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National communications from Parties included in Annex I to the Convention: synthesis of reports demonstrating progress in accordance with Article 3, paragraph 2, of the Kyoto Protocol

Synthesis of reports demonstrating progress in accordance with Article 3, paragraph 2, of the Kyoto Protocol

Note by the secretariat

Summary

The Conference of the Parties, by its decision 25/CP.8, requested the secretariat to prepare, for consideration by the Subsidiary Body for Implementation at its first session in 2006, a synthesis of reports submitted by Parties to demonstrate progress.

The report summarizes the efforts made by Parties to implement domestic policies and measures, the planned use of land use, land-use change and forestry activities and the Kyoto mechanisms to achieve the Kyoto target. The report outlines progress reported by Parties in influencing the historical emission trends based on greenhouse gas inventory information available for 1990–2003. It also outlines progress reported by Parties to modify their projected emission trends by 2012 with a view to achieving the Kyoto target. It also provides an overview of the implementation of commitments according to Articles 10 and 11 of the Kyoto Protocol.

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I. Introduction

A. Mandate

1. This note has been prepared in response to decisions 22/CP.7 and 25/CP.8. These decisions establish that the consideration by the Subsidiary Body for Implementation (SBI) and the Conference of the Parties to the Convention serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) on the progress by Parties in preparing for the implementation of their commitments under the Kyoto Protocol should be performed based on information included by Parties in a report under Article 3, paragraph 2, of the Kyoto Protocol, which is to be submitted by 1 January 2006. It also establishes that this report on demonstrable progress (RDP) should include four elements (i.e. domestic policies and measures, emission trends and projections, an evaluation of the contribution of domestic policies and measures to meeting commitments under Article 3, and fulfilment of commitments under Articles 10 and 11 of the Kyoto Protocol).

2. To facilitate the consideration by the subsidiary bodies and the COP/MOP of information on the progress in preparing for the implementation of commitments under the Kyoto Protocol, the secretariat was requested by decision 25/CP.8 to prepare a synthesis of reports by Parties demonstrating progress for consideration by the SBI at its first session in 2006 (May 2006).[1]

B. Scope of the note and approach

3. This note is based on the 18 national reports demonstrating progress received by around half of the Parties included in Annex I to the Convention (Annex I Parties) that are also Parties to the Kyoto Protocol. It therefore covers information reported by 18 Parties: Belgium, Czech Republic, Denmark, Estonia, the European Community, Finland, Greece, Hungary, Japan, Lithuania, the Netherlands, Norway, Romania, Slovakia, Spain, Sweden, Switzerland and the United Kingdom of Great Britain and Northern Ireland (the United Kingdom). In addition, it covers information from nine Parties that are member States of the European Union (EU) and which did not submit RDPs, but about which relevant information was provided in the report of the European Community, e.g. on emission trends,[2] policies and measures and Kyoto mechanisms. Since this note covers information reported by only a half of the Parties included in Annex B to the Kyoto Protocol it should be regarded as a preliminary one.

4. The note consists of four chapters. Chapter I summarizes Parties' efforts to implement domestic policies and measures and the planned use of land use, land-use change and forestry (LULUCF) activities to achieve the Kyoto target. It also includes an overview of the use of the Kyoto mechanisms and LULUCF activities as a contribution to the Kyoto target. Chapter II outlines progress achieved in influencing the historical emission trends based on greenhouse gas (GHG) inventory information available for 1990–2003. It also outlines efforts by Parties to modify their emission trends by 2012 with a view to achieving the Kyoto target. Chapter III provides an overview of the contribution of domestic policies and measures, Kyoto mechanisms and LULUCF activities to meeting the Kyoto target. Finally, chapter IV provides information on the implementation of commitments according to Articles 10 and 11 of the Kyoto Protocol.

5. Parties have taken different approaches in reporting information in their RDPs, while adhering to the outline and content of the report as defined by decisions 22/CP.7 and 25/CP.8. Some Parties provided very detailed information in their reports, while other Parties highlighted only the key messages

[1] It was agreed by the contact group on Annex I national communications at COP/MOP at its first session that this note will be published by the secretariat in early May 2006.

[2] In 2003, these 27 Parties covered 65.9 per cent of total GHG emissions of all Annex I Parties that are also Parties to the Kyoto Protocol.

and made relevant linkages to the information in the fourth national communications. This is particularly true for reporting on actions under Articles 10 and 11 of the Kyoto Protocol, where the approach and level of detail varied a great deal among Parties. To ensure consistency and completeness in the coverage of action by Parties the secretariat used in a few instances relevant information from the national communications to supplement the information from the RDP.

C. Possible action by the Subsidiary Body for Implementation

6. The SBI may wish to consider this note with a view to preparing a draft decision for adoption by the COP/MOP at its second session.

II. Domestic policies and measures, and actions to implement the Kyoto mechanisms

A. Introduction

7. This chapter of the report outlines developments in climate change policies and measures taken by the 18 reporting Parties to make progress in implementing mitigation commitments outlined in the Kyoto Protocol and the Convention. It proceeds in three parts. The first part focuses on legal and institutional developments and overarching trends observed in these areas. The second part focuses on specific trends in domestic policies and measures, with the discussion organized by cross-cutting policies, and policies implemented in energy and non-energy sectors to highlight recent and innovative policy developments. The third part is devoted to recent developments in the implementation of the Kyoto mechanisms (emissions trading under Article 17, joint implementation (JI) and the clean development mechanism (CDM)), and the use of activities relating to LULUCF.

8. All reporting Parties have by now adopted national climate change strategies with mitigation programmes of policies and measures that span many if not all parts of the energy and non-energy sectors. They have reported noticeable progress in establishing national systems for inventory preparation and registries to support implementation of the Kyoto mechanisms. Climate change action is manifested by Parties through portfolios of different types of policies and policy approaches, spanning a wide range of government activities, sectors, actors and institutions within and outside of governments.

