

# Annex 6: Use of flexible mechanisms and carbon sinks for compliance with burden sharing targets of EU Member States

Assessment of questionnaire from 2003 submission

## 1 Introduction

In 2003 the Monitoring Mechanism Committee agreed on a questionnaire that aims to gather information on the use of the flexible mechanisms and carbon sinks for compliance with burden sharing targets. The first questionnaire should be submitted to the Commission by 31 December 2002 together with the annual information on inventories and national programmes under the EC greenhouse gas Monitoring Mechanism.

By April 2003, only eight from fifteen Member States returned the questionnaires (Austria, Belgium, Finland, the Netherlands, Portugal, Spain, Sweden and United Kingdom). Therefore the following assessment only includes those eight Member States.

## 2 Use of flexible mechanisms under the Kyoto Protocol by EU Member States

### 2.1 Overview of results

Six from eight Member States already decided to use the flexible mechanisms under the Kyoto Protocol, most countries are planning to use all three mechanisms (emissions trading (ET), JI and CDM) (Table A.241). Two countries (Finland and Sweden) have not yet taken decisions on the use of flexible mechanisms under the Kyoto Protocol. However activities to implement project based mechanisms have also been started in these countries (see Table A.243).

Quantitative targets for the use of flexible mechanisms outside the EU bubble were only provided by the Netherlands and Portugal (see Table 242). The Netherlands are planning to meet 50% of the effort to

**Table A.241 Planned use of flexible mechanisms in EU Member States**

Member State	Planned use of flexible mechanisms under the Kyoto Protocol	Stage of decision making	Which flexible mechanisms will be used? (ET, CDM, JI)
Austria	Yes	Use of international ET not included in national climate strategy Preparation of legal framework for JI/CDM	Priority on JI and CDM
Belgium	Yes Trading simulation to gain experiences	Cooperation agreement between three regions planned for 2003	Not yet decided
Finland	Not yet decided Pilot programme to gain experiences	Not yet decided	Not yet decided
Netherlands	Yes	JI and CDM implemented Use of international ET not yet decided	ET, CDM, JI
Portugal	Yes	Planned (drafting of climate change strategy)	ET, CDM, JI
Spain	Yes	Adoption of strategy for flexible mechanisms planned for 2003	Priority on ET and CDM
Sweden	Yes	Use of mechanisms not included in national climate strategy, policy reviews in 2004 and 2008 Preparation of legal framework CDM and JI projects selected	ET, CDM, JI
United Kingdom	Yes	Domestic trading scheme implemented CDM/JI planned after EU decision on linking of CDM and JI to EU ETS	ET, CDM, JI

**Table A.242 Contribution of flexible mechanisms for compliance with burden sharing targets**

<b>Member State</b>	<b>Expected contribution of Kyoto mechanisms to the required efforts for compliance with BS target</b>	<b>Expected compliance with BS target through domestic action without use of Kyoto mechanisms</b>	<b>Annual projected emission reduction in the first commitment period through the use of Kyoto mechanisms [Gg CO<sub>2</sub>-equiv.]</b>
Austria	Maximum 50 %		No quantitative targets foreseen
Belgium	Not yet decided	Not yet decided	Not yet decided
Finland	Not yet decided	Not yet decided	Not yet decided
Netherlands	50 %	NO	20 000 JI: 8 400 CDM: 36 000 ( <sup>1</sup> ) Contribution of international ET not yet decided
Portugal	Not provided	NO	Total international: 680–1 300 EU ETS: 320–400
Spain	Use of flexible mechanisms necessary for compliance with BS sharing target	NO	Not yet decided
Sweden		YES	Not yet decided
United Kingdom		YES (domestic trading scheme considered as domestic action)	Domestic trading scheme: 2 000

reach the Kyoto target through the use of flexible mechanisms (20 000 Gg CO<sub>2</sub>-equiv. per year in the commitment period). Portugal provides total contributions from the use of flexible mechanisms (680–1 300 Gg CO<sub>2</sub>-equiv.) which amount to approximately 19–28% of the actual gap between the Portuguese greenhouse gas emissions in 2001 and the burden sharing target. Austria has set a maximum of 50% for the contribution of flexible mechanisms to its reductions commitment. United Kingdom and Sweden indicate that they will reach their burden sharing targets through domestic measures without the use of flexible mechanisms under the Kyoto Protocol.

In the view of the start of the EU emission trading scheme in 2005, Member States are preparing for the implementation of the EU scheme and do not plan to establish additional domestic emission trading schemes besides United Kingdom and Denmark who already implemented domestic schemes. United Kingdom estimates the contribution of the domestic trading scheme to emissions reductions of 2 000 Gg CO<sub>2</sub>-equivalents which should be considered as part of domestic action.

The status of preparations for the use of project based activities differ largely within Member States. From the eight countries included in this assessment, the Netherlands have made the strongest progress in the implementation of JI and CDM projects and allocated the largest budgets. However, also other Member States started to implement activities whether the preparation of the national legal framework (Austria, Belgium, Spain, Sweden), the start of pilot programmes (Finland) or the allocation of budgets for JI or CDM projects (Austria, Finland, Netherlands, Sweden). Few Member States (Portugal, United Kingdom) have not yet started arrangements for JI or CDM projects.

Up to now more agreements or contracts were arranged for Joint implementation, however two countries (Netherlands and Spain) prefer CDM project activities according to their responses. Most of the project based activities initiated by Member States are in an early stage that does not yet allow their quantitative contribution to the burden sharing target during the commitment period.

(<sup>1</sup>) In the first commitment period a contribution of 100,000 Gg CO<sub>2</sub>-equiv. from flexible mechanisms are expected. By now 8 400 ERUs and 36,000 CERs have already been contracted.

**Table A.243 Preparations for the use of project based activities by EU Member States**

<b>Member State</b>	<b>Preparation of JI/CDM programmes</b>	<b>Bilateral/multilateral agreements, MoU or contracts arranged with countries</b>		<b>Allocated budget</b>
		<b>JI</b>	<b>CDM</b>	
Austria	Legal framework and programmes under preparation	Czech Republic, Slovakia, Bulgaria, Romania	No arrangements yet	EUR 36 million per year starting in 2003
Belgium	Flemish region: preparation of legal framework and start of pilot projects in 2003 Walloon region: CDM project currently launched	No arrangements yet	No arrangements yet	Not provided
Finland	Pilot programme 3 JI projects under consideration	Estonia, Latvia, Lithuania, Poland, Ukraine		EUR 8.5 million
Netherlands	ERUPT CERUPT Multilateral and Regional Financial Institutions, Participation in PCF (2), Private Financial Institutions, bilateral contracts	Romania, Hungary, Slovakia, not legally binding: Bulgaria, Slovenia, Croatia, participation in PCF (2)	not legally binding: Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Panama, Uruguay, participation in PCF (2)	JI: EUR 51 million IFC (3): EUR 44 million IBRD (4): EUR 70 million CAF (5): EUR 45 million PCF: EUR 15 million JI: 1/3 of total budget CDM: 2/3 of total budget
Portugal	-	No arrangements yet	No arrangements yet	None
Spain	Pilot phase for JI/CDM expected to start in 2003, priority on CDM, preparation of legal framework	No arrangements yet	No arrangements yet	None
Sweden	SCILIP (6) was started to implement CDM and JI projects, implementation of 4-6 CDM projects planned, preparation of legal framework Participation in PCF (7) and BASREC (8)	Estonia, Romania arranged, Russia and Lithuania in progress	No arrangements yet	EUR 27.5 million (9) for JI and BASREC EUR 10 million (10) in PCF
United Kingdom	-	No arrangements yet	No arrangements yet	None

United Kingdom and Portugal integrated the use of flexible mechanisms in the 'with additional measures' greenhouse gas projections; projections from all other countries do not include the effects from the use of Kyoto mechanisms on compliance.

## 2.2 Information on individual Member States

### Austria

It is planned to use the Kyoto Protocol mechanisms for the fulfilment of the burden sharing target with priority of using project based mechanisms. The use of flexible mechanisms will be limited to a maximum of 50 % of the total effort. Legal framework and programmes for project based activities are under preparation and up to EUR 36

million per year starting from 2003 are allocated.

### Belgium

Belgium is generally planning to use the Kyoto mechanisms, however the government has not yet decided on a national climate strategy that includes the use of international flexible mechanisms for the fulfilment of the burden sharing target. Legal framework and programmes for project based activities are under preparation.

