

## Spain

### Sources of information

The information in this Appendix is based on Spain's Third National Communication (<http://unfccc.int/text/resource/docs/natc/spanc3.pdf>).

### Quality and transparency of reporting

**Table 1: Information provided on policies and measures (from the Third National Communication)**

Information provided	Level provided	Comments
Policy names	+++	Key sectors opportunities are described (75 P&Ms) Objectives are strictly directed at GHG abatement, sometimes they are described very detailed
Objectives of policies	+++	
Which GHGs?	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFC, PFC, NO <sub>x</sub> , CO	
Status of implementation	++	Most measures are adopted (63%) or already implemented (37%)
Implementation body specified	++	
Quantitative assessment of implementation	++	Only few P&Ms have been quantified for the year 2005 (not for 2010 or later); in some sectors no quantitative assessment has been provided
Interaction with other P&Ms discussed	+	Interaction with other P&Ms is discussed only for some sectors

+, ++, +++ level of information available increases as the number of + signs increases

**Table 2: Information provided on projections**

Category of information	Level of information provided	Comments
Scenarios considered	With measures, with additional measures	Both scenarios are only provided for CO <sub>2</sub> emissions; it is not clearly stated which measures are considered in the 'with measures' and which in the 'with additional measures' projection
Expressed relative to inventory for previous years	1990	Only 1990 in the Third National Communication
Starting year	1990, 1995	
Split of projections	+	A split of projections is given only for CO <sub>2</sub> ; a split by gases is not provided as other greenhouse gases are not projected
Presentation of results	++	Results presented in both tabular and graphical form
Description of model (level of detail, approach and assumptions)	+	CO <sub>2</sub> forecasts use a bottom up approach (MED-PRO), other gases use trend analysis
Discussion of uncertainty	—	Uncertainty issues of the projections are not discussed or mentioned
Details of parameters and assumptions	—	Parameters assumed in the projections are not provided

+, ++, +++ level of information available increases as the number of + signs increases

## Assessment of policies and measures

The Third National Communication discusses mostly existing measures and provides only few planned or additional P&Ms. Quantitative assessment is given only for some measures and only for the year 2005. For the forestry sector quantitative effects of P&Ms are currently under calculation. Sector discussions cover energy, transport, commercial, institutional and residential, industry, waste, agriculture and forestry. A summary of the effects of P&Ms in the individual sectors (table 3) is not provided. Table 4 gives detailed information on the policies and measures.

**Table 3: Summary of the effect of policies and measures Included in the projections (MtCO<sub>2</sub>)**

	With measures <sup>a</sup>	With additional measures <sup>b</sup>
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
Total	n/a	n/a

In the P&M summaries of the Third National Communication it is not clearly state whether a measure is considered under with measures or under the with additional measures scenario (table 4).

**Table 4: Detailed information on polices and measures**

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Energy (1.A.1.a.)	1) premium for energy production in special regime	Establish premiums for less contaminating energy production	CO <sub>2</sub>	Economic	Implemented	Ministry of Economy			Yes
Energy (1.A.1.a.)	2) promotion plan for renewable energy								
Energy (1.A.1.a.)	2.1) extension of the use of wind power	Installation of 8 140 MW additional power	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology	7.7 to 19.1		Yes
Energy (1.A.1.a.)	2.2a) extension of the use of biomass for electricity and heating	Installation of 1 708 MW additional power and 12 810 GWh increased generation	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology	5.0 to 12.5		Yes
Energy (1.A.1.a.)	2.2b) extension of the use of biomass for heating	Make energetic use of additional 900 ktoe (kilo tons of oil equivalent)	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology	2.6		Yes
Energy (1.A.1.a.)	2.3) extension of the use of small hydro power	Installation of 720 MW additional power	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology	0.9 to 2.2		Yes
Energy (1.A.1.a.)	2.4) extension of the use of biogas	Installation of 78 MW and generation of 546 GWh	CO <sub>2</sub> , CH <sub>4</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology, Local Councils	0.2 to 0.5		Yes