B. Legal and institutional frameworks for domestic implementation and compliance

9. **Four general trends are apparent in the reports** and each of these trends is briefly discussed below. First, there is growing evidence of more **significant policy infrastructure and policy-making capacity to deal with climate change** in many countries compared with earlier years. In turn, efforts that in many cases began in the early 1990s have now begun to yield results by limiting growth in GHG emissions trends. For example, almost all of the Scandinavian countries (Denmark, Norway and Sweden) as well as Belgium, the Netherlands, Switzerland and the United Kingdom have significantly reduced growth in emissions relative to gross domestic product. Sweden and the Netherlands have succeeded in stabilizing emissions altogether, and in Sweden and Japan significant progress has been made in reducing or at least stabilizing emissions in the very difficult to control sector of transport.[3]

10. Second, within this policy infrastructure there is an **apparent strengthening of integrated policy approaches**, which aim to address climate change principally through sector policies. The challenge is to introduce and eventually balance the treatment of climate change amongst the many other existing policy objectives in relevant sectors.

[3] The European Community reports: *"Despite drastic reductions of a number of pollutants in the transport sector, this sector is currently responsible for 20 per cent of the EU-25 emissions. Specifically, energy use in the transport sector remains an area where greenhouse emissions continue to rise.*"

11. Countries are approaching this challenge in different ways. For example, some governments have sector targets or objectives that pertain to climate change and place the responsibility for achieving agreed targets directly with sector ministries (the Netherlands; Switzerland on energy; the United Kingdom's climate strategy for vehicles). In other countries, the sector targets exist with more central oversight (e.g. Japan). In Belgium, regional targets exist to guide climate policies at regional scale. Inter-departmental committees have been established in many countries to guide the development and implementation of climate change strategies.

12. Though many initial "climate" measures do not have climate change as their first and foremost objective, where climate change benefits can be derived, such policies merit and have received significant attention from climate change policymakers. Another trend in policymaking that emerges from the RDPs is the **increased coverage and scope of GHG mitigation through climate-specific policies and measures**. These measures sometimes consist of broad cross-cutting policies such as emission-trading systems (e.g. the EU Emissions trading Scheme (ETS) and Norway), which in some cases complement other long-standing climate-specific measures. The use of carbon dioxide (CO_2) and "green" energy taxes in Denmark, Finland, the Netherlands, Norway and Sweden is an example of climate-specific policy that has been in place since the early 1990s. Other examples of climate-specific policies include voluntary agreements (VAs) with industry or other actors focusing on CO_2 (e.g. the EU voluntary agreement with the car manufacturers from EU, Japan and Korea) or the CO_2 tax that is being initiated in Swiss climate policy (see paragraphs 18 and 30). A more recent development is the portfolio of measures emerging to promote biofuels (e.g. in the transport sector) (Denmark, Finland, Sweden, Switzerland, the European Community and the United Kingdom).

13. A fourth trend is the **emergence of governance on climate change issues at various levels, such as local and national governments** as well as non-governmental actors. Leadership from cities and other sub-national governmental authorities is increasingly influencing GHG emissions trends and is also playing an essential role in adaptation planning. A number of Parties report policies to voluntarily work more closely with local and regional governments on mitigation strategies (Czech Republic, the European Community, Finland, Hungary, Japan, the Netherlands, Romania, Sweden and Switzerland).

14. Many mitigation initiatives are also increasingly led not only by local and regional governments but also through formal and informal partnerships with non-governmental entities, such as environmental organizations, corporations or business organizations. Linkages with non-governmental stakeholders is increasingly evident in institutional structures designed to provide advice and insights to governments on next steps in climate policy.

C. Domestic policies and measures and their effect

1. Cross-cutting instruments and policies

15. The **launch of the EU ETS is one of the most significant policy developments** to occur over the last decade with respect to policies intended to deliver emission reductions as set out in the Kyoto Protocol. It is now in a first, pilot phase that goes from 2005 to 2007 and will continue thereafter, through the first commitment period (2008–2012) and beyond. It extends to all 25 EU member States and therefore also includes the new member States (e.g. Czech Republic, Hungary, Slovakia, Estonia and Lithuania) as full participants in this pilot period and beyond.

16. EU ETS is significant in all countries in terms of the scope of emissions covered under the system, with coverage of 52 per cent of overall EU CO_2 emissions in the 2005–2007 pilot period. The share of emissions covered in the system is higher in some newer EU member States (e.g. Czech Republic and Estonia) than in the other EU countries.

17. In the first pilot phase of the system, national allocation plans allow for a small (3.5 per cent) increase in emissions from the covered facilities above 2003 emission levels, with an estimated decline (–3.4 per cent) below business as usual emissions in the 2005-2007 period. The EU ETS is expected to reduce emissions from covered facilities across the EU to below baseline levels in the first commitment period. National allocation plans for this period are to be submitted and approved by the European Commission in 2006.

18. **CO_2 and energy taxes have been a cornerstone of climate policies** in Denmark, Finland, Norway and Sweden since the early 1990s, and, judging from emission trends, they appear to be yielding some promising results. Finland, for example, was among the first nations to introduce a CO_2 tax. Throughout the years the tax has been modified, with the role of the CO_2 component being gradually diminished and replaced by differentiated energy taxes. In addition, both the Netherlands and Sweden have significant energy taxes or rebate/refund systems that **encourage investments in energy efficiency and the use of renewables**. Switzerland is expected to implement a CO_2 tax in 2006.

19. Generally, a range of exemptions exists in the coverage of CO_2 or energy taxes, especially for energy-intensive industries. Beyond broad exemptions, many countries adjust or exempt companies that are participating in climate change VAs for CO_2 or energy taxes (e.g. the Netherlands, Norway, the United Kingdom). The Netherlands and Belgium also provide tax deductions and targeted subsidies for climate-friendly energy investments, across all energy end-use sectors except transport.

20. A number of other countries have either undertaken (the United Kingdom) or are considering **revenue-neutral "green" tax reforms** (e.g. Norway, the Netherlands and Denmark). The overarching objective of many of these reforms undertaken in the mid-1990s was to shift taxation from labour to the use of resources.