### Finland

The government has not yet decided on the use of Kyoto mechanisms for the fulfilment of the burden sharing target. A pilot programme with three JI projects was started with a budget of EUR 8.5 million.

(2) Prototype Carbon Fund of the World Bank

(3) International Finance Cooperation

(4) International Bank for Reconstruction and Development

(5) Corporación Andina de Fomento

(6) Swedish International Climate Investment Programme

(7) Prototype Carbon Fund of the World Bank

(8) Baltic Sea Region Energy Co-operation on JI and Emissions Trading

(9) Reported 250 million SEK which are approximately EUR 27.5 million

(10) Reported US\$ 10 million which are approximately EUR 10 million

### *Netherlands*

It is planned that flexible mechanisms will contribute with 50% to the efforts to meet the burden sharing target, other domestic action will contribute with 50%. A number of national programmes for project based activities (CERUPT, ERUPT) as well as multinational, regional and bilateral agreements have been set up with a total budget of EUR 225 million, which will be spent by 2/3 on CDM and by 1/3 on JI projects.

### *Portugal*

It is planned to use the Kyoto Protocol mechanisms for the fulfilment of the burden sharing target which are expected to contribute with 680 to 1,300 Gg CO<sub>2</sub>-equiv. to the fulfilment of the target which amounts to approximately 19–28 % of the actual gap between the Portuguese greenhouse gas emissions in 2001 and the burden sharing target. No arrangements are taken so far with regard to project based activities.

### *Spain*

It is planned to use the Kyoto Protocol mechanisms for the fulfilment of the burden sharing target with priority of using emissions trading and CDM. A strategy for the use of Kyoto Mechanisms is planned to be decided in 2003, therefore no specific activities have been implemented so far.

### *Sweden*

It is expected that domestic action will be sufficient to meet the burden sharing target. Progress reviews of climate change policy in 2004 and 2008 may further decide to use Kyoto mechanisms. A regulatory framework for the implementation of the flexible mechanisms is under preparation. SCILIP (Swedish International Climate Investment Programme) was started to implement CDM and JI projects. Sweden also participates in PCF (<sup>(11)</sup>) and BASREC (<sup>(12)</sup>).

### *United Kingdom*

It is expected that domestic action will be sufficient to meet the burden sharing target. National emissions trading scheme is considered as part of domestic action. The government may further decide to use Kyoto mechanisms for compliance with its burden sharing target as part of the management of assigned amount. No arrangements are taken so far with regard to project based activities.

## **3 Use of carbon sinks under the Kyoto Protocol**

### **3.1 Overview of results**

Member States have to account for afforestation, reforestation and deforestation (ARD) activities under Article 3.3 of the Kyoto Protocol. Only Austria, Netherlands, Portugal, Spain and United Kingdom provided estimates for their projected annual net carbon stock change under Article 3.3 during the commitment period (Table A.244). Austria and Sweden expect additional emissions from ARD activities during the commitment period, whereas the Netherlands, Portugal, Spain and United Kingdom estimate net sequestration effects from these activities. Belgium, Finland and Sweden have not yet quantified the expected effects from Article 3.3 activities.

With regard to election of Article 3.4 activities for accounting in the first commitment period, three countries that provided information in the questionnaire have already decided to account for forest management under Article 3.4 (Table A.245). Portugal, Sweden and United Kingdom expect to use their maximum allowance for the accounting of forest management under Article 3.4 according to the Marrakech Agreements (Table A.246). Most of the countries have not yet taken a final decision with regard to accounting of Article 3.4 activities.

<sup>(11)</sup> Prototype Carbon Fund

<sup>(12)</sup> Baltic Sea Region Energy Cooperation on JI and Emissions Trading

**Table A.244 Projected net carbon stock changes under Article 3.3 for the first commitment period**

Country	Net carbon stock change during commitment period [Mt C/year] <sup>a</sup>	Pools included	Net carbon stock change during commitment period [Gg CO <sub>2</sub> /year]
Austria	0.2 (large uncertainties)	Not indicated	733 (large uncertainties)
Belgium	Estimates not yet available	-	-
Finland	Estimates not yet available	-	-
Netherlands	- 0.03	-	- 110
Portugal	- 0.38 to - 0.46	-	- 1 400 to - 1 700
Spain	- 1.86	Not indicated, probably only aboveground biomass	- 6 820
Sweden	Probably small net debit	-	-
United Kingdom	- 0.6	Above ground and below ground biomass, litter and soil organic matter	- 2 200

<sup>a</sup> consistent with inventory reporting a negative sign '-' is used for removal and a positive sign for emissions

**Table A.245 Intention to elect Article 3.4 activities for accounting in the first commitment period under the Kyoto Protocol**

Country	No election of Art. 3.4 activities	Not yet decided	Yes, election of Art. 3.4 activities
Austria			✓ (forest management)
Belgium		✓ Walloon region: inventory of possible 3.4 activities under elaboration; Flemish region: sink contribution not considered key with regard to compliance with Kyoto commitments	
Finland		✓	
Netherlands		✓	
Portugal			✓ (forest management, other options under consideration)
Spain			✓ (forest management)
Sweden	Will not be used to achieve national target	✓	
United Kingdom		✓	

**Table A.246 Potential projected net carbon stock changes from forest management under Article 3.4 for the first commitment period**

Country	Net carbon stock change during commitment period [Mt C/year]	Maximum allowance for forest management [Mt C/year]	C Pools included
Austria	No data provided	- 0.63	
Belgium	No data provided	- 0.03	
Finland	No data provided	- 0.16	
Netherlands	No data provided	- 0.01	
Portugal	- 0.43	- 0.22	Not clearly indicated
Spain	- 0.22	- 0.67	Not clearly indicated, probably only aboveground biomass
Sweden	Amount is likely to be larger than maximum allowance	- 0.58	Not clearly indicated
United Kingdom	- 3.4 to - 3.7	- 0.37	Above ground and below ground biomass, litter and soil organic matter

<sup>a</sup> consistent with inventory reporting a negative sign '-' is used for removal and a positive sign for emissions

Most of the Parties reported considerable co-benefits from the increase in sinks (Table A.247), such as restoration of degraded and abandoned areas,

protection against forest fires, pests and diseases, biodiversity or quality of life. Those co-benefits are mostly the reasons why measures were adopted.

**Table A.247 Expected co-benefits of the use of sinks**

<b>Country</b>	<b>Co-benefits mentioned</b>
United Kingdom	Associated with areas of multi-purpose forestry Associated with environmentally sensitive agriculture
Spain	The conservation and improvement of poor forested areas and restoration of abandoned lands and forested degraded areas through the application of appropriate methods of forest - hydrological restoration, combating desertification and protection against forest fires, forest pests and forest diseases
Sweden	Survey is conducted that assesses the linkages of promoting sequestration of carbon in sinks affect the country-side cultural heritage, the biodiversity of forests, the bio fuel market, the forestry sector and other vital societal needs
Belgium	The expansion of the Flemish forests takes place for several reasons, with stimulation of recreation possibilities in a green environment, nature education, promoting the quality of life in urban regions and the strengthening of natural structures as the present most important ones

**Table A.248 Status of implementation of plans in relation to carbon sequestration**

<b>Country</b>	<b>Stage of adoption</b>	<b>Legal status</b>
Austria	Adopted as part of the national climate change strategy	No legal status
Belgium	Flemish region: Adopted with forest legislation, structural plan and environmental policy plan Walloon region: planned	Flemish region: Environmental policy and structural plan are decrees
Finland	-	-
Netherlands	Partly adopted and partly implemented	No legal status
Portugal	Drafting phase	-
Spain	Adoption of national forest plan in July 2002	No legal status
Sweden	-	-
United Kingdom	Adopted and implemented as part of the national climate change strategy	No legal status

**Table A.249 Budget related to implementation of plans in relation to carbon sequestration**

<b>Country</b>	<b>Budget</b>
Austria	No specific budget has been allocated
Belgium	Flemish region: EUR 1 103 million EUR in 2001 for afforestation Walloon region: EUR 450 000 for studies and monitoring
Finland	No information included
Netherlands	No specific budget has been allocated
Portugal	No information included
Spain	EUR 3 494 million during 2002–2008 for implementation of national forest plan
Sweden	No specific budget has been allocated
United Kingdom	No specific budget has been allocated

Policies related to carbon sinks are at least partly adopted in five from eight Member States that provided information (Table A.248). However, in most Member States have not given legal status to their plans to increase terrestrial carbon sequestration. Reported activities and quantitative effects are generally included in the national climate change strategy except for Finland. Half of the reporting countries did not allocate a specific budget for carbon sequestration activities under Articles 3.3 and 3.4, two countries did not provide information if a budget was allocated.