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Energy (1.A.1.a.)	2.5) extension of the use of bio fuels	Production increase of 500 ktoe (kilo tons of oil equivalent)	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology		1.4	Yes
Energy(1.A.1.a.)	2.6) extension of hydro power	Installation of 350 MW additional with increased generation of 700 GWh	CO <sub>2</sub>	Economic, fiscal,regulatory,other	Implemented	Ministry of Economy, Ministry of Science and Technology		0.3 to 0.7	Yes
Energy (1.A.1.a.)	2.7) extension of the use of photovoltaics	Installation of 135 MW additional with increased generation of 203 GWh	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology		0.1 to 0.2	Yes
Energy (1.A.1.a.)	2.8a) extension of the use of solar thermal energy	Increase of the surface installed by 4,5 million m <sup>2</sup> with an increase of production by 309 ktoe (kilo tons of oil equivalent)	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology		0.9	Yes
Energy (1.A.1.a.)	2.8b) extension of the use of solar thermal energy	High-temperature electricity generation (200 MW)	CO <sub>2</sub>	Economic, fiscal, regulatory, other	Implemented	Ministry of Economy, Ministry of Science and Technology		0.5	Yes
Energy (1.A.1.a.)	a) other measures in electricity generation	Electricity production by incineration of solid urban waste (200 MW)	CO <sub>2</sub>						No
Energy (1.A.1.a.)	b) other measures in electricity generation	Combined-cycle electricity generation of at least 13 600 MW	CO <sub>2</sub>						Yes

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Energy (1.A.1.a.)	c) other measures in electricity generation	Application of some EC Directives (IPPC, Large Combustion Plants and National Emission Ceilings)	CO <sub>2</sub>						Yes
Energy (1.A.1.a.)	3) national plan for R&D in energy issues	Promotion of technology for less contaminating energy systems	CO <sub>2</sub>	Economic	Implemented	Ministry of Economy, Ministry of Science and Technology		1.3	Yes
Energy (1.A.1.a.)	4) other measures of regional or local ambit								
Energy(1.A.1.a.)	4.1) law 6/2001 of May 31, 2001 of the Parliament of Cataluña about lighting	Regulation of installations, appliances and instruments for outside and inside lighting with regard to light contamination	CO <sub>2</sub>	Regulatory	Adopted	Regional and local public administrations in Cataluña			No
Energy (1.A.1.a.)	4.2) programme for energy saving and efficiency, co-generation and renewable energy of Castilla and León	Energy saving, substitution of mineral oil products, diversification, renewable energy (except of wind and solar)	CO <sub>2</sub>	Economic	Adopted	Regional public administration in Castilla y León	0.1		No
Energy (1.A.1.a.)	4.3) wind energy plan of Castilla and León	Renewable energy: wind	CO <sub>2</sub>	Other	Adopted	Regional public administration in Castilla y León	5.6		No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Energy (1.A.1.a.)	4.4) solar plan of Castilla and León (line I: solar thermal energy)	Renewable energy: solar thermal	CO <sub>2</sub>	Economic	Adopted	Regional public administration in Castilla y León	0.0		No
Energy (1.A.1.a.)	4.5) solar plan of Castilla and León (line II: photovoltaic energy)	Renewable energy: photovoltaics	CO <sub>2</sub>	Economic	Adopted	Regional public administration in Castilla y León	0.1		No
Transport (1.A.3.)	1.1) programme for railroad activities, Plan 2000 – 07	Promotion of railway transport: increase of the energy efficiency of the entire transport system through a shift from air and road transport to railways	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion			Yes
Transport (1.A.3.)	1.1.a) development of an high speed railroad network	Promotion of railway transport: increase of the energy efficiency of the entire transport system through a shift from air and road transport to railways	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion		0.3	Yes