21. A number of **countries with economies in transition (EIT countries) also rely upon tax instruments** to achieve GHG reductions. For example, Hungary introduced energy and environmental levies in 2004; these should influence energy use in municipalities, business and industry (residential heating energy is exempt from tax). Estonia has a tax on CO_2 emissions for large industrial facilities (i.e. boilers greater than 50MW in size). Lithuania also reported on **"green" budget reforms** and the establishment of a "green" procurement practices rule for public purchasing of products as well as on the use of differentiated taxation to promote renewable energy and waste-to-energy investments.

22. A number of Parties reported on the use of **innovative financing mechanisms** to develop and promote renewable energy technologies and/or to broaden understanding of opportunities and increase investment in energy savings processes and technologies. These mechanisms include the use of an Energy Fund in Norway where funds of roughly NOK 100 million a year are allocated on a competitive basis. Other examples are the Electricity Savings Trust in Denmark, which targets saving electricity in buildings. Significant amounts of co-financing for energy efficiency and renewable energy investments have been made available to EIT countries through a variety of international mechanisms, such as the Global Environment Facility (GEF) or the EU.

23. Parties are devoting increasing attention and amounts of money to information and awareness-raising measures to respond to climate change as part of their overall climate change portfolios. Such actions are building on heightened media attention to events linked to climate change, such as the melting of Arctic ice sheets, heat waves and extreme precipitation and flooding.

24. The EU has in place several cross-cutting policies and measures that affect either several sectors or a single sector across a large number of Parties to the Kyoto Protocol. Most of these policies are in the form of **framework directives** which establish actions with which EU member States are legally bound to comply by a specific date.

2. Energy-related policies and measures

25. Mitigation measures in **energy supply** focus largely on the electricity production industry, which is characterized by a relatively small number of companies within a country, often competing for market share and customer base in a liberalizing market. In some countries, a large share or the entire industry may still be operating as state-owned companies (e.g. in Romania) whereas in other countries power producers are entirely in the private sector (United Kingdom).

26. There is also **a range of different approaches to finance and support renewable energy (RE) sources in place in countries and these financing instruments are expected to boost the share of "green" power within the fuel mix of power generators** between 2008 and 2012. In the United Kingdom, for example, power suppliers also have a Renewables Obligation to provide a fixed share of supply from renewable energy (5.5 per cent for 2005–2006 rising to 15.4 per cent by 2015–2016). In parallel, the United Kingdom Government has committed substantial amounts of new funding (£500 million in the period 2002–2008) to support demonstration projects and research and development for a wide range of renewable energy sources (e.g. off-shore wind and marine energy, biomass and solar) and related technologies (e.g. fuel cells; micro-generation technologies). In Denmark, a range of measures in the energy sector promotes market penetration of renewable energy, including pricing incentives for "green" electricity use and for off-shore wind production, and an agreement based on financial incentives to promote biomass energy to produce power. Renewable energy (including biomass and waste, excluding hydro) is currently about 13.6 per cent of total primary energy supply in Denmark, a share which has roughly doubled since 1990.

27. Promotion of highly efficient energy technologies, such as **district heating (DH) and combined heat and power (CHP),** is also central to parts of policies found in this sector (e.g. in Belgium, Czech Republic, Denmark, the European Community, Greece, Hungary, the Netherlands, Romania, Sweden, the United Kingdom). In Denmark, for example, approximately half the demand for heat is supplied through DH systems powered by small-scale CHP plants, waste incineration and biomass-fired DH plants. An EU directive establishes a framework to support the installation of CHP where heat demand exists across member States; this directive comes into force in 2006 and many Parties report progress in the implementation of measures in this area.

28. **Voluntary and negotiated agreements remained a main policy instrument** in use in the EU member States (Denmark, Finland, the Netherlands, Spain, Sweden, the United Kingdom) and in other reporting Parties (Japan, Norway, Switzerland) up to 2005 to work with industry towards sizeable GHG reductions. A range of different forms of VA exist. In many countries, such agreements include compulsory elements and compliance mechanisms, such as requiring non-compliant entities or companies to pay CO_2 or energy taxes (e.g. Sweden, Switzerland, the United Kingdom) or to deduct agreed investments in particularly innovative energy efficient or renewable energy technologies from their tax bills (the Netherlands).

29. The largest source of emissions in the residential and commercial sector comes from heating, cooling and lighting of buildings, hence many of the policies focus on these energy uses. Apart from the use of cross-cutting instruments (e.g. energy and CO_2 taxes), reporting countries are taking action to strengthen **minimum energy performance standards (MEPS) for new buildings.** In the **commercial buildings** sub-sector, a portfolio of policies is used in the Netherlands to target energy efficiency investments; these include **tax rebates and reductions, subsidies and an energy tax** on natural gas and electricity.

30. Voluntary agreements are in place in the EU and in Switzerland in the **transport** sector. Focusing on vehicle manufacturers, the EU-wide climate-specific measure in place since 1997 is the EU VA with car manufacturers from EU, Japan and Korea to reduce average CO_2 emissions of newly sold

petrol cars to 140 g/km and diesel cars to 120 g/km by 2008–2009 (roughly a 25 per cent reduction compared with EU average levels in the mid-1990s).

31. In addition to the overarching measures, many EU member States have advanced broad portfolios of measures intended to limit congestion and vehicle use as well as to encourage purchase of "green" vehicles running on biofuels or ethanol fuel mixes. Measures for the latter **include tax exemptions for biofuels**, **differentiated registration taxes/rebates for "green" vehicles** and for company-owned vehicles.

3. Policies and measures in sectors other than energy

32. The last five years has brought some new linking of **biofuels** initiatives to policies that often cut across the agriculture, forestry and waste sector policies. This results from a growing interest in the development and use of biofuels as alternatives to fossil fuels, in particular in the transport sector but also in other sectors. Incentives and policy reforms in energy-using sectors, aiming to stimulate demand for biofuels, could significantly shape rural agricultural and forestry practices of the future.