Belgium and Spain were the only countries that allocated budgets for the implementation of carbon sequestration activities.

### 3.2 Information on individual Member States

#### *Austria*

Article 3.3 activities are expected to be a small net source during the commitment period. Austria plans to elect forest management from Article 3.4 activities, but has not yet estimated quantitative effects.

***Belgium***

Belgium has not yet estimated quantitative contributions of Article 3.3 activities and has not yet decided if Article 3.4 activities will be used for compliance with burden sharing targets.

***Finland***

Finland has not yet estimated quantitative contributions of Article 3.3 activities and has not yet decided if Article 3.4 activities will be used for compliance with burden sharing targets.

***Netherlands***

Article 3.3 activities are expected to be a net sink of – 0.03 Mt C per year during the commitment period. It is not yet decided if Article 3.4 activities will be used for compliance with burden sharing targets.

***Portugal***

Article 3.3 activities are expected to be a net sink of – 0.38 to – 0.46 Mt C per year during the commitment period. Portugal plans to elect forest management from Article 3.4 activities, and will use its maximum allowance for forest management.

***Spain***

Article 3.3 activities are expected to be a net sink of – 1.86 Mt C per year during the commitment period. Spain plans to elect forest management from Article 3.4 activities. It will use less than its maximum allowance for forest management.

***Sweden***

Article 3.3 activities are expected to be a small net source during the commitment period. Sweden has not yet decided if Article 3.4 activities will be used for compliance with burden sharing targets.

***United Kingdom***

Article 3.3 activities are expected to be a net sink of – 0.6 Mt C per year during the commitment period. United Kingdom has not yet decided if Article 3.4 activities will be used for compliance with burden sharing targets.

## Appendix — Response to individual questions

### 3.3 Does your country plan to use Kyoto Protocol mechanisms for the fulfilment of the burden sharing target?

- Yes: 6
  - Companies are allowed to use flexible mechanisms (UK)
  - The aim is to meet 50% of the effort by using flexible mechanisms (NL)
  - Yes (ES, AT, BE, PT)
- No: 2
  - Not yet; may be decided after the review of the climate policies in 2004 or 2008; all necessary preparations to use the flexible mechanisms will be done (SE)
  - No formal decision on the use of flexible mechanisms (FI)

### 3.4 Are there plans to use KP mechanisms as part of the national climate strategy and in which stage are these (adopted, implemented, planned)?

- Yes: 7
  - Companies are allowed to use credits from flexible mechanisms in the UK ETS, waiting (UK)
  - Yes; current status: draft & stakeholder consultations; adoption planned for 2003 (ES)
  - Yes; 70 AIJ projects have been supported; bilateral agreements

on JI have been concluded or are under negotiation (Romania, Estonia, Russia, Lithuania); from a call for CDM projects 6 projects are short-listed; participation in PCF (SE)

- Yes; a MoU with Czech Republic has been signed, concrete implementation steps are being taken by the MoE (AT)
- Yes; preparation for the use of flexible mechanisms started in January 2003 (BE)
- Yes; the use of flexible mechanisms has been adopted in Spring 2000, JI and CDM programmes are under implementation (NL)
- Yes; the plans are still in a drafting stage (PT)
- No: 1
  - No; current national Climate Strategy does not include the use of flexible mechanism (FI)

### 3.5 Which of the three Kyoto mechanisms (Joint Implementation, Clean Development Mechanism, Emissions trading) does your country plan to use/ does it use?

- All three Mechanisms: (UK, ES, SE, NL, PT)
- Priority will be given to project based mechanisms: 1 (AT)
- No government decision yet: 2 (FI, BE)

Mechanism	Annual projected emission reduction in the first commitment period [Gg CO <sub>2</sub> -equiv.]							
	UK	ES	SE	AT	FI	BE	NL	PT
<b>In total</b>							20 000	1 080 to 1 620 <sup>2)</sup>
Joint implementation								8 400 <sup>1)</sup>
Clean development mechanism								36 000 <sup>1)</sup>
Emissions trading (domestic)	2 000							
Emissions trading (EU)								320 to 400 <sup>2)</sup>
Emissions trading (International)								
No answer given		X						
No Government decision yet			X		X	X		
In total max. 50 % of reduction commitment				X				

<sup>1)</sup> Under contract up till now.

<sup>2)</sup> Annual average projected reduction.

**3.6 What quantitative contributions to the fulfilment of the burden sharing target are expected from the use of the Kyoto mechanisms?**

**3.7 Are the contributions from Kyoto mechanisms included in the reported greenhouse gas projections? If so how much do they contribute to the fulfilment of the target in the with measures projections and how much in the with additional measures for 2010? (in Gg CO<sub>2</sub>-equiv. per year in the first commitment period)**

- Yes: 2
  - Savings from the UK ETS are estimated at 2 MtCO<sub>2</sub>-equiv.; this may include the use of flexible mechanisms; savings from the UK ETS are included in the 'with additional measures' projection (UK)
  - The National Climate Change Plan (PNAC in its Portuguese acronym) includes projections for EU emissions trading only as additional measures, contributing to about 17% of these (PT)?
- No: 6 (ES, SE, AT, FI, BE, NL)

**3.8 Please list all specific policies, initiatives and programmes which aim to implement the use of the Kyoto mechanisms and provide further information on their implementation as indicated below.**

- UK: Climate Change Programme, Emissions Trading Scheme, Climate Change Agreements, Climate Change Projects Office
- ES: Pilot phase for the use of CDM and JI
- SE: no answer
- AT: a MoU with Czech Republic has been signed, concrete

implementation steps are been taken by the MoE

- FI: Pilot programme 2000–2003, EUR 8.5 million
- BE: additional budges (EUR 2.3 million in 2003) for the implementation of the National Climate Plan and the KP mechanisms; preparations for all three flexible mechanism in the Flemish Climate Policy plan; use of the KP mechanisms is included in the regional Action Plan on Climate Change approved by the Walloon Government
- NL: ERUPT, CERUPT, Multilateral and Regional Financial Institutions, MoUs, Private Financial Institutions, Bilateral contracts
- PT: no answer

**3.8.1 Emissions trading (¹³)**

*Has your country implemented or does it plan to implement a domestic trading scheme?*

- Yes: 1
  - The UK ETS was launched in April 2002 (UK)
- No: 6 (ES, SE, AT, FI, BE, NL)
- No answer (PT)

*Please specify the sectors and/or the installations as well as the greenhouse gases included in the system, the status of the policy (planned, adopted, implemented), the year in which the trading system was implemented or is expected to be implemented, and the expected annual emission reductions as well as the expected total emission reductions during the first commitment period (in Gg CO<sub>2</sub>-equiv.).*

- UK: 44 sectors and 34 companies hold reduction targets; power generation for off-site use, surface transport and households are excluded from target holding; all six greenhouse gases included in the Kyoto Protocol are covered; the UK ETS is implemented and was launched in April 2002
- Not relevant: 2 (SE, AT)
- No answer: 5 (ES, FI, BE, NL, PT)

(¹³) Depending on the decisions on the proposal for an EU emissions trading scheme this question will be revised.

*Please also indicate if a government budget for financial support to the (potential participants in) the trading scheme was or is planned to be provided and if so the size of this budget (annually and in total for the period concerned).*

- UK: The government has provided £ 215 million (£ 43 million per annum) to direct participants over the 5 years period of the domestic trading scheme. The climate change levy is revenue neutral.
- Not relevant: 2 (AT)
- No answer: 5 (ES, FI, BE, NL, PT)

*Please also describe and characterise the preferred allocation scheme and strategy. How is the monitoring and compliance organised? Who will be responsible for monitoring and compliance?*

- UK:
  - Direct participants had absolute targets and share of incentive money allocated in a 'descending clock' auction held in March 2002. Direct participants must report baseline emissions (the average of 1998, 1999 and 2000 emissions from sources within the scheme) and annual emissions for each of the scheme years to Defra. The emissions report must be independently verified by a verifier accredited to the UK Accreditation Service. Defra is responsible for checking that the direct participant holds sufficient allowances to cover their annual emissions.
  - Climate Change Agreements targets with 44 energy intensive industry sectors were negotiated taking the implementation of all cost effective measures as a starting point. Energy use and output information are essentially self-reported, although Defra will conduct an audit of a sample of reports. If the Climate Change Agreement holder wishes to sell an over-achievement on the target onto the UK ETS market, this over-achievement must be

independently verified as for a Direct Participant in the scheme.

