[SPANISH NATIONAL EMBLEM]

The Ambassador
Permanent Representative of Spain to the
European Union

[OUTGOING STAMP DATED
29 APR 2008
WITH REF. NO. A24-4508*]*

Brussels, 29 April 2008

To: Mr Matthias Ruete
Director General of Energy and Transport
Commission of the European Union
28 Rue de Mot (8/41)
1040 Brussels

SUBJECT: Report under Directive 2001/77/EC – Electricity from renewable energies

Dear Sir,

Pursuant to Article 3 (3) of Directive 2001/77/EC of the European Parliament and of t he Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market, we append the report of the Kingdom of Spain.

Yours faithfully,

pp. Carlos BASTARRECHE

[SIGNATURE]

María Jesús Ónega
Industrial Advisor

MJO/ty

Important notice: this report has been submitted in the language of the Member State, which is the sole authen tic version. Translation into the English la nguage is being provided for information purposes only. The European Commission does not guarantee the accuracy of the data or information provided in the translation, nor does it accept responsibility for any use made thereof.

REPORT OF THE KINGDOM OF SPAIN ON THE DEGREE OF FULFILMENT OF THE NATIONAL INDICATIVE TARGETS FOR RENEWABLE ELECTRICITY CONSUMPTION IN 2010

YEAR 2006

The report of the Kingdom of Spain pursuant to Article 3 (3) of Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market.

March 2008
Secretariat General of Energy

CONTENTS

1. INTRODUCTION

2. OBJECTIVES AND MEASURES FOR THE PROMOTION OF RENEWABLE ENERGIES IN THE PERIOD 2005 -2010: *2005-2010 RENEWABLE ENERGIES PLAN*

3. PROGRESS IN THE FULFILMENT OF THE MEASURES AND OBJECTIVES PROPOSED

4. RENEWABLE ENERGIES SITUATION IN 2006

5. CONCLUSIONS

1. INTRODUCTION

This report is pursuant to Article 3 (3) of Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market.

On 26 August 2005 the Spanish Cabinet approved the 2005-2010 Plan for Renewable Energies in Spain (PER), which replaces that approved by the Spanish Government in December 1999 with the same time horizon of 2010.

The 2005-2010 Plan reviews the previous objectives and lays down the general framework for the development of renewable energies up to 2010, taking into account the amount of progress achieved towards the objectives of the previous Plan in each sector. The total renewable energy consumption target for 2010 remains at least 12%. In terms of generating electricity from renewable sources, the new Plan provides for exceeding by some tenths the indicative 2010 gross electricity consumption target of 29.4% set for Spain by the Directive. The Plan also sets a target for biofuels to cover at least 5.75% of petrol and diesel consumption for transport purposes.

This is the third report submitted to the European Commission pursuant to the Directive (Article 3 (3)). It summarises the renewable energies targets in terms of electricity up to the end of the present decade, the measures adopted for achieving them and the renewable energies situation with particular reference to the degree of development of these sources in Spain up to 2006, overall and specifically for each technology, with express indication of the degree of fulfilment of the targets set. This latter aspect, which is the subject of the third chapter, is of course a matter of the proportion of gross electricity consumption covered by renewables.

With regard to the indicative target for 2010, set by Directive 2001/77/EC at 29.4% of Spain's gross national electricity consumption in 2006, the proportion covered by renewably generated electricity was 17.7%, appreciably higher than in 2005 but still below target. Although the hydroelectric input improved in 2006 compared with the previous year, both years were below average, so it is more significant to look at values for an average hydroelectric (and wind-based) year, which would make the proportion 20%.

2. OBJECTIVES AND MEASURES FOR THE PROMOTION OF RENEWABLE ENERGIES IN THE PERIOD 2005-2010: THE NEW *2005-2010 RENEWABLE ENERGIES PLAN*

Objectives of the 2005-2010 Renewable Energies Plan (PER 2005-2010)

Insufficient growth in the consumption of renewable energies with a view to achieving the 2010 target of 12% made it necessary to revise the 2000-2010 Renewable Energies Promotion Plan approved in December 1999. Various reasons for the insufficient increase in the consumption of renewable energies - particularly in relation to the increase in overall energy demand – made it necessary to review the Plan.

First, the consumption of primary energy [1] (and the energy density) had increased far more than forecast, largely owing to a substantial increase in electricity demand and in fuel consumption for transport.

Second, since the approval of the Promotion Plan in 1999, two further indicative targets set for the generation of electricity from renewable sources – Directive 2001/77/EC – and for biofuel consumption – Directive 2003/30/EC – needed incorporating in the planning instruments for the development of renewable energies in Spain.

It was also necessary to take into account the potential contribution of renewable energies to meeting the new environmental commitments, more particularly those arising from the National Plan for Allocation of CO_2 Emission Rights (PNA).

In the light of all of the above, the overall targets of the new 2005-2010 Renewable Energies Plan call for renewable energies to cover 12.1% of primary energy consumption in 2010, and 30.3% of gross electricity consumption, and for biofuels to cover 5.83% of the petrol and diesel consumption forecast for transport in 2010.

In sector terms, a substantial contribution is expected from wind-generated energy, with an installed capacity target for 2010 of 20,155 MW, producing in that year an estimated 45,511 GWh.

Substantial increases are also planned in biofuel targets, with a target up from the 0.5 million TOE set in the Promotion Plan to 2.2 million TOE in 2010, solar photovoltaic energy, for which the target is now 400 MW installed by 2010, solar thermal electricity energy, with a target raised to 500 MW, and in biogas.

As regards biomass, a distinction needs to be made between electricity generation and thermal uses. The growth target for the former in the period 2005-2010 is 1,695 MW, involving inter alia three factors:

- Setting up a co-combustion programme for the joint combustion of biomass and coal at existing coal-fired power stations.

- Substantial increase in financial incentive for electricity generated by biomass installations.