33. Few countries report climate-specific agriculture measures (i.e. that target climate change mitigation as a main objective). However, most of the reporting European countries note a decline in agricultural GHG emissions due to **agricultural sector reforms**. This is largely a result of the reforms associated with the EU Common Agricultural Policy which are generally leading to lower numbers of livestock and less intensive agriculture, thus bringing down emissions of both nitrous oxide (N_2O) and methane (CH_4). Some reporting countries outline policies and measures in the **forestry** sector aiming to achieve an increase in the uptake of CO_2.

34. Almost all reporting countries note significant success in achieving GHG reductions through **waste** minimization and management policies, which are implemented largely for other environmental purposes. However, many countries also report climate-specific measures in this sector that aim to capture and use CH_4 from landfill sites for energy purposes. An EU framework directive has been in place since 2001 to limit the biodegradeable waste going into landfills, which in turn leads to lower CH_4 emissions.

35. **Emissions from industrial processes** account for 6.5 per cent of reported Annex I Parties' emissions in 2003 with a significant drop (26 per cent) in this sector since 1990 (Figure 4). The emissions include CO_2 from cement production, N_2O from adipic acid and nitric acid production and fluorinated gases (sulphur hexafluoride (SF_6), perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs)) from a variety of industrial sources. The introduction of effective abatement techniques, particularly for N_2O, has helped reduce industrial process emissions since 1990. Given the high potency of the fluorinated gases, small changes in their release can make a big difference to the atmosphere and to GHG emission reduction (accounted for in carbon dioxide equivalent (CO_2 eq.)).

36. **Voluntary agreements** are commonly used by Parties to work with industry to limit process emissions of greenhouse gases. Switzerland and Japan (for fluorinated gases), as well as the Netherlands, Belgium, Norway (for fluorinated gases and N_2O) report on using these agreements to significantly curb emissions from this sector.

37. Reporting Parties outlined their progress in mitigating GHG between 2008 and 2012 and to moving towards achieving their Kyoto targets as a result of existing policy frameworks and specific policies and measures targeting climate change. A few of them reported on their **national targets and objectives that go beyond the Kyoto target**. These targets and objectives aim to guide climate policies to achieve long-term solutions for climate change by providing longer-term policy signals to stimulate business investment in climate-friendly technologies and processes.

D. Participation in the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol and use of land use, land-use change and forestry activities

38. Many Parties reported on their plans to use the **Kyoto mechanisms**, including JI, CDM and international emissions trading under Article 17 of the Kyoto Protocol. The use of the project-based Kyoto mechanisms, CDM and JI, is seen by Parties as **a tool to achieve a dual objective:** to deliver emission reductions at a lower cost than domestic measures and to contribute to the international cooperation on climate change mitigation. CDM is also seen as a tool to contribute to sustainable development in developing countries.

39. Many Parties have already put in place the relevant **legislative arrangements** to make the use of the Kyoto mechanisms operational (Austria, Belgium, the Czech Republic, Denmark, Finland, Germany, Italy, the Netherlands, Spain, Sweden and the United Kingdom). Although the United Kingdom expects to meet its commitments with measures currently implemented, it recognizes the importance of the Kyoto mechanisms not only for the first, but also for the subsequent commitment periods and the need for an institutional and accounting framework to facilitate the use of such mechanisms. The United Kingdom led the development of a technical software tool to help create a national emissions registry and as of the beginning of 2006 this tool was licensed in 16 countries in addition to the United Kingdom.

40. Many Parties have already allocated **responsibilities for the management of the Kyoto mechanisms among various institutions and many of them have already designated a national authority** to deal with the implementation of these mechanisms. Some Parties, for example the Netherlands, put their national registries online at the beginning of 2006. Thus, with few exceptions, Parties **are advancing their effort to establish their national registries** as a basic requirement to make transfers and acquisitions of Kyoto units.

41. Most of the non-EIT Annex I Parties have also concluded specific agreements to implement both JI and CDM. This includes having **planned and allocated financial resources** for acquisition of emission credits from these mechanisms.[4] Estimates on the use of credits generated through CDM and JI to achieve Kyoto commitments vary widely among non-EIT Annex I Parties. The European Community estimates that it will use credits amounting to 100 Mt CO_2 eq. annually and report that currently allocated financial resources total around EUR 2.7 billion over the five-year commitment period. Table 1 provides a summary of the planned use of Kyoto units and allocated financial resources as reported by Parties.

42. At the international level, most of the Annex I Parties have supported the setting up of **regional and global carbon funds and facilities** to acquire carbon credits through CDM and JI. Examples include the Prototype Carbon Fund and the Pan-European Carbon Fund of the World Bank, CDCF and the European Carbon Fund as well as the Baltic Sea Region Energy Cooperation facility for JI.

43. Parties are at **different stages of preparation for the use of JI and CDM credits** in meeting their emission reduction commitments. A few Parties expect to use such credits to meet a considerable part of their emission reduction commitments, and these countries are at an advanced stage of implementation, e.g. Japan, the Netherlands and Spain. Japan stresses the need to initiate activities relating to the utilization of the Kyoto mechanisms as early as 2005 to ensure the necessary quantity of

[4] Project-based emissions reductions resulting from project-based activities (certified emission reductions (CER) resulting from CDM, emission reduction units (ERU) resulting from JI and removal units, resulting from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol) are called "**credits**". The assigned amount units (AAU), which are a part of the overall assigned amount for a particular Party, are allocated in advance based on base year emissions and removals, and are available for trading. They are also known as "**quotas**" or "**allowances**". Altogether, allowances and credits comprise the "**Kyoto units**".

Kyoto units and the environmental quality of CDM and JI projects. Other Parties, for example Belgium, are in the process of initiating relevant activities.