- SE: Allocation issues are being considered from an organisational view point with regard to the implementation of the EU trading scheme
- Not relevant: 2 (AT)
- No answer: 5 (ES, FI, BE, NL, PT)

### **3.8.2 Joint Implementation and Clean Development Mechanism**

*Which government departments/institutions or other organisations are responsible for the implementation of the policies, initiatives and/ or programmes to implement the Kyoto mechanisms?*

- UK: 5 Ministries and 3 additional authorities are involved  
Department for Environment Food and Rural Affairs, Department for Trade and Industry, Foreign and Commonwealth Office, Department for International Development, HM Treasury, The Climate Change Projects Office, Devolved Administrations (Scottish Executive; National Assembly for Wales, Department of Environment for Northern Ireland)
- ES: 4 Ministries (Ministry of Environment, Ministry of Economics, Ministry of Foreign Affairs, Ministry of Science and Technology) are developing the Spanish National Authority for the administration of project based mechanisms
- AT: the Ministry for Environment; additional authorities will be implemented
- FI: the Ministry for Foreign Affairs was responsible for the pilot programme
- NL: Ministry of Environment, Ministry for Economic Affairs, Ministry of Foreign Affairs, Government agency Senter
- No answer: 3 (SE, BE, PT)

Question should be deleted in the future

*With regard to project based activities, please indicate the countries with which bilateral or multilateral agreements, memorandums of understanding or contracts were arranged for the implementation of project based activities.*

- None: 2 (UK, ES)
- SE: 2 (Estonia, Romania), 2 additional MoU are in progress (Russia, Lithuania)
- AT: 4 (Czech Republic, Slovakia, Bulgaria, Romania)
- FI: 5 (Estonia, Latvia, Lithuania, Poland, Ukraine)
- NL: 3 (Romania, Hungary, Slovakia), 11 not legally binding MoU (Costa Rica, Panama, Colombia, El Salvador, Guatemala, Uruguay, Ecuador, Romania, Bulgaria, Slovakia, Croatia)
- No answer: 2 (BE, PT)

*Please indicate the budget allocated to the initiatives and programmes listed under question 7. Please indicate separately the budget allocated to international funds for project based activities.*

- UK: No specific funds; 'Fund for Environment Projects' provides £ 3 million in 2003/2004 for capacity building
- None: 1 (ES)
- SE: MSEK 350 were initially accounted of which are remain approx. MSEK 250
- AT: EUR 36 million per year starting by 2003

- NL: JI — ERUPT: EUR 51 million, CDM — IFC: EUR 44 million, IBRD: EUR 70 million, CAF: EUR 45 million, International Funds — PCF: EUR 15 million
- No answer: 3 (FI, BE, PT)

*Please describe briefly the results of evaluations of the initiatives or programmes to implement the Kyoto Mechanisms or indicate when such evaluations are planned.*

- UK: no participation in JI or CDM projects; UK ETS was evaluated in October 2002; such evaluation will be carried out on yearly basis due to requirements from State Aid approval
- SE: AIJ programme was evaluated; more recent programmes on JI and CDM were launched more recently and have not been evaluated yet; Within the SICLIP-CDM programme a portfolio of 4–7 CMM projects will be established; all considered projects fall in the category 'renewable energy'; the projects are located in Africa (2), Asia (2) and in Latin America (3).
- AT: Not yet applicable (no project contracts until December 2002)
- FI: Three projects under consideration
- NL: Evaluation of the Dutch is planned in 2005
- No answer: 3 (ES, BE, PT)

Table A.1 provided in the questionnaire at this place was not used by any of the responding countries.

# Annex 7: Comparison of Member State projections with the results of EU wide modelling

## 1.1 Options for comparison

The different sector break down in the Primes baseline projection (PBL) and the Member State projections (MSP) and the different break down by greenhouse gas limit the options for a comparison drastically. The differences of both approaches can be seen in Table A.250.

Whereas the MSP comprise all greenhouse gases the PBL covers only CO<sub>2</sub> emissions from fuel combustion. The sectoral coverage is also quite different. The MSP are — or at least should be — disaggregated according to the so called Common Reporting Format (CRF) which was agreed upon under the UNFCCC. The PBL, in contrast, differentiates on the first stage between energy supply and energy demand. On the second stage there are several sub-sectors in each sector which themselves are composed from different topics each.

Basically the overall PBL result (sum of 1. + 2.) is comparable to the total CO<sub>2</sub> emissions from fuel combustions (CO<sub>2</sub> from 1.A.). Also comparable might be the energy supply form the PBL (1.) with energy industries CO<sub>2</sub> emissions from the MSP (1.A.1.) as well as energy demand from the PBL (2.)

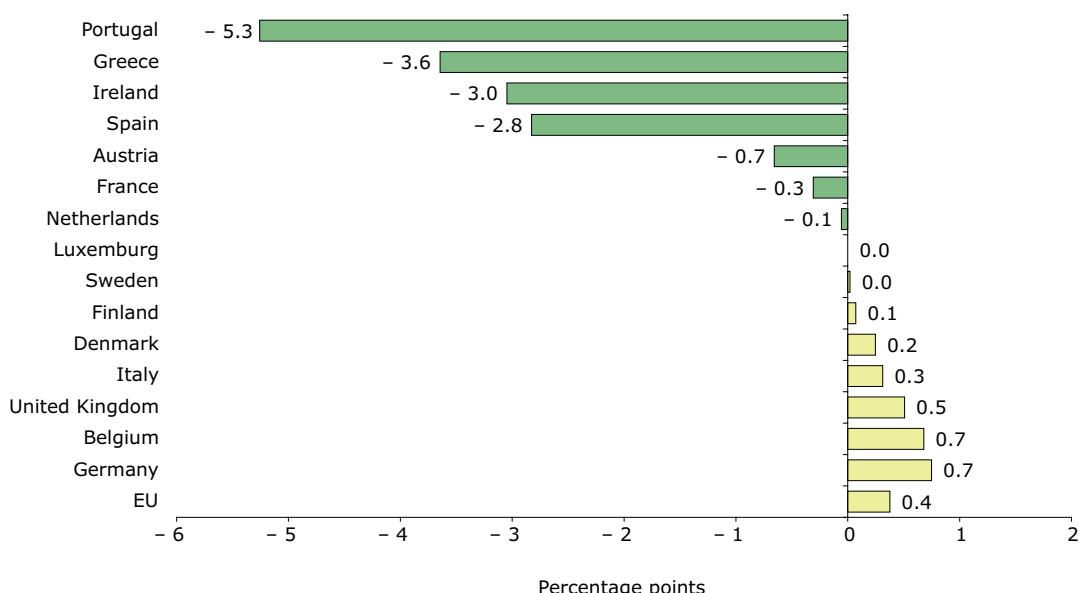
with the remaining CO<sub>2</sub> emissions from fuel combustion without from energy industries (1.A. minus 1.A.2.-5.).

However, most MS do not report their projections in such details. Generally MS break down their projections either by gas or by sector but not by gas and sector. Concerning the sectors, a more or less comprehensive set of figures is available for energy, transport, industry, agriculture and waste (1., 1.A.3., 2., 4., 5.). But these data are not differentiated by greenhouse gas and comprise the sum of all greenhouse gases which makes the direct comparison with the PBL more difficult. On the other hand MS report their total emissions (sum of 1.-7.) differentiated by greenhouse gas.

Considering the fact, that total CO<sub>2</sub> emissions are — if emissions or removals by sinks (6.) are neglected — at its larger share CO<sub>2</sub> emissions from fuel combustion and derive only to a minor share from industrial processes, total CO<sub>2</sub> emission from the MSP might be compared with the overall result from the PBL projection. According to the Sectoral Objectives Study the share of process related CO<sub>2</sub> emissions amounts to about 5 to 6% of total CO<sub>2</sub> emissions. By adding the somewhat

**Table A.250 Disaggregation by sector and greenhouse gas in the Primes baseline projection and in the Member State projections**

	CO <sub>2</sub>	MS projections (Common Reporting Format)	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	F gases
<b>Primes baseline</b>		1. Energy supply 1.1 Electricity generation 1.2 Heat generation 1.3 Refineries 2. Energy demand 2.1 Industry 2.2 Transport 2.3 Tertiary 2.4 Households				

**Figure A.79 Primes baseline projection and Sectoral Objectives Study**

outdated data for process related CO<sub>2</sub> emissions from the Sectoral Objectives Study to the PBL it can be checked, how much comparison results are distorted if the process emissions are neglected completely. But the influence of neglecting these non-CO<sub>2</sub> emissions seems to be very small. This can be seen in Figure A.79, where the results of the Primes baseline projection for the year 2010 are compared to the results if non-CO<sub>2</sub> emission projections from the sectoral objective study are added to the Primes results. For the EU as a whole and for most Member States the difference is rather small (below one percentage point).