[1] The average growth rate in consumption of primary energies between 2000 and 2004 was more than 3.2% per annum.

- Expediting by the existing *Interministerial Biomass Commission* .

The thermal biomass increas e target is 583 kTOE by 2010, involving inter alia improving the logistics of the supply of waste and a new line of non -returnable investment support proposed in the new Plan.

The table below sets out the targets for the different sectors (thermal and ele ctrical), the forecast primary energy consumption in 2010 and the renewable energies consumption target as a proportion of total energy demand, 12.1% in 2010.

The planning has involved using and assessing the potential penetration of renewable energies in various scenarios. The renewable energies production and consumption targets have been set on the basis of an economic and energy growth trend scenario in the light of the most recent increases in economic activity and energy demand, and a technological development scenario considered probable in each renewable sector. The resulting scenario on which the targets are based is that of the PER (2005 -2010 Renewable Energies Plan) is arrived at by merging the energy trend scenario and the probable technologic al development scenario.

TARGETS OF SPAIN'S 2005-2010 RENEWABLE ENERGIES PLAN

PER scenario

	Situation in 2004 [average year (1)]			2005-2010 increase target (2)			2010 target situation		
	Power (MW)	Production (GWh)	Production in terms of Primary Energy (kTOE)	Power (MW)	Production (GWh)	Production in terms of Primary Energy (kTOE)	Power (MW)	Production (GWh)	Production in terms of Primary Energy (kTOE)
Electricity generation									
Hydro (> 50 MW) (3)	13,521	25,014	1,979	0	0	0	13,521	25,014	1,979
Hydro (between 10 and 50 MW)	2,897	5,794	498	360	687	59	3,257	6,480	557
Hydro (< 10 MW)	1,749	5,421	466	450	1,271	109	2,199	6,692	575
Biomass	344	2,193	680	1,695	11,823	4,458	2,039	14,015	5,138
Biomass power plants	344	2,193	680	973	6,787	2,905	1,317	8,980	3,586
Co-combustion	0	0	0	722	5,036	1,552	722	5,036	1,552
Urban solid waste	189	1,223	395	0	0	0	189	1,223	395
Wind-generated	8,155	19,571	1,683	12,000	25,940	2,231	20,155	45,511	3,914
Solar photovoltaic	37	56	5	363	553	48	400	609	52
Biogas	141	825	267	94	592	188	235	1,417	455
Solar thermal electric	-	-	-	500	1,298	509	500	1,298	509
ELECTRICAL SECTORS	**27,032**	**60,096**	**5,973**	**15,462**	**42,163**	**7,602**	**42,494**	**102,259**	**13,474**
Thermal uses	**m^2 low temp. solar thermal**		**(kTOE)**	**m^2 low temp. solar thermal**		**(kTOE)**	**m^2 low temp. solar thermal**		**(kTOE)**
Biomass			3,487			583			4,070
Low-temperature solar thermal	700,805		51	4,200,000		325	4,900,805		376
THERMAL SECTORS TOTAL			**3,538**			**907**			**4,445**
Biofuels (Transport)									
BIOFUELS TOTAL			**228**			**1,972**			**2,200**
RENEWABLE ENERGIES TOTAL			**9,739**			**10,481**			**20,220**
CONSUMPTION OF PRIMARY ENERGY (kTOE) **(Energy scenario: Trend/PER)**			**141,567**						**167,100**
Renewable Energy/Primary Energy (%)			**6.9%**						**12.1%**

(1) 2004 provisional data. The hydro, wind-generated, solar photovoltaic and solar thermal energy figures comprise the production for an average year based on the powers and surface areas in service at 31 December according to the characteristics of the installations commissioned to date, not the actual 2004 figures. They do not include thermal biogas and geothermal energy, which in 2004 accounted for 28 and 8 kTOE.

(2) In the increase targets for 2005-2010, productions are for an average year according to the powers and characteristics of the installations commissioned during that period. For hydro and wind energy, only half of the power installed in the final year (2010) has been converted to production in the corresponding columns.

(3) Includes production purely by pumping.

As regards the target for generating electricity from renewables (at least 29.4%), renewable energies will contribute to the system in 2010 more than 100,000 GWh, estimated to cover 30.3% of gross energy consumption in that year.

	Year 2010
GROSS ELECTRICITY CONSUMPTION	**337,407**
Total generation by Renewables (GWh)	102,259
Proportion of Renewable Electricity to Gross Electricity Consumption (2)	**30.3%**

The contribution of biofuels – 2,200 kTOE – to the forecast consumption of petrol and diesel for transport will reach 5.83% in 2010, thus also meeting the 5.75% indicative objective set for that year by Directive 2003/30/EC.

Biofuels Petrol and diesel for transport	2,200 37,735
Proportion of biofuels to petrol and diesel for transport	**5.83%**

With regard to the forms of economic support considered, both generally and with regard to electricity generation, it should be noted that the main support expected continues to be that arising from the system of premiums in force in Spain, albeit with certain changes. It is also considered that proposed the maintenance of existing remuneration levels in some cases and improvement in that remuneration in other cases are necessary conditions for achieving the proposed targets.

The Plan involves the investment of 23,599 million euros in the period 2005-2010, with a total volume of support for renewable energies of 8,492 million, comprising 3,536 million of public support in the strict sense (the State's General Budgets bearing 681 million of investment aid and 2,855 million of fiscal incentives to biofuel production) and 4,956 million euros representing all the support during the period for electricity generation from renewables via the premiums system.

3.- PROGRESS IN THE FULFILMENT OF THE MEASURES AND OBJECTIVES PROPOSED

In pursuance of the 2005-2010 Renewable Energies Plan, this chapter analyses the proposals and measures indicated therein and the results achieved in each of the technological sectors during 2006.