Table 1. Summary of the planned use of Kyoto units and allocated financial resources

Party	Planned use of credits annually, Mt	Allocated financial resources for 2008–2012	Comments
Austria[a]	NA[b]	EUR 288 million	
Italy[a]	NA	EUR 1 320 million	
Belgium	8.5	NA	Estimate includes use of all the Kyoto mechanisms
European Community	100	EUR 2 700 million	Includes financial resources allocated by the EU member States and estimated amount of credits
Denmark	4.5	DKK 1 130 million	Financial resources are allocated for 2003–2008
Finland	2.6	NA	The Government is prepared to finance acquisition of up to 10 Mt Kyoto units between 2008 and 2012
Japan	20		Plans mainly refer to the use of credits from joint implementation and the clean development mechanism
Netherlands	20	EUR 606 million	Plans cover the use of credits from joint implementation and the clean development mechanism, and allowances under Article 17. Further domestic measures could reduce planned use of Kyoto mechanisms
Norway	10	NA	Indicated an intention to use the Kyoto mechanisms
Spain	20	EUR 205 million	The Ibero-American Climate Change Bureau Network (RIOCC) was created. Plans exist to invest in projects located in Latin America and 15 MOU have been already signed with Latin American countries and with Morocco. Largest share of funds invested in various World Bank carbon funds: Bio-Carbon Fund, Community Development Carbon Fund, and the Spanish Carbon Fund
Sweden	1	SEK 174 million	Sweden can meet its Kyoto goal without the use of the Kyoto mechanisms. Yet it has already allocated resources for the first commitment period for acquisition of Kyoto units through the Swedish International Climate Investment programme, as well as EUR 4 million in the Testing Ground Facility and EUR 10 million in the World Bank PCF

[a] Information for these Parties is taken from the reports demonstrating progress of the European Community.
[b] NA: not available.

44. Most of the **EIT Parties reported on the progress in preparing JI projects**, which in many cases builds upon the experience of the pilot phase of Activities Implemented Jointly (AIJ) under the Convention. The early experience with AIJ and JI helped Parties to build capacity to implement these projects. This includes finding ways to effectively address the administrative and financial barriers for these projects and to minimize the transaction costs, especially for small-scale JI projects. Priority areas for implementation of JI projects in EIT countries usually correspond to the areas where significant mitigation potential has been identified through national climate change programmes, including the use of renewable energy, development of energy savings in buildings and industry, utilization of landfill gas for energy and sustainable transport.

45. Estimates suggest that JI projects could result in substantial emission reductions. The Czech Republic, for example, has reported on emission savings of 0.6 Mt CO_2 eq. annually from its three projects (two AIJ and one JI). Hungary reported on emission savings of 8.7 Mt CO_2 eq. annually from its 14 approved JI projects. From the investors' side, Denmark has already contracted JI projects in EIT countries that will result in credits amounting to 2.6 Mt CO_2 eq. annually between 2008 and 2012.

46. Most countries stressed that the allocation for their emissions trading schemes, including **emissions trading under Article 17 of the Kyoto Protocol**, was yet to be decided at the beginning of 2006. EU member States are required to submit proposed national allocation plans for the Kyoto commitment period by mid-2006 and the European Commission is expected to rule on these by the end of the year. In many cases no clear distinction in terms of contribution to the Kyoto target was made between current emissions trading programmes and emissions trading by governments and legal entities under Article 17 of the Kyoto Protocol.

47. **Parties can use LULUCF activities** under Article 3, paragraph 3, of the Kyoto Protocol (afforestation, reforestation and deforestation) and can elect any or all activities under Article 3, paragraph 4, (forest management, cropland or grazing land management and re-vegetation), in meeting their Kyoto targets. Limited information was available from the national RDPs in this context, as when the reports were prepared many countries were still in the process of assessing the available information and the extent to which such activities could contribute to meeting their Kyoto target.

48. Japan, for example, plans to use around 48 Mt CO_2 net removals resulting from forest management activities, which accounts for 3.9 per cent of its base year emissions. Switzerland plans to use net removals from LULUCF of up to 1.8 Mt CO_2 in case emissions in the first commitment period are higher than the currently projected levels. The United Kingdom included emissions and removals from deforestation (0.37 Mt CO_2) under Article 3, paragraph 7, in its base year accounting. It intends to use Article 3, paragraph 3 activities and forest management activities under Article 3, paragraph 4, up to the cap established by the Marrakech Accords at 1.36 Mt CO_2 for the first commitment period. It decided not to use activities other than forest management under Article 3, paragraph 4, for its Kyoto accounting in view of the associated high uncertainties. Several Parties have not yet decided on the use of activities under Article 3, paragraph 4.

III. Reported past and projected future trends in greenhouse gas emissions

A. Introduction

49. This chapter of the report provides a synthesis of mostly quantitative information reported by Parties on their historical emission trends for the period from 1990[5] to 2003 and projections to 2010, based on latest available data from GHG inventory submissions and emission projections reported in the RDPs. The quantitative information presented in this chapter covers **27 Annex I Parties, for which emissions are summarized in the totals, including 18 non-EIT** Annex I Parties[6] **and 9 EIT Parties**[7].

50. All Parties reported on the three main GHGs: CO_2, CH_4 and N_2O. Reporting on fluorinated gases, HFCs, PFCs and SF_6 was less complete, and three Parties (Czech Republic, Estonia and Lithuania) did not provide any data on these gases.[8] As reported by Parties, the total GHG emissions referred to in this chapter do not include GHG emissions from international bunker fuels and emissions/removals from LULUCF,[9] as these sources/sinks are not covered by Article 3, paragraph 1, of the Kyoto Protocol.

51. When reporting on their projections of GHG emissions, all Parties included a "with measures" scenario for 2010. Most Annex I Parties[10] also reported "with additional measures" scenarios for 2010. A few Annex I Parties also provided additional scenarios (e. g. "without measures" scenarios for 2010, "with measures" scenarios for 2020) and projections by sector or gas.

52. In their RDP, many Annex I Parties reported on past and future emission trends in percentage numbers of their individual base year emissions in addition to information on the absolute emission levels. This approach allowed Parties to assess their own performance relative to their individual Kyoto

[5] When the 1990 value was different from the base year value, the latter was used in this analysis.
[6] These are Japan, Norway and Switzerland, plus the EU-15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.
[7] These are the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.
[8] To ensure consistency in trends, some minor gaps in reporting interpolation or previous year data were used.
[9] In two cases (Czech Republic and Denmark), where projections of total GHG included emissions and removals from LULUCF, the trend analysis was based on the totals reported by Parties.
[10] Denmark, Lithuania, Norway, Spain, Sweden, and the United Kingdom did not report a "with additional measures" scenario. In Lithuania, Sweden and the United Kingdom such a scenario was not deemed necessary as, according to their projections, they will be able to achieve their individual Kyoto targets with measures in place.

targets, which are also shown as a share of base year emissions. Hence, the trend analysis in this chapter mainly builds on percentage numbers of base year emissions for both individual and groups of Parties.