Only in the case of Portugal, Greece, Ireland and Spain the deviation of the projections is somewhat higher but still in the area of five percentage points or below. Although total CO<sub>2</sub> emissions from the Member State projections may not absolutely comparable to the results of the Primes baseline projection it seems to be justified to compare them because the deviations cause by neglecting the differences are quite small. Transport sector emissions are also not directly comparable. MS report total greenhouse gas emission from transport which include besides CO<sub>2</sub> some 4% of CH<sub>4</sub> and N<sub>2</sub>O emissions which are, again, not included in the Primes baseline projection.

However, taking into account the limitations due to differences in disaggregation by sector and greenhouse gas the PBL and the MSP can be somehow compared within the following sectors:

#### Primes

Overall PBL results	(1.+2.)
Transport	(2.2.)
Remainder	(1.+2. minus 2.2)

#### MS projections

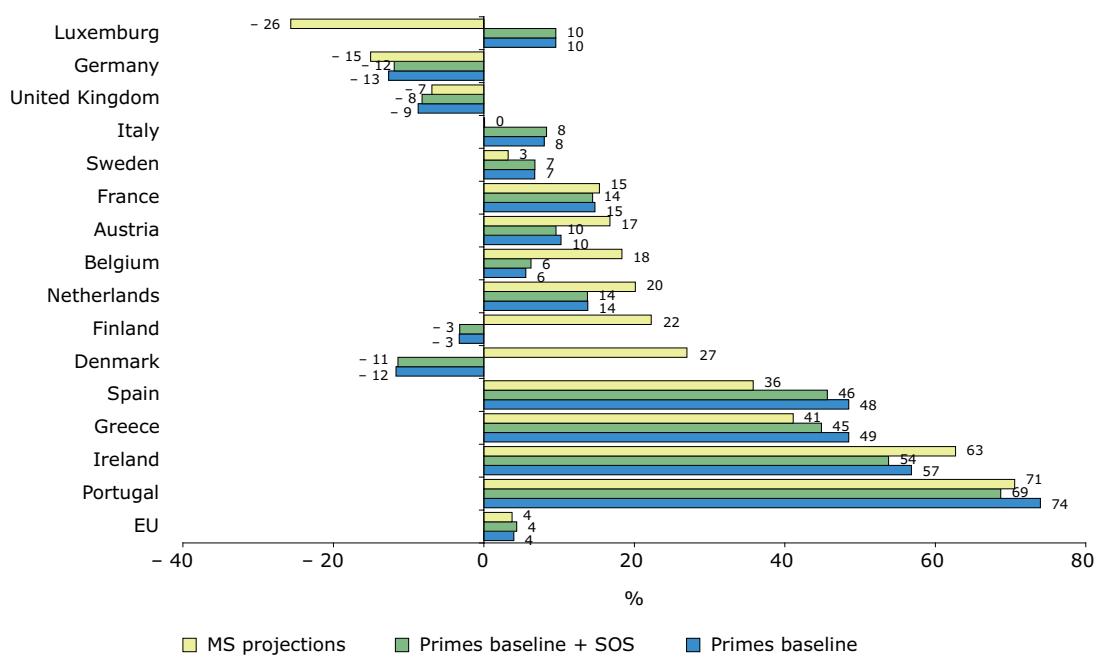
CO <sub>2</sub> emissions from fuel combustion	(1.A.)
Transport	(1.A.3)
Remainder	(1.A.minus 1.A.3)

As the transport sector is part of the overall CO<sub>2</sub> emissions, the remaining shares of total CO<sub>2</sub> emissions can be also compared. However, it is not very likely that additional findings can be discovered which have not been identified during the comparison of the overall CO<sub>2</sub> emissions.

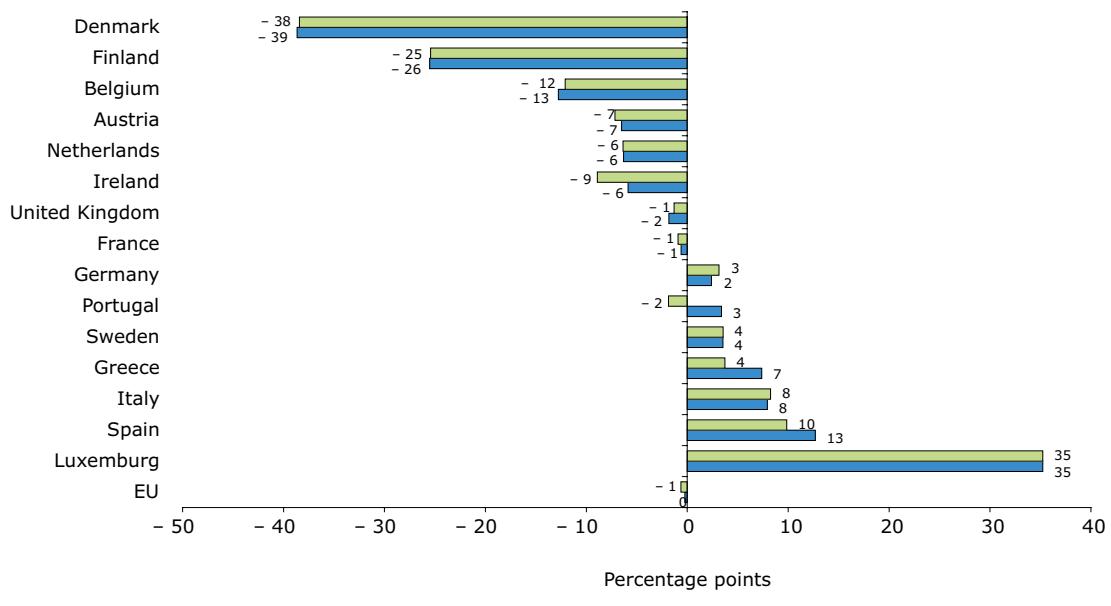
## 1.2 Total CO<sub>2</sub> emissions

For the EU as a whole the projections for total CO<sub>2</sub> emissions result in an increase of 4 % between 1990 and 2010 in both, the Primes baseline projection and the aggregation of the projections provided

**Figure A.80 Change of total CO<sub>2</sub> emissions between 1990 and 2010 according to the results of the Primes baseline projection and projections by individual Member States**



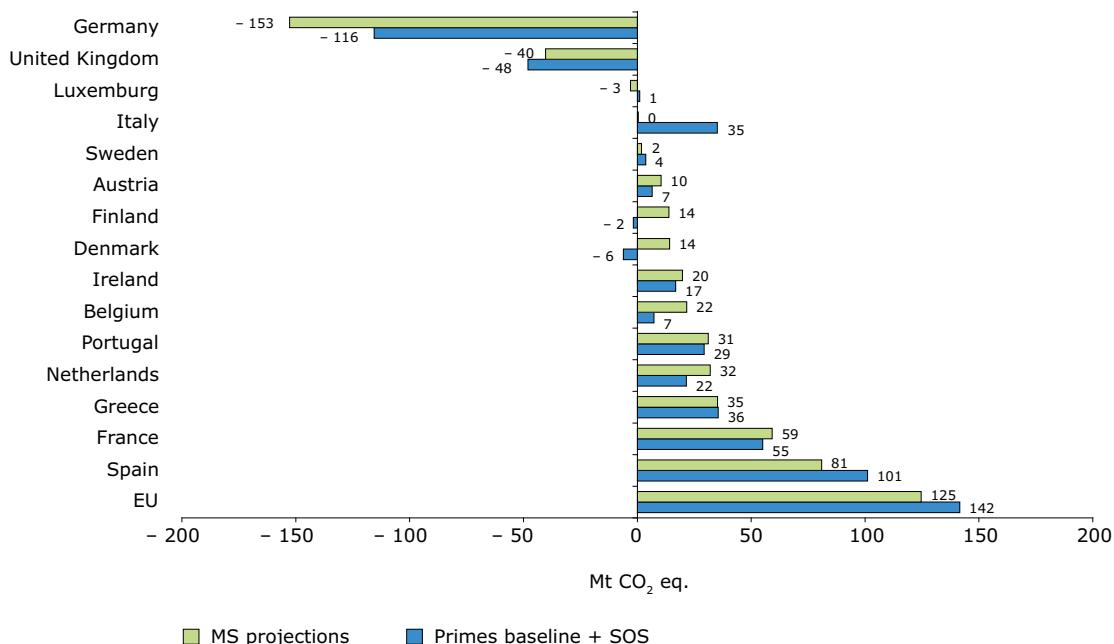
**Figure A.81 Deviation of Primes baseline projection for total CO<sub>2</sub> emissions in 2010 from Member State projections**



by the individual Member States (Figure A.80).