3.1 Wind sector

The following table shows what was done in the wind sector in 2006 in relation to each of the measures included in the 2005-2010 Renewable Energies Plan:

			WIND-BASED GENERATION
Measures	Responsible party	Period	Actions in 2006
Development of transmission networks	REE	2006-2010	REE continued developing the transmission networks according to the new planning of March 2006 for the period 2002-2011.
Revision of the Planning of the Gas and Electricity Sectors	Ministry of Industry, Tourism and Commerce	2006	**COMPLETED.** The Spanish Cabinet approved the document "***Planning of the Electricity and Gas Sectors 2002-2011. Revision 2005-2011***" on 31 March 2006, including the PER wind-based target of 20,155 MW. A draft of a new "Planning of the Gas and Electricity Sectors for the period 2007-2016" was prepared.
Establishment in REE of a specific operating centre for the Special Regime	REE and Ministry of Industry, Tourism and Commerce	2005-2006	**COMPLETED.** In June 2006, REE put into operation a specific control centre for the supervision and control of renewable energies and cogeneration installations: the Special Regime Control Centre (CECRE). In March 2006, the System Operator published the associated regulatory amplification: the functional specifications for the control systems of the CECRE's interlocutory control centre and of the wind-based generating facilities for direct power control from the CECRE.
Development of coordination centres for wind-based generating installations belonging to a given company or within a particular geographical area.	REE and Operators	2006-2007	October 2006 saw the publication of operating procedure **PO 3.7** setting out the criteria for the "***programming in real time of non-manageable generation***". **Royal Decree 1634/2006** of 29 December 2006 *which states the electricity tariff for 2007,* extended to 30 June 2007 the deadline for installations under the special regime with power of more than 10 MW to come compulsorily within the jurisdiction of a control centre.

Measures (continued)	Responsible party	Period	Actions in 2006
Extension of the period of application of the incentive for conversion of old wind generators (amendment of Royal Decree 436/2004). Amendment of Royal Decree 436/2004 (Article 31) eliminating diversion costs for wind-based installations with regulated tariff. Amendment of Royal Decree 436/2004 (Article 34.5) increasing the power limit for the economic regime	Ministry of Industry, Tourism and Commerce	2005-2006	Draft revisions of the economic regime established by Royal Decree 436/2004 for electricity production from renewable energies, extending its application to the PER wind-generated target of 20,155 MW. October 2006 saw publication of operating procedure **PO 12.3** on "***requirements for response to voltage dips of wind-based installations***". The revision of Royal Decree 436/2004 was supplemented by Royal Decree 661/2007 of 25 May 2007.
Active participation in R+D+I for the development of national technology	Ministry of Industry, Tourism and Commerce / IDAE and Ministry of Education and Science	2005-2010	The Ministry of Industry, Tourism and Commerce resolved the First Convening of the CENIT (National Strategic Technical Research Consortia) Programme intended to promote public and private cooperation in R+D+I. The granting of aid – through the CDTI (Centre for the Development of Industrial Technology)– was approved for the Windlider 2015 project led by the Spanish technology firm Gamesa Eólica, with a view to developing technologies for high-power wind generator simulation and validation systems. Follow-up of IDAE's Technological Agreements with two Spanish manufacturers.
Development of sufficiently reliable prediction tools	Sector players	2005-2006	**COMPLETED.** Generalised use of prediction tools for reducing energy diversion costs. The possibility of issuing joint tenders for the production of various technologies – by marketing players – makes it possible to reduce the cost of diversions on the forecasts of each wind-based installation. 94% of net wind-generated energy in Spain in 2006 participated in the market via the unrestricted sale option.
Development of specific legislation for offshore wind-based installations	Ministry of Industry, Tourism and Commerce and Ministry of the Environment	2005-2006	Processing at the Ministry of Industry, Tourism and Commerce of the procedure for establishing installations within the public offshore/onshore domain. IDAE contacts with sector promoters.
Development of Spanish wind generators adapted to marine conditions, and setting up of demonstration offshore facilities	Technology firms and IDAE	2006-2008	IDAE's Technological Agreements with Spanish manufacturers provide for the future adaptation of prototypes to offshore conditions. IDAE maintaining contact with promoters for future participation in offshore wind farms.
Greater uniformity of administrative procedures in the Autonomous Regions, especially environmental ones	Autonomous Regions, Ministry of Industry, Tourism and Commerce and Ministry of the Environment	2005-2010	Periodic meetings of the Renewable Energies Group Consultative Commission (Ministry of Industry, Tourism and Commerce, IDAE, Autonomous Regions).
Elimination of processing delays in certain regions	Autonomous Regions	2005-2006	Periodic meetings of the Renewable Energies Group Consultative Commission (Ministry of Industry, Tourism and Commerce, IDAE, Autonomous Regions).
New Royal Decree on the Connection of Installations under the Special Regime	Ministry of Industry, Tourism and Commerce	2006	Inclusion in the compilation of the Draft of the new Royal Decree amending Royal Decree 436/2004, on the economic regime of renewable energies.

Measures (continued)	Responsible party	Period	Actions in 2006
Transposal of Directive 2001/77/EC on the promotion of electricity produced from renewable sources	Ministry of Industry, Tourism and Commerce	2005-2006	Royal Decree 1634/2006 of 29 December 2006, *establishing the electricity tariff for 2007,* empowers the Ministry of Industry, Tourism and Commerce to develop the guarantee-of-origin system arising from Directive 2001/77/EC. At the end of 2006, processing at the Ministry of Industry, Tourism and Commerce of the Draft of the new enactment for the transposal of Directive 2001/77/EC. 2007 saw the approval of Order ITC/1522/2007 concerning the regulating of the guarantee of origin of electricity from renewable sources and high-efficiency cogeneration.