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Transport(1.A.3.)	1.1.b) improvement of the network for short distances	Promotion of railway transport: increase of the energy efficiency of the entire transport system through a shift from air and road transport to railways	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion			Yes
Transport (1.A.3.)	1.1.c) promotion of freight transport on railways	Promotion of railway transport: increase of the energy efficiency of the entire transport system through a shift from air and road transport to railways	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion			Yes
Transport (1.A.3.)	1.2) liberalisation of railway transport	Promotion of railway transport: increase of the energy efficiency of the entire transport system through a shift from air and road transport to railways	CO <sub>2</sub>	Regulatory	Adopted	Ministry of Promotion			No
Transport (1.A.3.)	2) improvement of the quality and the state of conservation of infrastructure	Improved use of roads and increased energy efficiency of road transport	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion			No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Transport (1.A.3.)	3) promotion of public transport in cities and metropolitan regions	Increase of the energy efficiency of the entire transport system through a shift from cars to public transport	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion and Ministry of Finance, Local Councils			Yes
Transport (1.A.3.)	4.1) training of drivers in energy savings	Improved energy efficiency of road transport services and improved use of roads	CO <sub>2</sub>	Education	Implemented	Ministry of Promotion			No
Transport (1.A.3.)	4.2) improvement of the car fleet	Improved energy efficiency of road transport services and improved use of roads	CO <sub>2</sub>	Regulatory, economic	Implemented	Ministry of Promotion and Ministry of Economy			Yes
Transport(1.A.3.)	4.3) route optimisation due to GPS technology	Improved energy efficiency of road transport services and improved use of roads	CO <sub>2</sub>	Fiscal	Implemented	Ministry of Promotion and Ministry of Finance			Yes
Transport (1.A.3.)	5) renewables plan of AENA (solar and wind in airports and control centres)	Reduction of emissions from airports and control centres	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion			Yes
Transport (1.A.3.)	6.1) optimisation of operations in airports and airlines	Improved energy efficiency of air transport services	CO <sub>2</sub>	Economic	Implemented	Ministry of Promotion and airlines			No



Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Transport (1.A.3.)	6.2) improvement of control systems for traffic	Improved energy efficiency of air transport services	CO <sub>2</sub>	Regulatory, economic	Implemented	Ministry of Promotion and European Union			No
Transport (1.A.3.)	6.3) renewal of the fleet	Improved energy efficiency of air transport services	CO <sub>2</sub>	Regulatory	Implemented	Ministry of Promotion and European Union			Yes
Transport (1.A.3.)	7) national plan for cars at the end of their life	Recycling and utilisation of residues from used cars	HFC and PFC	Regulatory, economic	Implemented	Ministry of Promotion and Ministry of Finance, Local Councils			No
Transport (1.A.3.)	8) voluntary agreements with car manufacturer	Reduction of specific CO <sub>2</sub> emissions of new cars, target 120 g/km in 2008	CO <sub>2</sub>	Voluntary	Implemented	European Commission and employers' association			Yes
Transport (1.A.3.)	9) programme PREVER	Modernisation of the car fleet, increase of road safety and environmental protection	CO <sub>2</sub>	Economic	Implemented	Ministry of Finance			Yes
Energy (1.A.4.a. & b.)	plan for promotion of flats	Energy efficiency	CO <sub>2</sub>	Economic	Adopted	Public administrations			Yes
Energy (1.A.4.a. & b.)	regulations for thermal installations in buildings	Energy efficiency of thermal installations in buildings	CO <sub>2</sub>	Regulatory	Adopted	Public administrations			Yes
Energy(1.A.4.a. & b.)	allocation of costs for central heating according to individual consumption	Reduction of energy consumption in households	CO <sub>2</sub>	Education	Adopted	Consumer			No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Energy (1.A.4.a. & b.)	substitution of bulbs by compact fluorescent lamps	Reduction of energy consumption in the household and commercial sector	CO <sub>2</sub>	Education	Adopted	Consumer			Yes
Energy (1.A.4.a. & b.)	natural replacement of electrical appliances for high efficient appliances	Incentives for the use of more energy efficient appliances	CO <sub>2</sub>	Education	Adopted	Consumer			Yes
Energy (1.A.4.a. & b.)	energy certificates for new buildings	Reduction of energy consumption in new buildings	CO <sub>2</sub>	Regulatory	Adopted	Public administrations			Yes
Industry (2.)	PROFIT initiative (programme for the promotion of technical investigations)	Industrial research for environment-friendly processes and energy and resources efficiency		Economic, other	Adopted				No
Industry (2.)	Financial incentives for investment in technology for environmental protection	Incentives for acquiring ecological industrial equipment, setting up less contaminating or mitigation processes, and less contaminating industrial vehicles		Economic, other	Adopted				No
Waste (6.)	Disposal programme (national urban waste plan)	Capture and use of biogas	CH <sub>4</sub> , CO <sub>2</sub>	Regulatory, economic	Adopted	Local and autonomous administrations	Cannot be quantified	Cannot be quantified	No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Waste (6.)	Disposal programme (national urban waste plan)	Capture and use of biogas for methanisation	CH <sub>4</sub> , CO <sub>2</sub>	Regulatory, economic	Adopted	Local and autonomous administrations	Cannot be quantified	Cannot be quantified	No
Waste (6.)	Disposal programme: closure, sealing and gas capture at uncontrolled landfill sites (national urban waste plan)	Capture and use of biogas	CH <sub>4</sub> , CO <sub>2</sub>	Regulatory, economic	Adopted	Local and autonomous administrations	Cannot be quantified	Cannot be quantified	No
Waste(6.)	Compost programme (national urban waste plan)	Use of organic parts for compost production	CH <sub>4</sub> , CO <sub>2</sub>	Regulatory, economic	Adopted	Local and autonomous administrations	Cannot be quantified	Cannot be quantified	No
Agriculture (4.)	Realization of annual GHG inventories for agriculture on provincial level in Spain	Identification of the problems and pursue the adequate measures	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO	Other	Adopted	Co-operation of the General Secretariat of Agriculture and the Ministry of the Environment	Cannot be quantified	Cannot be quantified	No
Agriculture (4.)	Establishment of nitrogen balances for Spanish agriculture on provincial level	Support for the estimation of GHG in the calculations concerning nitrogen	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO	Other	Adopted	General Secretariat of Agriculture	Cannot be quantified	Cannot be quantified	No
Agriculture (4.)	Actualisation of the map on cultivation and utilization on a scale of 1:50 000	Knowledge of use and utilisation of soils	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO	Other	Adopted	General Sub-directorate of Grass Cultivation	Cannot be quantified	Cannot be quantified	No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Agriculture (4.)	Actualisation of the Spanish agro-climate characterisation	Attainment of the precise climate variables for GHG estimation	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO	Other	Adopted	General Sub-directorate of Grass Cultivation	Cannot be quantified	Cannot be quantified	No
Agriculture (4.)	Development of a cartographic model on risks of erosion	Identification of zones vulnerable to erosion in order to establish cultivation methods which reduce the oxidation of organic substances	CO <sub>2</sub>	Other	Adopted	General Sub-directorate of Grass Cultivation	Cannot be quantified	Cannot be quantified	No
Agriculture (4.)	Characterisation of production systems for grass cultivation	Knowledge of precise inputs for GHG estimation	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO	Other	Adopted	General Directorate of Agriculture and the National Institute for Agricultural Research	Cannot be quantified	Cannot be quantified	No
Agriculture (4.)	Co-operation with the ministry of Science and Technology on scientific investigation, development and technological innovation	Distinction of Spain with regard to emitting processes	CH <sub>4</sub> , N <sub>2</sub> O, NO <sub>x</sub> , CO	Other	Adopted	General Secretariat of Agriculture and the National Institute for Agricultural Research	Cannot be quantified	Cannot be quantified	No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Agriculture (4.)	Start of action programmes against nitrate contamination in vulnerable zones	Reduction of the use of fertilisers (about 56 000 t/yr), which results in 1,010 t/yr of N <sub>2</sub> O and 308 000 t/yr of CO <sub>2</sub> emissions due to the production process	N <sub>2</sub> O, CO <sub>2</sub>	Education, voluntary	Adopted	Co-operation of the General Secretariat of Agriculture with the Ministry of the Environment, application by local authorities	0.6		No
Agriculture (4.)	Promotion of best practice codes for fertilisation in agriculture	Adequate use of dung in order to reduce the needs of synthetic N by about 55 000 t/yr which results in 1 000 t/yr of N <sub>2</sub> O and 302,500 t/yr of CO <sub>2</sub> emissions due to the production process	N <sub>2</sub> O, CO <sub>2</sub>	Education, voluntary	Adopted	Co-ordination by the Ministry of Agriculture, Fishery and Food, application by local authorities	0.6		No
Agriculture (4.)	Establishment and control of the agro-environmental conditions which are attached to the direct support in the framework of the Common Agricultural Policy (CAP)	Prohibition to burn stubble fields avoiding 2 160 t of methane and 50 t of dinitrogen oxide emissions	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO	Regulatory, economic	Adopted	Co-ordinated by the Ministry of Agriculture, Fishery and Food	0.1		No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Agriculture (4.)	Establishment and control of the agro-environmental conditions which are attached to the direct support in the framework of the Common Agricultural Policy (CAP)	Maintain not cultivated lands (20 % of the basic surface) which results in a reduction of the use of mineral fertilizers by 117 000 t yearly and in a reduction of about 2 120 t N <sub>2</sub> O emissions	N <sub>2</sub> O	Regulatory, economic	Adopted	Coordinated by the Ministry of Agriculture, Fishery and Food application by local authorities	0.7		No
Agriculture (4.)	Rural development programme for accompanying measures in Spain: rationalisation of the use of agricultural lands through a plan of reforestation of lands which are cultivated or used pasturage	Forestation of 22 000 ha yearly of agricultural land in order to achieve 153 000 ha in the year 2006 which results in a reduction of 13 300 t of N or a reduction of 240 t N <sub>2</sub> O emissions in 2006 correspondingly	N <sub>2</sub> O	Regulatory, economic	Adopted	Co-ordinated by the Ministry of Agriculture, Fishery and Food and the Ministry of Environment, application by local authorities	0.1		No
Agriculture (4.)	Rural development programme for accompanying measures in Spain	Alteration of poor land for growing of cereals to pasture and stubble fields	N <sub>2</sub> O	Regulatory, economic	Adopted	Co-ordinated by the Ministry of Agriculture, Fishery and Food	Cannot be quantified	Cannot be quantified	No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Agriculture (4.)	Rural development programme for accompanying measures in Spain	Prevention of fires and conservation and prevention of fires in systems of intensive pasture, having an effect on 49 622 ha/yr	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO CO <sub>2</sub>	Regulatory, economic	Adopted	Co-ordinated by the Ministry of Agriculture, Fishery and Food application by local authorities			No
Agriculture (4.)	Coordination of agricultural policies with other sectors which generate sub-products that can be used in agriculture	Use of 300 000 t/yr of compost from sewage sludge in agriculture reducing about 9 000 t/yr of synthetic N whose production would involve emitting 49 500 t/yr of CO <sub>2</sub> ; the reduction of methane is estimated at 5 000 t	N <sub>2</sub> O, CH <sub>4</sub> CO <sub>2</sub>	Voluntary	Adopted	Coordination of different ministerial departments, among them that of Agriculture, Fishery and Food	0.2		No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Agriculture (4.)	Co-ordination of agricultural policies with other sectors which generate sub-products that can be used in agriculture	Use of 400 000 t/yr of compost from solid household waste in agriculture reducing about 11 000 t/yr of synthetic N which means 64 350 t/yr of CO <sub>2</sub> due to the production; this compost would indicate that 1 200 000 t of solid household waste do not have to be treated which means a methane emissions of about 48 000 t in landfill sites	N <sub>2</sub> O, CH <sub>4</sub> CO <sub>2</sub>	Voluntary	Adopted	Coordination of different ministerial departments, among them that of Agriculture, Fishery and Food	1.1		No
Agriculture (4.)	Improve the characteristics of the feed for intensive stock farming in order to increase the digestion	To reduce the methane emissions; methane emissions by enteric fermentation in bovines could be reduced by 50 000–60 000 t/yr; at the moment the effect can only be quantified though approximation on the bovine	CH <sub>4</sub>	Voluntary	Adopted	Co-operation of the Ministry of Agriculture, Fishery and Food with local authorities	1.2		No



Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Agriculture (4.)	Stimulation of the plans rural hygiene initiated by some local councils	To gather selectively plastic of greenhouses, vegetal rests and other polluting products and pass it later over to its recycling	CH <sub>4</sub> , N <sub>2</sub> O NO <sub>x</sub> , CO CO <sub>2</sub>	Education, voluntary	Adopted	Local councils	It is still not possible to evaluate the answer	It is still not possible to evaluate the answer	No
Agriculture(4.)	Increase of wooden biomass CO <sub>2</sub> sinking action by reforestation	At the moment, it is not possible to quantify the effect and the objective cannot be made specific either	CO <sub>2</sub>	Other	Adopted	Co-operation of the Ministry of Agriculture, Fishery and Food with the Ministry of the Environment and local authorities	It is still not possible to evaluate the answer	It is still not possible to evaluate the answer	No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Agriculture (4.)	Promotion plan for renewable energies	Increase of the surface destined to biomass production for obtaining of energy, replacing fossil fuels, from land at the moment cultivated, mainly in semi-arid dry lands, reaching 800 000 to 1 000 000 of hectares in 2010, to obtain about 3 350.00 toe (tons of oil equivalent) that will avoid CO <sub>2</sub> emission to the atmosphere of 10 284 500 t	CO <sub>2</sub>	Regulatory, economic	Adopted	Co-operation of different ministerial departments, among them that of Agriculture, Fishery and Food	10.3		No
Forestry (5.)	Forestation	Forestation of agricultural lands	CO <sub>2</sub>		Adopted	Ministry of Agriculture, Fishery and Food, Ministry of the Environment and local authorities	Being in the process of calculation	Being in the process of calculation	No
Forestry (5.)	Reforestation	Increase carbon sinks through the increase of biomass stocks	CO <sub>2</sub>		Adopted	Ministry of Agriculture, Fishery and Food, Ministry of the Environment and local authorities	Being in the process of calculation	Being in the process of calculation	No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Forestry(5.)	Forest management	Increase biomass in forests by means of forestry operations	CO <sub>2</sub>		Adopted	Ministry of the Environment and local authorities	Being in the process of calculation	Being in the process of calculation	No
Forestry (5.)	Forest fires	To avoid the destruction of stocks of CO <sub>2</sub> and its release to the atmosphere	CO <sub>2</sub>		Adopted	Ministry of the Environment and local authorities	Cannot be quantified	Cannot be quantified	No
Forestry (5.)	Health of forests	To avoid the destruction of stocks of CO <sub>2</sub> and its release to the atmosphere	CO <sub>2</sub>		Adopted	Ministry of the Environment and local authorities	Cannot be quantified	Cannot be quantified	No
Forestry (5.)	National forest inventory	Knowledge of the existence of fixed biomass and carbon	CO <sub>2</sub>	Other	Adopted	Ministry of the Environment	Cannot be quantified	Cannot be quantified	No
Forestry (5.)	National forest map	Map and geo-reference of stocks of carbon in forests	CO <sub>2</sub>	Other	Adopted	Ministry of the Environment	Cannot be quantified	Cannot be quantified	No
Forestry (5.)	Database of the nature	Detailed knowledge of stocks of carbon and the impact of the activities on sinks in forests	CO <sub>2</sub>	Other	Adopted	Ministry of the Environment	Cannot be quantified	Cannot be quantified	No
Forestry (5.)	Calculation of the factors of expansion of biomass	Detailed knowledge of the existence of biomass of all the components of a forest system	CO <sub>2</sub>	Other	Adopted	Ministry of the Environment and research institutes	Cannot be quantified	Cannot be quantified	No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO <sub>2</sub> )		CCPM
							2005	2020	
Forestry (5.)	Measurement of carbon flows in forest systems	To model the capture dynamics and the release of carbon in forest systems	CO <sub>2</sub>	Other	Adopted	Ministry of the Environment and research institutes	Cannot be quantified	Cannot be quantified	No