However, the approach of taking into account emissions from bunker fuels for international aviation is quite different. The Member State projections exclude – in accordance with the IPCC inventory guidelines –these emissions,

whereas they are included in the Primes baseline projection, which is based on Eurostat energy balances. In the Eurostat energy balances, however, it is not differentiated between domestic and international aviation. Instead the total demand for bunker fuels is included, be it for domestic or international aviation. According to rough estimates this

**Figure A.82 Change in total CO<sub>2</sub> emissions between 1990 and 2010**

causes an overestimation in total CO<sub>2</sub> emissions for the EU as a whole of one percentage point.

For the comparison of the overall Primes baseline projection with the aggregated result of the Member State projections this has to be taken into account.

Deducing this percentage point from the result in the Primes baseline projection for the EU as a whole results in an increase of CO<sub>2</sub> emissions of just 3%, so that the difference to the Member States projections is still quite small.

But a comparison on the Member State level shows, that the overall result is comparable although there are considerable differences in the projections on the Member State level (Figure A.81).

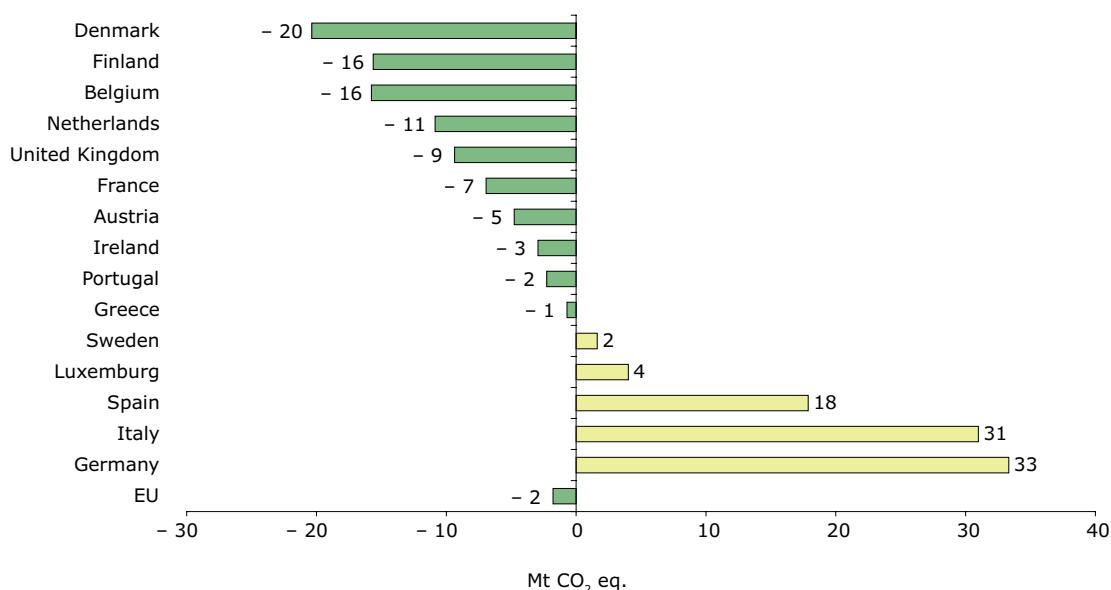
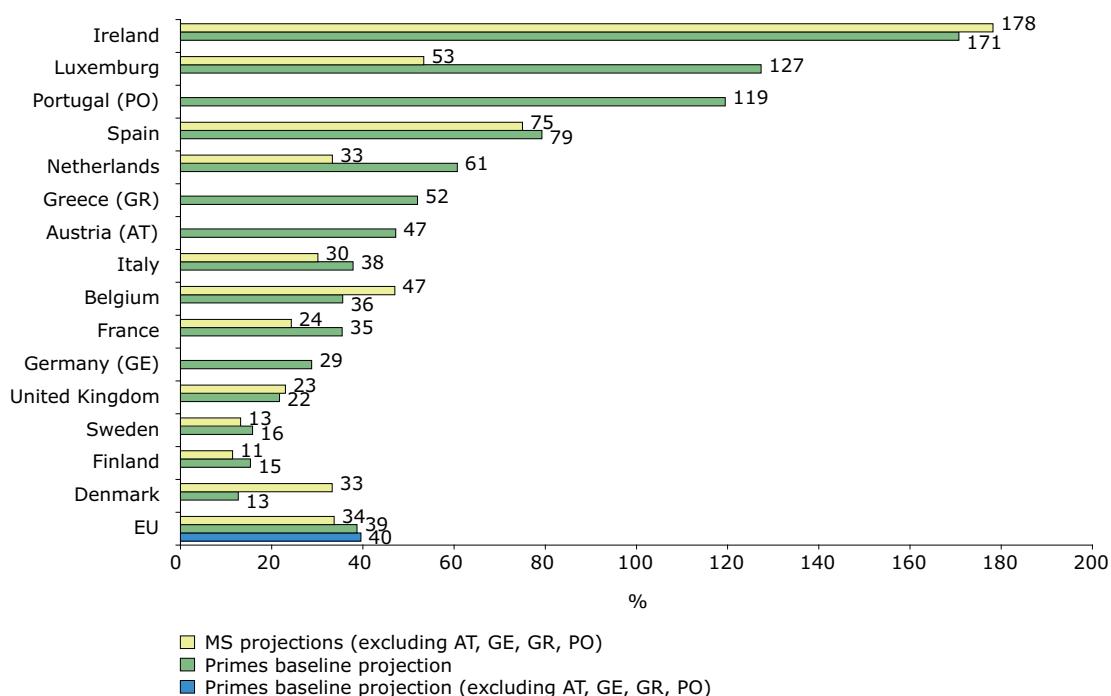
There are huge differences between both projections in percentage point terms. In some cases the Primes baseline projection results in a stronger increase (Luxembourg, Spain, Italy etc.), in other cases the Member State project a stronger increase in CO<sub>2</sub> emissions than the Primes baseline projection (Denmark, Finland, Belgium etc.)<sup>(1)</sup>. For most of the larger Member States

the difference between both projections is relatively small and at least below 5 percentage points (France, United Kingdom, Germany).

A comparison of the change of total CO<sub>2</sub> emissions between 1990 and 2010 in the Member State projections and in the Primes baseline in absolute terms reveals, that the aggregated difference of Luxembourg, Denmark and Finland, the countries with the highest deviation in terms of percentage points, is almost in the same size as the absolute difference in the projections for Germany, which is small in terms of percentage points but large in absolute terms (Figure A.82). With other words, although the differences of the larger countries may be small in terms of percentage points, they are considerable in absolute terms.

Figure A.82 indicates also, that in most case the Primes baseline and the Member States projections 'show into the same direction'. But in the case of Finland and Denmark the Member States project an increase in CO<sub>2</sub> emissions whereas the Primes baseline projection results in a decrease of CO<sub>2</sub> emissions. In contrast, Luxembourg's projection shows a decrease of 3 Mt CO<sub>2</sub>

<sup>(1)</sup> Reasons for differences in the projections are explained in section 1.5.