Some of the priority measures proposed in the PER for appropriate development of wind-based generation in Spain were completed in 2006, particularly the publication of the 2005-2011 revision of the planning for the wind-based sector. The year also saw the entry into operation of the **Special Regime Control Centre (CECRE)**, its functional specifications, and operating procedures **PO 3.7** for the programming of non-manageable generation and **PO 12.3** on the requirements for response to voltage dips of wind-based installations. CECRE's objective is to incorporate in the electricity system the largest possible production of energy from renewable sources, especially wind-based generation, in conditions of security. The output of all the renewable energy producers established in Spain is managed and controlled from this centre, in association with the Electricity System Control Centre (Cecoel).

As regards legislation, it should be noted that 2006 saw the publication of **Royal Decree-Law 7/2006** of 23 June 2006 *adopting urgent measures in the energy sector;* it eliminates the band of remuneration of generating installations using renewable energies, between 80% and 90% of the average electricity tariff, that was established by Law 54/1997 on the Electricity Sector. At the same time, it unties the variation of the premiums of the special regime from the average electricity tariff.

As regards public support, the PER does not provide for any investment support for wind-based projects for achieving the intended targets, so public support for production takes the form of premiums for electricity fed to the grid.

3.2 Hydroelectric sector

Work was done in 2006 on the priority measures stated in PER 2005-2010 as mechanisms for overcoming hydroelectric sector barriers:

			HYDROELECTRIC SECTOR
Measures	Responsible party	Period	Actions in 2006
Promotion of public tendering for State infrastructures and utilisation of Ecological Flows	**Ministry of the Environment**	**2005-2010**	September 2006 saw the signing of a Collaboration Protocol between the Ministry of the Environment and the Ministry of Industry, Tourism and Commerce for the development and implementation of the projects of the AGUA Programme for the promotion of Renewable Energies (2006-2010 Shock Plan), including increasing the available hydroelectric potential. Periodic meetings between the Directorate General of Water (Ministry of the Environment) and IDAE resulted in work on the report entitled "Shock plan for implementing utilisation of renewable hydroelectric resources" with a view to evaluating the potential that might be developed within the scope of the Hydrographic Confederations.

			HYDROELECTRIC SECTOR
Measures (continuation)	Responsible party	Period	Actions in 2006
Amendment of Royal Decree 436/2004	**Ministry of Industry, Tourism and Commerce**	**2005-2006**	Processing at the Ministry of Industry, Tourism and Commerce of the Draft Royal Decree.
Transposal of Directive 2001/77/EC on guarantees of origin	**Ministry of Industry, Tourism and Commerce**	**2005-2006**	Processing at the Ministry of Industry, Tourism and Commerce of the Draft Royal Decree including the transposal of Directive 2001/77/EC.

As regards public support, the PER does not provide for any investment support for wind-based projects for achieving the intended targets, so public support for production takes the form of premiums for electricity fed to the grid.

[TRANSLATOR'S NOTE: There appears to be no section 3.3]

3.4 Solar Thermal Electric Sector

The following table shows the actions carried out in the Solar Thermal Electric sector during 2006 in relation to each of the measures included in the Renewable Energies Plan:

			SOLAR THERMAL ELECTRIC SECTOR
Measures	Responsible party	Period	Actions in 2006
Promoting direct solar radiation measurements	National Institute of Meteorology	2006-2007	Plant promoters are taking measurements.
Application of public support to the first projects	EU, Autonomous Regions	2005-2010	Allocation of €6.2 million to the first projects.
Support for the implementation of demonstration projects (valuation of components and budgets in the first projects) (*)	IDAE, CIEMAT (Research Centre for Energy, the Environment and Technology)	2005-2010	Meetings with promoters of demonstration projects (Iberdrola, Abengoa, Steam Generation Project Consortium). Meetings with the sector association. Participation in companies developing solar thermal electric plants with the main promoters.
Maintenance of the conditions of Royal Decree 436/2004, increasing the limit of the legal framework to 500 MW, and Royal Decree 2351/04 (*)	Ministry of Industry, Tourism and Commerce	2005-2010	Work on revising Royal Decree 436/2004 to this effect.

(*) Measures included as priorities in the Summary of PER 2005-2010.

No installations were commissioned during the second year of the 2005-2010 Renewable Energies Plan. The first plant to be commissioned during the period of the plan was in the first quarter of 2007.

As regards **public investment support**, the PER provides for subsidies for the first projects – amounting to 6.2 million euros – which will be implemented from 2006 onwards.

Regarding **public operating support**, the legislation in force in 2006 was Royal Decree 436/2004, which provides for two alternative ways of remunerating energy generated by solar thermal electric technology: by regulated tariff or by unrestricted sale to the market.

In 2006, since no thermal electric installation was commissioned, the balance of power, production, investment and hence of public operating support was nil.

3.5 Solar Photovoltaic Sector

The following table shows the actions carried out in the Solar Photovoltaic sector during 2006 in relation to each of the measures included in the Renewable Energies Plan:

			PHOTOVOLTAIC SECTOR
Measures	Responsible party	Period	Actions in 2006
Maintenance of premiums established in Royal Decree 436/2004.	Ministry of Industry, Tourism and Commerce	2006	Meetings with the Ministry of Industry, Tourism and Commerce and sector associations about the revision of tariffs, premiums and incentives. Profitability analyses to assess which tariffs provide adequate profitability.
Modification of IDAE's aid line	IDAE and Autonomous Regions	2006	Ongoing collaboration with Autonomous Regions, preparing the agreements governing the assignment of funds in 2006. Aid from IDAE funds for investment in solar photovoltaic energy connected to the grid is eliminated. It continues for isolated photovoltaic.
Support for innovation	IDAE and Ministry of Industry, Tourism and Commerce	2005-2010	Meeting with sector associations and institutions, identifying the main innovation trends in solar photovoltaic energy. IDAE participation in the development of innovative projects such as high concentration, architectural integration.
Amendment of installed capacity target for revision of tariffs from 150 MW (established in Royal Decree 436/2004) to 400 MW	Ministry of Industry, Tourism and Commerce	2006	**Amendment effected**, establishing the new installed capacity target for the revision of tariffs at **371 MW**, arrived at by deducting from the 400 MW total the 29 MW of isolated installations.
Approval of Technical Building Code (1)	**Approval**: Ministry of Housing **Application**: Municipalities	2006	**Approval of the Technical Building Code (CTE)**, the main actions have been directed at its dissemination in the Autonomous Regions via conferences and meetings.
Coordination between the various Autonomous Regions	IDAE and Autonomous Regions	2005-2010	Meetings with the Autonomous Regions to form a working group for assessing existing authorisation procedures and preparing proposals for greater uniformity and simplification.