## Evaluation of projections

The Third National Communication provides no projections for total greenhouse gases but only for CO<sub>2</sub>.

**Table 5: Summary of projections by gas in 2010 (Mt CO<sub>2</sub> equiv.)**

	Base year	With measures	With additional measures
CO <sub>2</sub>	226.1	307.0	265.0
CH <sub>4</sub>	34.7	n/a	n/a
N <sub>2</sub> O	41.2	n/a	n/a
HFC	5.6	n/a	n/a
PFC	0.8	n/a	n/a
SF <sub>6</sub>	0.1	n/a	n/a
<b>Total</b>	<b>308.5</b>	<b>n/a</b>	<b>n/a</b>
% change relative to base year	100%	n/a	n/a

In the with measures scenarios CO<sub>2</sub> emissions will grow by 48% to 307 t CO<sub>2</sub> whereas the increase in the with additional measures scenario will still be +28% to 265 t CO<sub>2</sub>.

**Table 6: Projections of CO<sub>2</sub> emissions by sector in 2010 (Mt CO<sub>2</sub>)**

	Base year	With measures	% change relative to 1990	With additional measures	% change relative 1990 (additional measures)
Industry	49,0	65,0	32,7 %	59,0	20,4 %
Transport	60,0	105,0	75,0 %	89,0	48,3 %
Residential	11,0	19,0	72,7 %	16,0	45,5 %
Services	5,0	8,0	60,0 %	8,0	60,0 %
Agriculture	8,0	11,0	37,5 %	10,0	25,0 %
Electricity generation	64,0	85,0	32,8 %	70,0	9,4 %
Refineries	10,0	14,0	40,0 %	13,0	30,0 %
<b>Total</b>	<b>207,0</b>	<b>307,0</b>	<b>48,3 %</b>	<b>265,0</b>	<b>28,0 %</b>