**Figure A.83 Deviation of Primes baseline projection for the change of total CO<sub>2</sub> emissions between 1990 and 2010 from Member State projections****Figure A.84 Change of CO<sub>2</sub> emissions in the transport sector between 1990 and 2010 according to the results of the Primes baseline projection and projections by individual Member States**

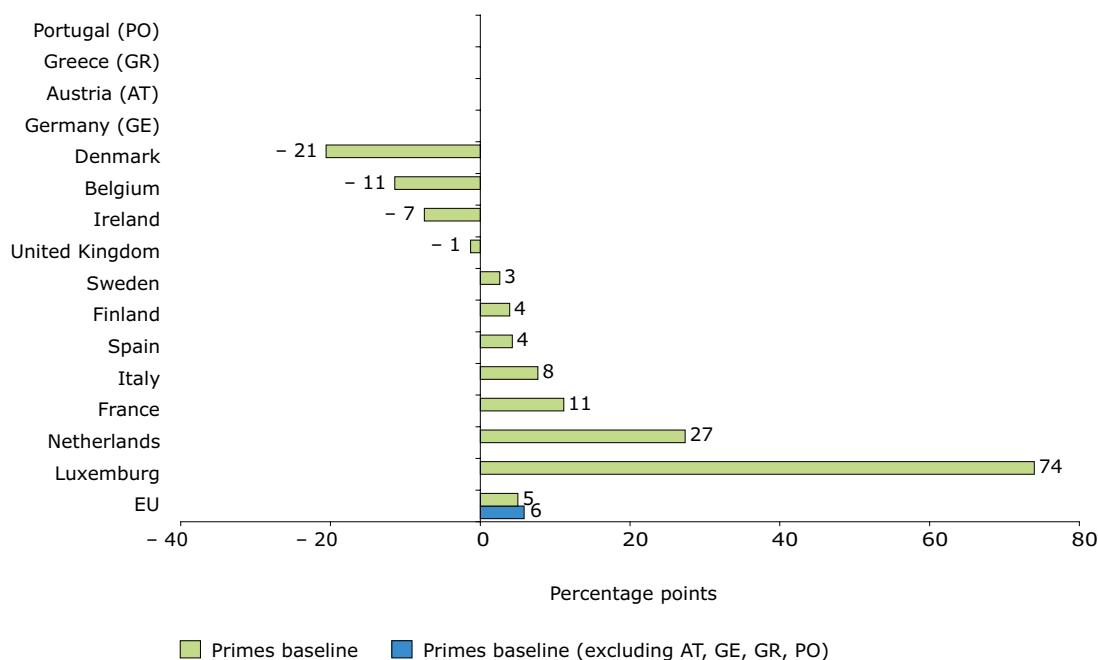
equivalents and the Primes baseline projection results in an increase of 1 Mt CO<sub>2</sub> equivalents.

The deviation of the Primes baseline projection for the change in CO<sub>2</sub> emissions between 1990 and 2010 from the Member State projections is given in Figure A.83. For the EU as a whole the result of the Primes baseline projection is only 2 Mt CO<sub>2</sub> equivalents below the

aggregate projections of the Member States.

For Denmark, Finland, Belgium etc. the result of the Primes baseline projection is also lower than the Member State projection. In Germany, Italy, Spain etc., in contrast, the Member States project lower emissions in the year 2010 than the Primes baseline projection.

**Figure A.85 Deviation of Primes baseline projection for total CO<sub>2</sub> emissions in the transport sector in 2010 from Member State projections**



### 1.3 CO<sub>2</sub> emissions from transport

CO<sub>2</sub> emissions in the transport sector increase in all Member States between 1990 and 2010<sup>(2)</sup>. In average the increase will be 35 % according to the aggregated Member State projections and about 39% according to the Primes baseline projection. Taking into account, that the different treatment of bunker fuels for international aviation in the Primes baseline projection might explain at least 3 or 4 percentage points of the differences in the transport sector, both projections result almost to the same result.

On the Member State level, however, large differences between both projections can be identified. In terms of percentage points the largest differences are between the projections for Luxembourg, the Netherlands and for Denmark (Figure A.85). But whereas the Danish projection results in about 20% higher emissions than the primes baseline both, the Netherlands and Luxembourg project much lower

emissions than the Primes baseline projection.

This might be explained, in particular in the case of Luxembourg, by tank tourism and different model assumptions: in the past fuel taxes in Luxembourg have been much lower than in the neighbouring countries Belgium and Germany. This has attracted some considerable so called tank tourism from these countries. In Primes it is assumed, that these taxation differences will not change during the time span of the projection. Unfortunately no detailed information on the assumptions used in Luxembourg's projection on future taxation policies is available. However, the difference between both projections might be reasonable if one assumes that recent decisions about the harmonisation of fuel taxation in the EU are taken into account in Luxembourg's projection. In addition, this might also explain some of the large difference in the overall projections (Figure A.81).

<sup>(2)</sup> Four Member States (Austria, Germany, Greece and Portugal) did not provide a break down of greenhouse gas by sector and have to be excluded from the analysis of the transport sector.

**Figure A.86 Deviation of Primes baseline projection for the change of total CO<sub>2</sub> emissions in the transport sector between 1990 and 2010 from Member State projections**

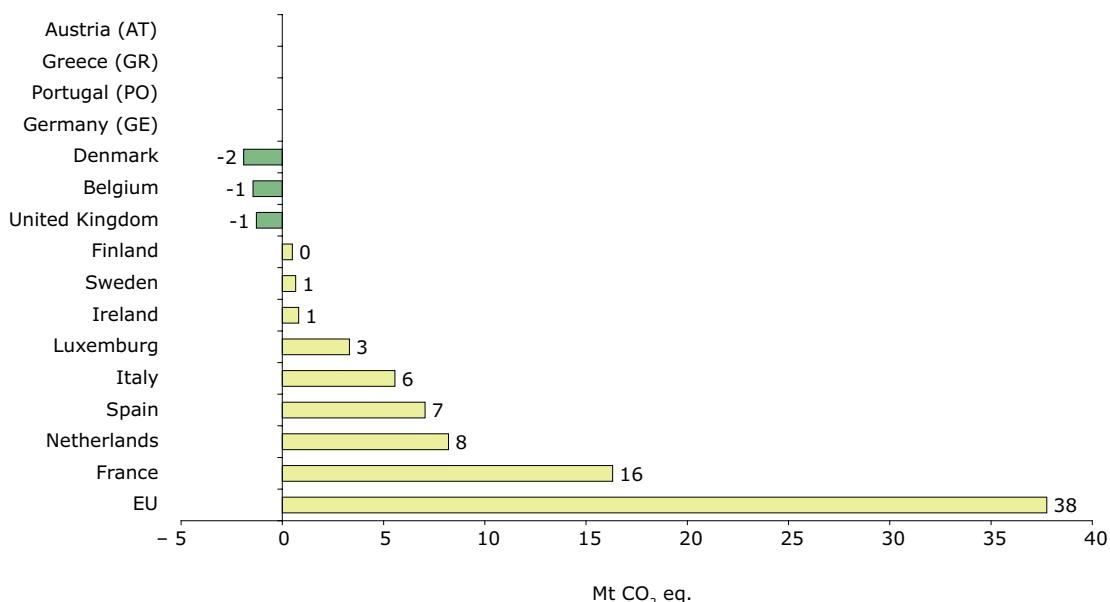


Figure A.86 presents the deviation of the change in CO<sub>2</sub> emissions in the transport sector of the Primes baseline projection from the Member States projections. It shows again – like for total CO<sub>2</sub> emissions – that large percentage point deviations may be small in absolute terms (Luxembourg) and small percentage points deviations may be large in absolute terms (e.g. Spain). And most of the deviation for the EU as a whole can be reduced to the different approach with regard to emissions from bunker fuels in international aviation.