(1) *On 28 March 2006, B.O.E. number 74 published* ***Royal Decree 314/2006*** *of 17 March 2006 approving the Technical Building Code (CTE).*

As regards **public investment support**, the PER only provides for investment aid to photovoltaic projects connected to the grid during 2005. From 2006 to 2010 there is provision for investment aid for photovoltaic projects isolated from the grid, via the Autonomous Regions, and operating aid via regulated tariffs, premiums, and incentives for photovoltaic projects connected to the grid.

Regarding **public operating support**, the legislation in force in 2006 on electricity production from installations utilising renewable energies (Royal Decree 436/2004) establishes a system of incentives, with no time limit, with a view to internalising their environmental benefits and facilitating their competitive positioning in a free market.

It should be noted that achieving the targets for power and energy generated at 2010 (29.72% and 20.10% respectively) involves a **smaller operating support cost** than originally envisaged (8.17% on the 2010 target), which implies that the total support in the period will in the end be appreciably less for the same installed capacity.

3.6 Biomass sector

			BIOMASS SECTOR
Measures	Responsible party	Period	Actions in 2006
Interministerial Commission for energy utilisation of biomass	Ministry of Industry, Tourism and Commerce	2005-2010	This Commission did not meet in 2006.
Amplification of the Fourth Additional Provision of Law 43/2003 on Woodlands	Ministry of the Environment	2005-2010	Completion of forest waste viability studies commissioned by the Directorate General of biodiversity in various parts of Spain around coal-fired (co-combustion) thermal power stations.
Development of logistics of the resource for its energy use	Ministry of Agriculture, Fisheries and Food Ministry of Industry, Tourism and Commerce	2005-2010	October 2006 saw the signing of the formation deed of the Andalusia Biomass Utilisation Company between various departments of that Autonomous Region, the Andalusian Energy Agency, IDAE and various private biomass companies. During 2006 there were meetings with various Ministries, TRAGSA and private companies for the development of actions to promote energy crops.
Programme of aid to the acquisition of machinery for harvesting, transport and processing	Ministry of Agriculture, Fisheries and Food Ministry of the Environment	2005-2010	No activities in 2006 relating to the aid programme.
30% investment subsidy on equipment for domestic use of biomass	Ministry of Industry, Tourism and Commerce Autonomous Regions	2005-2010	Signing of collaboration agreements with all the Autonomous Regions for the assignment and management of the renewable energies promotion aid that had been managed by IDAE in 2005 via the ICO-ADAE Line, for biomass applications in domestic uses only.
Development of rules and regulations for thermal biomass installations in buildings (RITE)	Ministry of Industry, Tourism and Commerce AENOR (Spanish Association for Standardisation and Certification)	2005-2010	The approval and publication of the proposed RITE amendment including biomass installations were pending in 2006.
Amendment of Article 30 of Law 54/1997 to authorise higher premiums for biomass	Ministry of Industry, Tourism and Commerce National Energy Commission	2005	The amendment of Law 54/1997 was effected within Law 24/2005 of 18 November 2005 on reforms to encourage productivity (BOE 277 of 19 November 2005) and the corresponding work for the amendment of Royal Decree 436/2004 was done.

			BIOMASS SECTOR
Measures	Responsible party	Period	Actions in 2006
Amendment of Royal Decree 436/2004	Ministry of Industry, Tourism and Commerce Ministry of the Economy and Finance National Energy Commission	2005-2006	Work at the Ministry of Industry, Tourism and Commerce paving the way for the preparation of the Draft of the new Royal Decree.
Support for coal and biomass co-combustion technology (amendment of Article 27 of Law 54/1997 and Royal Decree 436/2004)	Ministry of Industry, Tourism and Commerce Ministry of the Economy and Finance National Energy Commission	2005-2006	The amendment of Law 54/1997 was effected within Law 25/2005 of 18 November 2005 on reforms to encourage productivity (BOE 277 of 19 November 2005) and the procedures for amending Royal Decree 436/2004 were carried out during 2006.
Establishment of contact with electricity companies in relation to the development of co-combustion technology	Ministry of Industry, Tourism and Commerce	2005-2006	Continuing contact with electricity companies, including several meetings with their representatives with a view to technical advice on and pressing ahead with activities to promote co-combustion.
Studies of the biomass potential of each conventional thermal power station with a view to developing co-combustion potential	Ministry of Industry, Tourism and Commerce Electricity Companies	2005-2007	Contact with electricity companies was maintained with a view to follow-up and technical advice on co-combustion potential studies for each power station, resulting in the definition of several proposals for implementing procurement plans now in process of being signed.
Analyses of appropriate co-combustion technologies for each conventional thermal power station	Ministry of Industry, Tourism and Commerce Electricity Companies	2005-2007	Contact with electricity companies was maintained with a view to follow-up and technical advice on the most appropriate co-combustion technologies for each thermal power station.

As regards thermal biomass projects, the implementation of investment and support relating to the PER is clearly less than with respect to production in terms of primary energy. This is for the same reasons as in 2005. On the one hand, the substantial contribution of industrial thermal biomass, with a far lower investment ratio than domestic, reduces the final investment and hence the support. On the other hand, the domestic installations implemented are mainly concentrated in cold areas, involving a greater number of hours of use than the average stated in the PER and hence a greater energy input for the same investment.