53. In order to facilitate the analysis of the progress made in GHG mitigation, the trend analysis differentiates between three consecutive time periods: **first or "pre-Kyoto" period,** from 1990 to 1997; **second or "Kyoto early action" period,** from 1997 to 2003; and **third or "Kyoto implementation" period,** from 2003 to 2010. Whereas the emissions trends for the first two periods build on inventory data, emission trends for the third period reflect projections of emission trends, taking the year 2010 as an average for the first commitment period (2008–2012).

B. Emission reduction and limitation targets under the Kyoto Protocol

54. By adopting the Kyoto Protocol, Annex I Parties agreed, according to Article 3, paragraph 1, of the Kyoto Protocol, to binding targets to reduce, individually or jointly, their aggregated GHG emissions, expressed in CO_2 eq., by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012 (also known as the "first commitment period"). Individual targets vary from reducing emissions by 8 per cent to limiting the emissions growth to 10 per cent as summarized in table 2.

Table 2. Emission reduction and limitation targets under the Kyoto Protocol

Party	Target (1990[a]–2008/2012), %
European Community[b], Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland	–8
Canada, Hungary, Japan, Poland	–6
New Zealand, Russian Federation, Ukraine	0
Norway	+1
Iceland	+10

[a] Several Parties with economies in transition (EITs) have a year other than 1990 as a base year. For Bulgaria and Poland this is 1988, for Hungary this is the average between 1995–1997 and for Romania this is 1989.

[b] The target of –8 per cent refers to EU-15 countries, see paragraph 55. All data for the European Community in this chapter refer to the group of EU-15 countries, unless indicated otherwise.

55. In addition, the 15 countries that were member States of the EU in 1997 (EU-15), when the Protocol was adopted, have reached an agreement to fulfil their commitments under Article 3 jointly in accordance with Article 4. This was reflected in a legally binding burden-sharing agreement that was deposited together with the instrument of ratification by these Parties. Under this agreement, the EU-15 countries committed themselves to reducing their emissions jointly by 8 per cent in the first commitment period compared with 1990 levels. The individual targets for each Party to this agreement range from 27 per cent to –21 per cent, as shown in table 3.

Table 3. Emission reduction and limitation targets under Article 4 of the Kyoto Protocol

Party	Target (1990–2008/2012), %
Austria	–13
Belgium	–7.5
Denmark	–21
Finland	0
France	0
Germany	–21
Greece	25
Italy	–6.5
Ireland	13
Luxemburg	–28
Portugal	27
Netherlands	-6
Spain	15
Sweden	4
United Kingdom	–12.5

C. Past emission trends

56. Total aggregated GHG emissions (excluding LULUCF) of reporting Annex I Parties decreased by 6.4 per cent between the base year and 2003 (see figure 1). The decrease resulted mainly from a strong decline in emissions (of 35.5 per cent) from EIT Parties, whereas emissions from non-EIT Annex I Parties increased slightly (by 0.6 per cent). For individual countries, observed changes in total emissions varied between a decrease of 66.2 per cent (Lithuania) and an increase of 40.6 per cent (Spain, see figure 2). Total emissions for both EIT and non-EIT Annex I Parties show a peak of GHG emissions in 1996, with decreasing trends thereafter. Between 2002 and 2003, however, emissions of both EIT and non-EIT Annex I Parties increased (by 1.9 and 1.2 per cent, respectively).

Figure 1. Trends in aggregated GHG emissions for 27 reporting Parties (in per cent of base year emissions)

