical Building Code

2.4.2. Transport

2.4.2.1. Bio-fuels

2.4.2.2. transport taxes



4.1. Legal barriers (8)

Guarantees of origin

- Supplemental to special regime

- Includes cogeneration

- Link with the electricity bill finally made in 2007



4.1. Legal barriers (9)

Digital measuring equipments

- Introduced in 2007 in all frontier and connection points of the system
- Will allow to introduce into the revision of the electricity tariff the real costs of supply

4.1. Legal barriers (8)

The electricity tariff

Objective: full additivity+ efficiency+sufficiency

-Too low

-Not linked to generation costs



4.1. Legal barriers (10)

Measures to promote energy efficiency
Buildings

- Phase-out of coal boilers
- Technical building code and regulation on thermal installations
- Public buildings
- Transport
 - ‘Plate tax’



4.2. Administrative barriers

4.2.1. Licensing procedures

- EIA
- Number and interaction between permits and institutions

4.2.2. Planning law and conflicts of competences

- Very complex and lengthy process

4.2. Administrative barriers (2)

4.2.3. Regulation of access to network of RES electricity

- Limited to compliance with targets set in law
- Asymmetry between access to transport and distribution grid

4.2.4. Specific regime for marine wind parks

- Scope and competences
- Concession and related problems
- Submission of offers and premium
- Possibility of multiple projects in one area



4.3. Structural barriers

4.3.1. In the generation and transport markets

- The regulation of access to the network
- Barriers to the increase in installed capacity of wind energy
- Barriers related to planning of the network
- Specific barriers for some types of RES

6.2. Lack of competition in the retail market

4.3. Structural barriers (2)

The regulation of access to the network

- Incentives limited to legally binding targets

- Allocation of capacity made by each AACCC

- Access regime 'old' not in line with Dir 2001/77

- Priority to RES in general and in case of physical limitations in nodes



4.3. Structural barriers (3)

Barriers to the increase in installed capacity of wind energy

- Increase in reserves and pumping capacity

- Interconnections with France and Portugal

4.3. Structural barriers (4)

Barriers related to planning of the network

- Complexity in multi-level planning process=>uncertainty
- Uncertainty about firmness of investments
- Competition in nodes between operators for which legal regime did not provide solution
- Use of railway network to evacuate RES electr?

4.3. Structural barriers (5)

Specific barriers for some types of RES

-Raw material=> now solved

-Logistics=>now solved

-Co-firing was not allowed in RD

436/2004=>solved

-Premiums did not differentiate according to size of plants=>no small plants built=>solved

Remaining issues: waste and role of AACC

4.3. Structural barriers (6)

- Thermal solar=> TBC+Special Regime
- Thermo-electrical solar=> Special regime
- Photovoltaic solar=>from 400 MW to 1200 MW=>German system=premiums lowered 5 per cent yearly

4.3. Structural barriers (7)

Lack of competition in the retail market

Theoretically market fully liberalized since 2003 but...

- Majority of consumers remain under regulated tariff
- High vertical concentration and very few traders in the market
- Consumption not measured continuously
=>Consumers cannot exert power

5. Political barriers

- Enormous concern with ensuring low prices
- Lack of trust in the market



5. Conclusions

1. Starting point dominated by growth in energy consumption

2. Legal barriers

Problems with the special regime

Problems in the consumption side

3. Administrative barriers

Complex and lengthy process to obtain permits

Lack of simplified procedures for small RES

4. Structural barriers

4.1. Generation and transport sides

4.2. retail market