#### 1.4 Acceding and EEA Countries

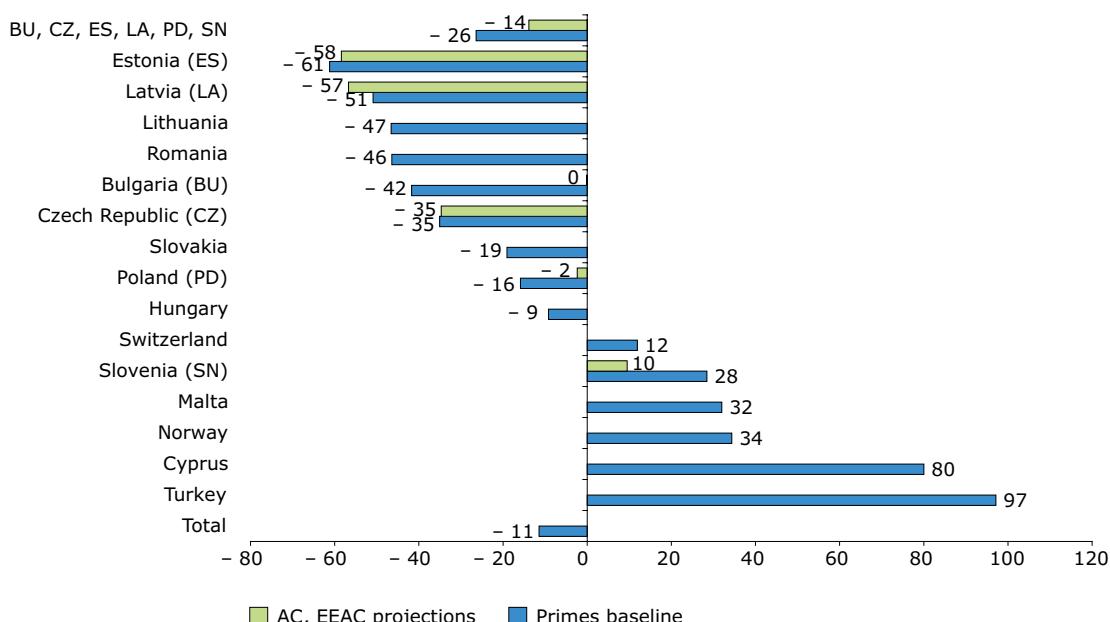
Only six out of 17 Acceding Countries (AC) and EEA Countries (EEAC) have yet provided data on greenhouse gas projections for 2010 (Bulgaria, Czech Republic, Estonia, Latvia, Poland, Slovenia, Figure A.87). Correspondingly, only projections from these countries can be compared to the results of the Primes baseline projection for the Acceding and EEA Countries. But for this comparison it has to be considered

that Bulgaria, Poland and Slovenia within the UNFCCC have opted process for a base year different to 1990 (Bulgaria, Poland 1988; Slovenia: 1986). 1990 CO<sub>2</sub> emission data is, therefore, not available for these countries and had been estimated <sup>(3)</sup>.

Figure A.87 shows the differences between the projections of the Acceding Countries and the Primes baseline projections for this group of countries. The aggregation shows a 12 percentage points stronger decrease in CO<sub>2</sub> emissions than the Primes baseline projection. However, for some of the Acceding countries the individual projections are quite comparable with the Primes baseline projection (Czech Republic, Estonia, Poland). Larger differences can be identified for Poland (14 percentage points) and Slovenia (16 percentage points). The largest difference in percentage terms is between Bulgaria's projection and the Primes baseline projection (42 percentage points).

<sup>(3)</sup> For these countries only the base year and 1991 figures instead of the 1990 emission are given in the greenhouse gas data base of the UNFCCC (<http://www.unfccc.int>). For the estimation of the 1990 emissions it had been assumed that the emissions developed on a linear path between the base year and 1991.

**Figure A.87 Change of total CO<sub>2</sub> emissions between 1990 and 2010 according to the results of the Primes baseline projection and projections by individual acceding or EEA Countries**



## 1.5 Causes of differences in projections

The different comparison carried out above have revealed several differences between the Primes baseline projection and the Member States projections. These differences might derive from many divers reasons. Some of the most important causes for such deviations are listed below:

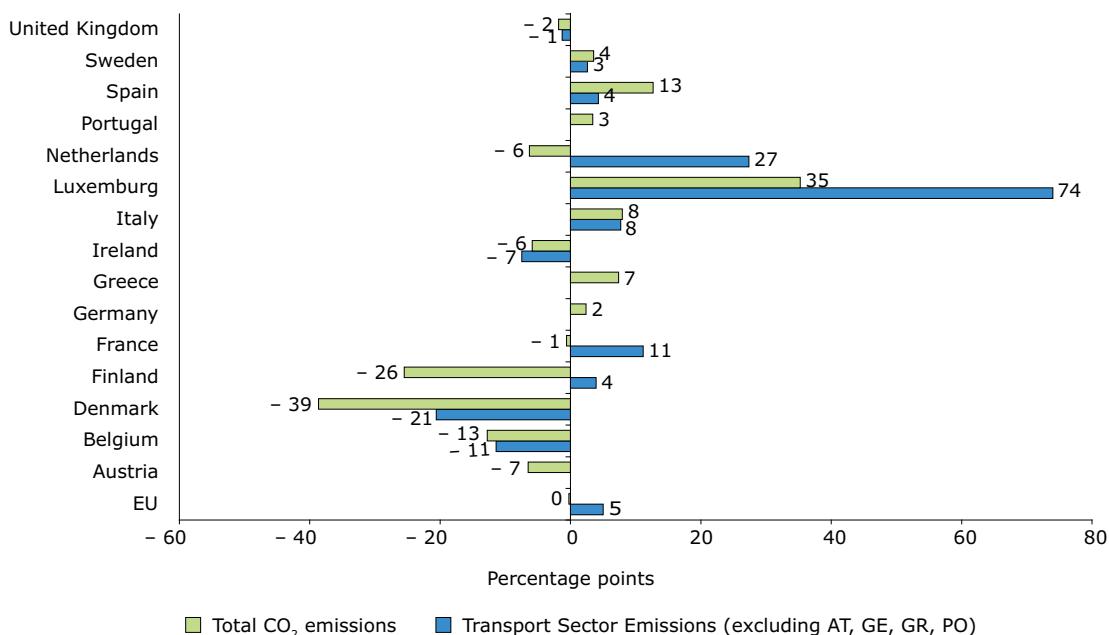
- Differences in the data base used: The Primes model is based on the Eurostat energy balances for the year 2000; some of the Member States (e.g. Italy) use different data bases for their projections that are not absolutely compatible with the Eurostat data;
- Different definition of the model boundaries: An example for this is the already mentioned different approach for the consideration of emissions from bunker fuels used in international aviation (see above);
- Differences in emission factor: The Primes model applies individual

emission factors for each Member State; the emission factors applied in the model are based Eurostat's emission factor data base; however, some Member States apply diverging emission factors;

- Differences in models applied: The Primes model is an econometric model driven by prices which solves economic decisions taken by representative players simultaneously; some of the Member States, in contrast, use model approaches quite different to Primes; Germany, for example, applies a technological orientated optimisation model, which, in general, tend to show lower projections results than econometric models; hence, it is no surprise that Germany's projection results in considerably lower emissions than the Primes baseline projection (see above) (4);
- Different assumptions applied in the models: Such differences may refer to differences concerning the policies which are included or covered by the projection (see above: taxation

(4) In Primes the concept of perceived prices is applied. This concept copes with fact, that some measures are implemented only to a small extent although they are economically efficient (energy saving lamps, fuel efficient cars etc.). This can be only explained by implementation barriers for these measures (scarce financial resources to finance such measures, higher risk expectations etc.). Primes models such barriers by applying higher discount rates for such measures. In general the potentials of such measures are, therefore, developed much lower in the Primes model than in technological orientated optimisation models.

**Figure A.88 Deviation of Primes baseline projection for the change of total CO<sub>2</sub> emissions and of emissions in the transport sector between 1990 and 2010 from Member State projections**



policy in Luxembourg), may refer to different assumptions on drivers of the models like population or GDP growth, fuel prices etc. (5), may refer to more technical features of models like demand elasticities which are, in general, quite sensitive to the model results or may refer to assumptions on technological development (6) to name just some of possible differences in assumptions.

This list can be extended easily. However, it already shows that is no surprise if there are differences between different projections. In contrast, it seems to be more of a surprise if no differences can be detected.

But even in case that overall CO<sub>2</sub> emissions are rather similar, there might be differences on the sector level (Figure A.88). Total CO<sub>2</sub> emissions in the Primes baseline projection are almost

identical with France' projection results. However, the difference on transport sector level is much larger, what can only be possible if — at least one of — the remaining sectors is quite different to the Primes baseline projection too.

Taking into account the 'bunch' possible reasons for deviations between both projections one might conclude that it is useless to compare such models at all. However, this approach shows, first, that none of the projections is right or true. Both of them might have been wrong if we look back to these projections in the year 2011. Second, a detailed comparison on the Member State level can reveal the differences and give some hints for the possible reasons. Thus it might, thus, help to revise and improve both, the Primes baseline projection and the projections of the individual Member States.

(5) Not all Member States have provided data on the assumptions for such drivers. But a cross check has revealed, that the differences in assumption on such drivers were relatively small; in any case, they can not explain the, in some cases, large differences in emission projections.

(6) Technological improvement is — at least partly — endogenous in the Primes model; some of the Member State models, in contrast, assume frozen technology in their projections, which will result in higher emissions than in the Primes baseline projection.

European Environment Agency

**Analysis of greenhouse gas emission trends and projections in  
Europe 2003**

2004 — 440 pp. — 21 x 29.7 cm

ISBN 92-9167-696-9