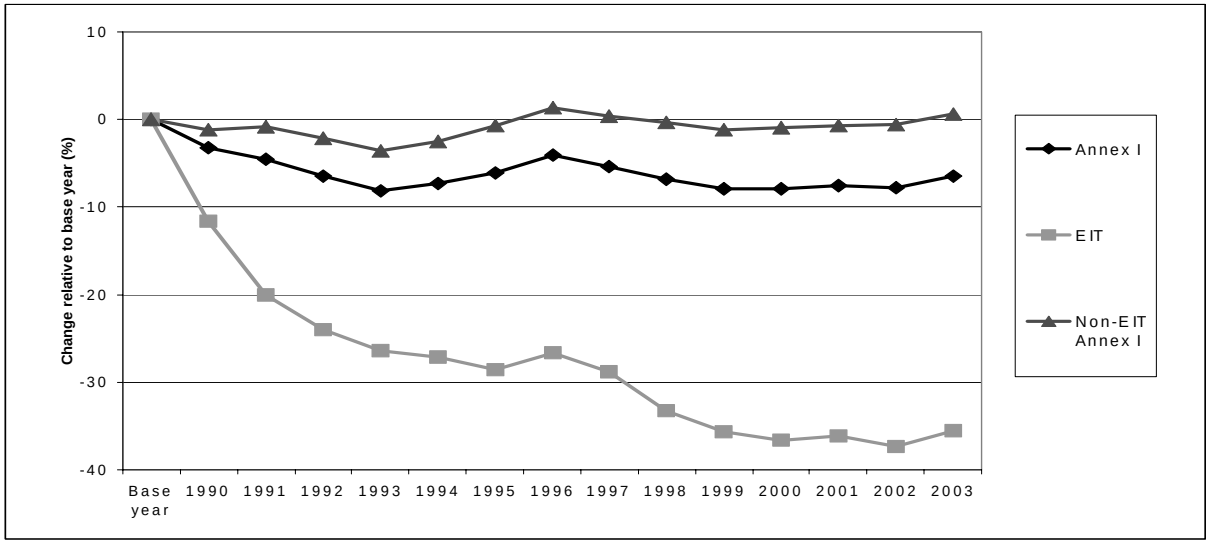
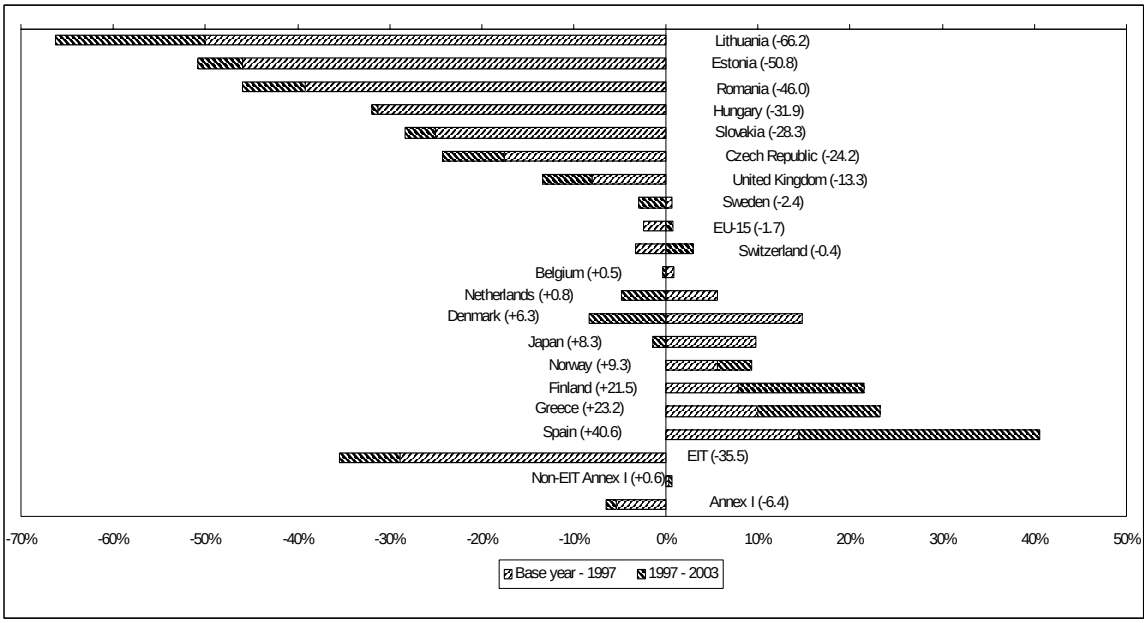


Figure 2. Relative changes in aggregated GHG emissions by Party between base year and 2003 (in per cent of base year emissions)



57. Most of the overall decrease in total aggregated emissions occurred prior to 1997, when these emissions had decreased by 5.4 per cent compared with the base year, whereas there was an increase of 1.6 per cent in these emissions after 1999. During the "pre-Kyoto" period, total emissions in EIT countries reduced considerably (by 28.8 per cent), whereas those from non-EIT Annex I Parties increased slightly (by 0.3 per cent). Between 1997 and 2003, the pace of reduction in aggregated emissions from Annex I Parties slowed down (to a decrease of 1.1 per cent of total base year emissions), following the slowing down of the reduction trend in emissions of EIT countries (to –6.7 per cent). In non-EIT Annex I Parties, the emission trend continued to increase slightly (by 0.3 per cent).

58. Five Parties (Belgium, Denmark, Japan, the Netherlands and Sweden) observed a reverse in trend from increasing emissions during the "pre-Kyoto" period towards decreasing emissions during the "early action" period, which could be explained in part by the implementation of effective policies and measures (see chapter II). In contrast, the European Community and Switzerland reported a reverse in trend from decreasing trends during the first period (–2.4 per cent and -3.4 per cent, respectively) towards increasing emissions during the second period (0.7 per cent and 3.0 per cent, respectively), partly due to significant increases in emissions in the last reporting year (2003). The United Kingdom reported a steady decrease in emissions over time (first period: -8.0 per cent, second period: –5.3 per cent). The growth in emissions of three countries (Finland, Greece and Spain) accelerated considerably during the second half of the reporting period.

59. **CO_2 emissions formed the main share of total GHG emissions in 2003** (84.8 per cent, see figure 3). Historical trends of CO_2 emissions of Annex I Parties show a slight decline (1.9 per cent) since the base year. Emissions of CH_4 and N_2O dropped considerably (by 29.7 per cent and 21.6 per cent, respectively) between the base year and 2003, partly as a result of effective policies and measures in the agriculture and waste sectors. Hence, these gases reduced their shares in total emissions (CH_4 from 9.3 to 7.0 per cent; N_2O from 8.0 to 6.7 per cent) between the base year and 2003. During this period, fluorinated gases contributed only a small share (less than 2 per cent). Within this group of gases, HFC emissions grew as a result of the substitution of ozone-depleting substances, while the drop in PFC and SF_6 emissions spurred on the overall decline in emissions of fluorinated gases (of 22.9 per cent).[11]