According to the Burden Sharing Agreement Spain is allowed to increase its GHG emissions by 15%. Due to the lack of projections for all six greenhouse gases a gap analysis can only be made for CO<sub>2</sub> (table 7). According to the projections given in the Third National Communication CO<sub>2</sub> emissions will be about 50% higher in 2010 than in 1990. Compared to Spain's commitment there will be a 'CO<sub>2</sub> gap' of 69 Mt in the with measures scenario. If additional measures are considered 42 Mt CO<sub>2</sub> can be furthermore reduced. However, there will still remain a gap of 27 Mt CO<sub>2</sub> equiv., which has to be filled by P&Ms targeted at the other greenhouse gases or by use of the flexible mechanisms of the Kyoto Protocol.

**Table 7: Assessment of the target (only CO<sub>2</sub>)**

	Mt CO <sub>2</sub> equiv.	% of 1990 level
Base year (from projections)	207	100
Commitment	238	115
With existing P&Ms	307	148
Gap (-ve means no gap)	69	33
Effect of additional P&Ms	42	20

Under a six gas approach Spain's base year emissions of all six greenhouse gases are 309 Mt CO<sub>2</sub> equiv. in the year 1990. In accordance with the Burden Sharing Agreement they might

increase to 355 Mt CO<sub>2</sub> equiv. for the period between 2008 and 2012. In the most recent inventory total GHG emissions are at 380 Mt CO<sub>2</sub> equiv. in the year 1999, i.e. they exceed the target for 2010 by some 25 Mt CO<sub>2</sub> equiv.

## Description of modelling approach

Two scenarios are presented in the Third National Communication: the ‘Escenario Tendencial’ (tendency scenario, business as usual) corresponds to the with measures scenario whereas the ‘Escenario Ahorro’ (saving scenario) corresponds to the with additional measures scenario. The horizon of the projections is 2010 only.

Projections are calculated only for CO<sub>2</sub>. The modelling approach comprises three phases. The simulation starts with the projection of energy consumption in industry, transport, residential sector, services and agriculture. The second phase simulates the transformation sector and calculates — based on the results from the first phase — the primary energy demand. In the last phase primary energy demand is transformed to CO<sub>2</sub> emissions.

Sensitivity analysis for different economic developments or varying price scenarios has not been performed. Key parameters of the projections are also not stated in the Third National Communication.

**Table 8: Modelling parameters**

Parameter	2000	2010	Unit
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a

## Country conclusions

Reporting by Spain to the Monitoring Mechanism has been limited to the National Communications to the UNFCCC. However in the Third National Communication, the level of information on projections and P&Ms has been increased substantially. Nevertheless, important information or data for the assessment of the Spanish climate policy are still missing including: projections for all greenhouse gases, clear distinction between measures which are considered in the with measures or the with additional measures scenario, sensitivity and provision of the key parameters used in the projections etc.

On the basis of the Third National Communication, it currently appears that a gap of 69 Mt CO<sub>2</sub> (equivalent to 33 % of 1990 emissions) exists between their burden sharing target and the GHG forecasts for 2010. If P&Ms considered in the with additional measures are implemented this gap might be reduced to 27 Mt CO<sub>2</sub> (equivalent to 13% of 1990 emissions). Currently there is no data available to help understand how this remaining gap may be filled by further P&Ms or the use of flexible mechanisms of the Kyoto Protocol. However, new activities have been initiated to overcome this obstacle in future:

1. The composition and functions of the National Council for Climate (NCC) have been recently changed to include all relevant stakeholders: all public administrations, NGOs, sectoral organisations. The NCC is already working on a National Plan to comply with the Kyoto Protocol, including the prioritisation of recommended measures.
2. On an informal basis, three working groups have been established and are already working actively with representatives of the affected Ministries of the National Administration and the main national organisation of all industries involved.
  - working group one is charged with the follow up of the Emissions Trading Directive;

- working group two deals with the promotion of initiatives to develop and implement JI and CDM projects;
- working group three is studying different possible measures to be adopted (sector by sector) to fulfil the Spanish emission target under the Kyoto Protocol after the EC burden sharing agreement.