The only aid received by biomass installations for electricity production was via the system of premiums of the special regime governed by Royal Decree 436/2004. In the case of biomass, the sum received per kWh generated varies with the type of biomass used, depending on the characteristics of each installation.

3.7 Biogas sector

			BIOGAS SECTOR
Measures	Responsible party	Period	Actions in 2006
Promotion of technologies with proven technical viability and environmental advantages, for the treatment of agricultural and livestock waste by anaerobic digestion generating biogas, and its subsequent energy utilisation.	Ministry of Agriculture, Fisheries and Food Ministry of the Environment Ministry of Industry, Tourism and Commerce	2005-2010	Contact has been made with sector companies.
Dissemination of existing technologies among holdings affected	Ministry of Agriculture, Fisheries and Food Ministry of the Environment Ministry of Industry, Tourism and Commerce	2005-2010	Ongoing.
Development of co-digestion processes	Ministry of Industry, Tourism and Commerce	2007-2010	Ongoing.
Continuation unchanged of the economic regime applicable to biogas-fired electricity generating installations, as defined previously in Royal Decree 436/2004 of 12 March 2004	Ministry of Industry, Tourism and Commerce	2005-2006	Work at the Ministry of Industry, Tourism and Commerce paving the way for the preparation of the Draft of the new Royal Decree that replaced Royal Decree 436/2004 in 2007. Amendments conducive to bringing biogas types into line with the sector's current realities were made.

As regards public investment support, the PER does not provide for any subsidies for projects to generate electricity from biogas to achieve the stated targets.

The only aid received by biomass installations for electricity production was via the system of premiums of the special regime governed by Royal Decree 436/2004. In the case of biomass, the sum received per kWh generated varies with the type and group concerned and the mode of sale of the energy.

4. RENEWABLE ENERGIES SITUATION IN 2006

The 2005-2010 Renewable Energies Plan is the most relevant operation undertaken in Spain to promote renewable energies in recent years.

We review below the situation in each sector and summarise the barriers or operations intended for 2007 for overcoming the obstacles to these energies achieving greater penetration in the overall balance.

The following table shows the consumption of each of the renewable energies in 2006 in terms of actual production data and estimated data for electricity production from renewables for an average hydroelectric and wind-based generating year[2].

Generation and gross consumption of electricity in Spain		
	Actual production data	Estimated data for average hydroelectric and wind-based generating year (2)
GWh	2006	2006
Coal	**69,850**	
Nuclear	**60,126**	
Natural gas	**90,593**	
Petroleum products	**21,075**	
Renewable energies	**52,989**	**59,822**
- Hydroelectric (1)	25,820	32,226
- Wind-based	23,377	23,804
- Photovoltaic	107	107
- Biomass, biogas, urban solid waste etc. (3)	3,686	3,686
Hydroelectric generation by pumping (not renewable)	**3,683**	
Non-renewable waste (waste gas + industrial waste) and treatment of waste with gas	**4,665**	
Total gross generation	**302,982**	**302,982**
Balance of exchanges (import/export)	-3,279	-3,279
Gross consumption	**299,703**	**299,703**
Renewables relative to gross consumption (%)	***17.7%***	***20.0%***
Consumption by pumping	5,262	5,262
Renewables + Hydroelectric by pumping relative to Gross consumption (%)	18.9%	21.2%

Source: Ministry of Industry, Tourism and Commerce; National Energy Commission (CNE) and IDAE

(1) Not including generation by pumping.

(2) Taking the same generation and gross consumption as in the case of real data, without making assumptions about the generation covered by fossil-fuelled and nuclear power stations.

(3) Includes 100% urban solid waste

The contribution to the grid of electricity from renewable sources in 2006 covered 17.7% of gross electricity consumption. It should be noted that this figure is variable as a function mainly of the hydroelectric resource. 2005 and, to a lesser extent, 2006 were dry years with low hydroelectric potential. It is therefore more significant to assess electricity generation from renewables for an average year, both hydroelectric and wind-based. On that criterion, taking an average production estimated on the basis of the installed capacity of renewables, the percentage rises in 2006 to 20% as against 19% in 2004 and 19.9% in 2005, likewise for an average hydroelectric and wind-based generating year.

[2] The calculation of estimated production in an average year is based on the following assumptions:

- Hydroelectric
  - Power station of 10 MW or less. Equivalent hours 3,100.
  - Power station of more than 10 MW but not more than 50 MW. Equivalent hours 2,000.
  - Power station over 50 MW. Equivalent hours 1,850.
- Wind-based generation. Equivalent hours 2,200.

The table below shows the degree of development in 2006 in terms of power data and the degree of fulfilment of the 2010 targets.

PER 2005-2010. DEGREE OF DEVELOPMENT IN 2006 ACCORDING TO POWER/ENERGY DATA

	Increase targets			Implemented		Degree of development (%)	
	Unit	2006	2005-2010	2006	Cumulative 2005-2006	2006 relative to 2006 target	Cumulative to 2006 relative to 2010 target
Electricity generation							
Hydro	MW	127	810	55	108	43.3%	13.3%
Hydro over 50 MW	MW	-	-	-	-	-	-
Hydro between 10 and 50 MW	MW	57	360	27	41	47.4%	11.3%
Hydro below 10 MW	MW	70	450	28	67	40.0%	14.9%
Biomass	MW	90	1,695	37	47	41.1%	2.8%
Biomass power stations	MW	*40*	*973*	*37*	*47*	*92.5%*	*4.8%*
Co-combustion	MW	*50*	*722*	*0*	*0*	*0.0%*	*0.0%*
Wind-based	MW	2,000	12,000	1,820	3,413	91.0%	28.4%
Solar photovoltaic	MW	27	363	85	108	320.8%	29.7%
Isolated	MW	*2*	*15*	*1*	*2*	*73.3%*	*12.7%*
Fed to grid	MW	*25*	*348*	*84*	*106*	*335.6%*	*30.5%*
Biogas	MW	10	94	9	19	87.4%	20.7%
Solar thermal electric	MW	10	500	0	0	0.0%	0.0%
Electricity sectors total	MW	2,264	15,462	2,006	3,696	88.6%	23.9%
Thermal uses (kTOE)							
Biomass	kTOE	80	583	33	49	41.3%	8.5%
Low-temperature solar thermal	kTOE	16	325	12	20	72.7%	6.2%
Surface area (m^2)	m^2	211,000	4,200,000	153,500	260,386	72.7%	6.2%
Thermal sectors total	kTOE	96	907	45	70	46.6%	7.7%
Biofuels (kTOE)							
Biofuels	kTOE	250	1,972	283	320	113.4%	16.2%
Biofuels total	kTOE	250	1,972	283	320	113.4%	16.2%

a) Wind-based generation

Spain's wind-based energy growth in 2006 was 18% (1,820 new MW), slightly below the figure for the EU as a whole (19%, approx. 7,700 new MW, additional to the 40,500 MW of 2005, EU-27), and also below the world total (26%, some 15,300 new MW on top of the 59,000 MW in operation at the end of 2005).

As may be seen in the above table, the aggregate power of the wind-based installations commissioned in 2006 was 1,820 MW, 91% of the 2010 target. The PER also provides for larger increases in 2007 and 2008.

The good rate of growth in the wind-based sector during the early years of the Plan, and the prospective installations in 2007 and 2008, suggest that the 2010 targets will be achieved.

b) Hydroelectric

55 new MW were put into operation in Spain in 2006 in the hydroelectric sector, an increase very similar to that of the previous year (53 MW), both figures being rather far away from, 50% below, the PER 2005-2010 figures intended for these early years (127 MW each year).

In the first two years of PER 2005-2010, 13.3% of the Plan's overall target for this sector was achieved. Of the two categories of hydroelectric power stations, the small stations (power up to 10 MW) did slightly better, achieving nearly 15% of their target, as against 11.4% for stations with powers of between 10 and 50 MW.

Achieving the targets set in the PER 2005-2010 will therefore entail continuing to make progress with proposals for achieving utilisation of the available hydroelectric potential that is

technically and environmentally viable, by promoting public competitive tendering for the exploitation of the hydroelectric resources arising from dams and channels entirely or partly built on the basis of State or private funds, utilisation of the ecological or environmental flows of large dams, and expediting and facilitating the administrative procedure for processing hydroelectric concessions in progress and the new ones that may arise in the period.

d) Solar Thermal Electric

The installation in this sector that was scheduled for commissioning in 2006 was delayed by commissioning tests to the first quarter of 2007. It is the 10 MW tower power station PS10, the world's first commercial plant set up by a private company.

In addition to that project, a further 1,500 MW appeared provisionally at the end of 2006 in the Register of Special Regime Electricity Energy Production Installations. 130 MW of these were being implemented by four main projects scheduled for commissioning from 2007 onwards.

The other projects are still at various stages of promotion and maturity, most of them still lacking economic studies and implementation plans.

e) Solar Photovoltaic

The Renewable Energies Plan (PER) provides for the installing of 363 MWp of solar voltaic energy (ten times the power installed in December 2004) to reach a total installed capacity of the order of 400 MW by the end of 2010. Achieving this requires a rate of photovoltaic power installed of close to 60 MW per annum, so the 2010 objective was actually exceeded in 2007.

At the end of 2006 Spain was second in Europe (after Germany) in terms of photovoltaic power installed, with about 144 MW, comprising some 128 MW from installations connected to the grid and 16 MW in isolated systems.

83.9 MW of photovoltaic installations connected to the grid came on stream in 2006, well above the 26 MWp required by PER 2005-2010 for this second year. It should be noted that the PER refers to the peak power of the installations, whereas the data used for this 2006 report are based on nominal power. The peak power of an installation is usually between 5 and 15% of its nominal power, so this nominal 83.9 MW might represent between 88 and 96 MWp.

The inclusion of solar energy in the Technical Building Code (CTE) means a very substantial legislative reliance on technologies that in Spain are at very high technical levels of design and implementation, as well as the country's privileged solar resource situation.

The CTE is the regulatory framework setting the performance levels required for buildings in relation to the basic safety and habitability requirements of the Building Control Act (LOE).

Section HE5 imposes on certain buildings (hypermarket uses, storage buildings, hotels and hostelries, hospitals etc.) with more than a certain surface area the obligation to install solar photovoltaic energy catchment and conversion systems.

f) <u>Biomass</u>

The development of electricity production from biomass could not be pursued in 2006, because the expected new Royal Decree amending the special regime incentives was not published. The lack of suitable incentives has prevented biomass development over recent

years pending substantial expectation of changes in the remunerations for such projects. Thus the 37 MW installed during the past year are around the forecast of PER 2005-2010, which already expected a biomass delay for the same reason. This entails an increase in the growth of power installed relative to the 2005 increase, thereby breaking the previous trend of year-on-year decreases in investment.

As regards thermal applications, despite the delay to the publication, scheduled for 2006, of the changes proposed in the Rules for Thermal Installations in Buildings (RITE) for biomass installations, installations with major social impact have been set up.

g) Biogas

Although not as spectacular as in 2005, this sector continued in 2006 its good rate of development as in previous years. The 8.74 MW installed during the past year maintains sector growth based mainly on the development of landfill biogas projects.

In this sector it seems necessary to explore the possibilities of applying anaerobic digestion technology to livestock waste. The inclusion in the special regime of using natural gas for the drying of slurry has removed from possible investors the use of this technology for treating waste of this kind. The Plan relies in this area specifically on the use of these technologies for the treatment of agricultural and livestock waste, since Directive 1999/31 on the landfill dumping of organic matter reduces the possibilities of biogas production by gas release from landfill.

5. CONCLUSIONS

Over the course of 2006 work has been done on the approval of measures for increasing the rate of growth towards the new targets set in PER 2005-2010. That Plan, approved by the Spanish Cabinet on 26 August 2005, revises upwards the targets set in the previous 1999-2010 Renewable Energies Promotion Plan in terms of wind-based generating power installed, photovoltaic power, solar thermal electrical energy and biofuel production for 2010 and sets out a broad range of measures and instruments for ensuring their fulfilment and boosting the renewable energies market.

In short, the new Plan's targets for 2010 are intended to achieve a contribution of at least 12% from renewable sources to primary energy consumption, electricity production from energies of this kind to cover 29.4% of gross electricity consumption, and a 5.75% contribution of biofuels to the petrol and diesel consumption predicted for transport in 2010. The scenario arising from the Plan produced slightly higher figures, as indicated in this report.

The amplification of the Plan has resulted in the adoption of certain important measures intended to come into operation this year, such as the approval of the Technical Building Code (CTE) by Royal Decree 314/2006 of 17 March 2006 for achieving rational use of energy by utmost reduction of consumption and replacement of some of the conventional energy sources by renewables. The new Code has been compulsory since 29 September 2006 and is applicable to new buildings or installations and refurbishments of existing ones, so it is expected to yield tangible results in coming financial years.

Among the measures provided for in the PER in the wind-based sector, the Ministry of Industry, Tourism and Commerce continues, through the Secretariat General of Energy and the Institute for Energy Saving and Diversification (IDAE) to support the development of prototype wind generators both for onshore use and to suit offshore conditions, while at the same time maintaining active participation jointly with the System Operator (REE) and the Ministry of the Environment in improving the management of wind-based production and the development of specific legislation for offshore wind-based installations.

In biomass utilisation, the main activity has comprised the two aspects of creating a proper supply of fuel and establishing conditions that make its energy utilisation possible.

With a view to establishing biomass supply logistics in accordance with the measures outlined in the Renewable Energies Plan, work on furtherance and coordination at institutional level has been done with other administrations (relations with the Directorate General of Biodiversity, Autonomous Regions etc.) and on promoting projects by offering direct participation (energy crops etc.).

In the hydroelectric sector, within the "General protocol of collaboration between the Ministry of the Environment and the Ministry of Industry, Tourism and Commerce for the development and implementation of the **A.G.U.A.** (Activities for the Management and Use of Water) programme" of 6 September 2006, close collaboration has been established between the Secretariat General of Energy of the Ministry of Industry and the Subdirectorate General of Integrated Management of the Public Water Domain (SGGIDPH) and the Directorate General of Water of the Ministry of the Environment. The object has been to analyse the possibilities of increasing the available hydroelectric potential with a view to ascertaining the degree of fulfilment of the targets set for the hydroelectric sector in 2005-2010 Renewable Energies Plan (PER) and producing a joint proposal for action measures to promote the increase in hydroelectric potential.

As regards the integration in the grid of the new targets set in the various technological sectors, we should highlight the commissioning in June by Spain's electricity authority REE of a specific control centre for the supervision and control of installations covered by the special regime, called the Special Regime Control Centre (CECRE). CECRE's objective is to integrate in the electricity system the maximum amount of energy production from renewable sources, especially wind-based production, in conditions of security. This centre, in association with the Electrical System Control Centre (CECOEL), manages and controls the output of all the renewable energy producers established in Spain.

2006 also saw the special regime generators beginning to come under the jurisdiction of **Generating Control Centres**, an obligation upon those producing 10 MW or more according to Royal Decree 1454/2005, for which the deadline of 24 December 2006 was deferred by Royal Decree 1634/2006 to 30 June 2007.

Work was underway in 2006 on the amendment of Royal Decree 436/2004, particularly the changes needed to facilitate the take-off of sectors where there has been little development because of insufficient profitability.

This led to the approval of Royal Decree-Law 7/2006 of 23 June 2006 allowing greater flexibility in the establishment of premiums and incentives for electrical energy production under the special regime.

Outside the time frame of this report, but of critical importance in the development of renewable energies, is Royal Decree 661/2007 of 25 May 2007 governing electrical energy production activity under the special regime and intended to facilitate the achievement of the PER targets for 2010 by revising Royal Decree 436/2004 of 12 March 2004 and hence the remuneration of renewable energies, broadening the types of generation eligible for support, increasing the remuneration of the forms of energy most needed – such as the various types of biomass – and introducing a new system of ceilings and floors for the incentives payable for production from renewable energy sources that participate in the Spanish electrical energy market, ensuring in any case reasonable profitability for such installations.

The balance of renewable energies during the year 2006 may also be deemed positive. The production consumption of renewable energies other than hydroelectric resulted in renewable sources contributing 6.8% to the overall energy balance.

Electricity fed to the electrical system from renewable sources in 2006 covered 17.7% of gross electricity consumption. It should be noted that this percentage is variable, mainly as a function of the hydroelectric resource, as occurred in previous years (see section 4 above). 2005 and, to a lesser extent, 2006 were dry years. This makes it more significant to assess electricity generated by renewables for an average year, both hydroelectric and wind-generated. On that criterion, taking an average production estimated on the basis of the installed capacity using renewables, the percentage rises from 17.7% to 20%.

Another aspect, despite the evolution of renewable technologies in terms of power installed and production achieved, is that the substantial increase in electricity demand in recent years, at growth rates of the order of 4% per annum, has meant that the contribution from such sources to the electricity system has grown somewhat less than expected.

It may therefore be concluded that, despite the negative impact of the scarcity of hydro resources in recent years and the high rates of electricity demand growth, renewable energies are establishing themselves as an increasingly important energy source in Spain's energy basket, a source which the new Plan certainly relies upon with a view to achieving its targets.

Finally, the Spanish Government reiterates herein its commitment to develop the potential of renewable energies in Spain. To this end, it relies on a detailed diagnosis of the existing barriers and on defining the measures for overcoming them, measures already catered for in the PER and updated subsequently.