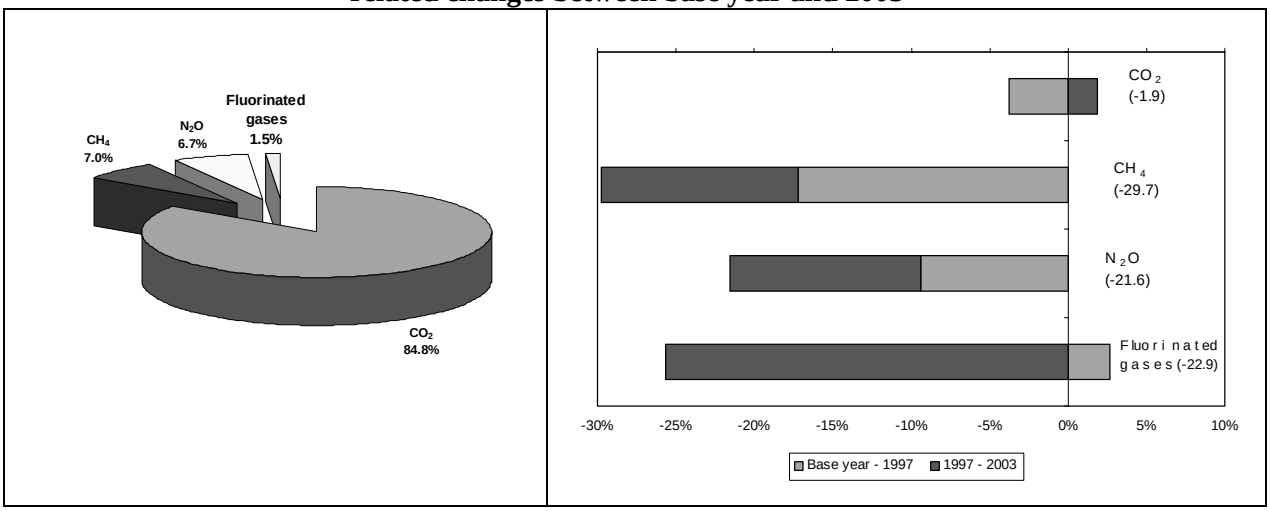
60. **Strong growth in GHG emissions from transport (by 22.8 per cent), in contrast to decreasing emissions in most other sectors, noticeably changed the share of individual sectors in total GHG emissions between the base year and 2003 (**see figure 4**)**. The contribution of transport grew from one in every seven tonnes of GHG in the base year to one in every five tonnes of GHG in 2003. There was a marked decrease in emissions from non-energy sectors (agriculture, industrial processes[12] and waste), as well as in the energy-related sectors (energy industries[13] and energy use in industries) with the exception of energy use in other sectors (residential, commercial and institutional).

61. Within the energy sector, Annex I Parties' emissions from **energy industries** decreased by 12.4 per cent during the first period, mainly owing to a drop in emissions from EIT Parties (by 29.0 per cent), as well as a decrease in emissions from non-EIT Annex I Parties (by 5.9 per cent; see table 4),

[11] Emissions of fluorinated gases from Annex I Parties (excluding Japan) increased by 27.9 per cent between 1990 and 1997 (in per cent of 1990 values). However, owing to the flexibility given by Article 3, paragraph 8, of the Kyoto Protocol, 1997 emissions of fluorinated gases were 2.1 per cent above the base year emissions (in per cent of base year values). Hence, the use of Article 3, paragraph 8, helped some Parties to get closer to their Kyoto target.
[12] Emissions from solvents and other product use are included under industrial processes.
[13] Fugitive emissions from fuels are included under energy industries.

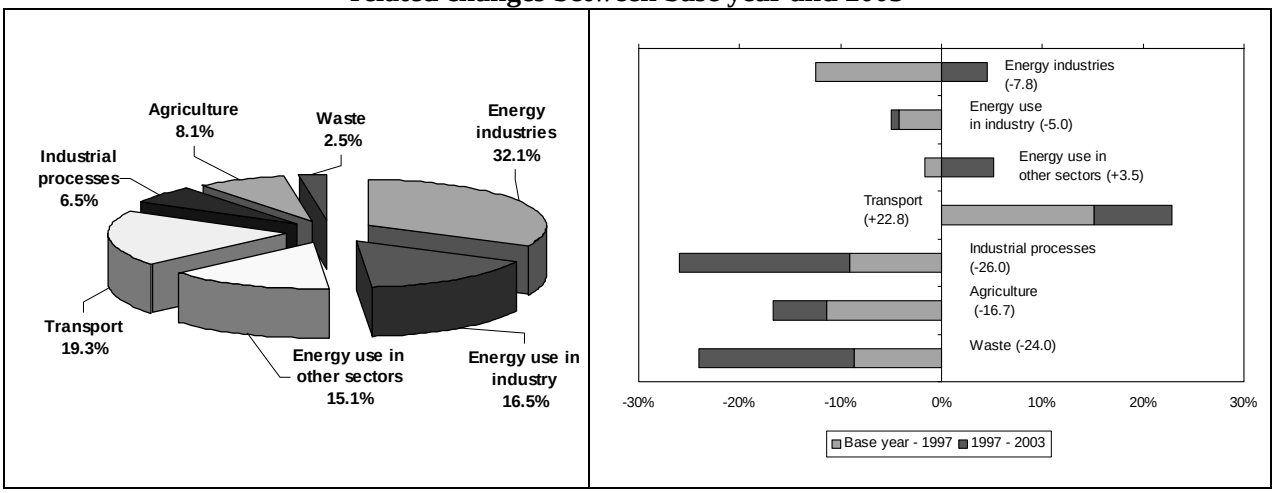
which resulted mainly from fuel shifts from coal to gas in some countries.[14] The second period saw a reverse in trend towards an increase in non-EIT Annex I Parties' emissions (by 9.6 per cent), whereas the reduction in emissions from EIT Parties slowed down (to a decrease of 8.4 per cent).

Figure 3. Shares in total GHG emissions by gas for 2003 for 27 reporting Parties and related changes between base year and 2003[a]



[a] Right-hand graphic: numbers shown in percentage of base year emissions.

Figure 4. Shares in total GHG emissions by sector for 2003 for 27 reporting Parties and related changes between base year and 2003[a]



[a] Right-hand graphic: numbers shown in percentage of base year emissions.

62. Emissions from **energy use in industry** decreased by 4.2 per cent during the first period, owing mainly to a decrease in emissions from EIT Parties (by 30.4 per cent), as well as some fuel switching and energy efficiency gains in non-EIT Annex I Parties.[15] The second period saw a strong reverse in trend towards an increase in emissions from EIT Parties (by 28.3 per cent), due to economic recovery, whereas the reduction trend in non-EIT Annex I Parties accelerated (to –4.6 per cent).

[14] This decrease in emissions from non-EIT Annex I Parties results mainly from two factors: economic restructuring in eastern Germany and the shift in primary energy supply from coal to gas in the United Kingdom (see in-depth review pf the Third National Communication of the European Community). The effects of both are somewhat similar to those observed during the economic restructuring process in EIT countries. Greece also reported a considerable shift from coal to gas.

[15] See footnote 14.

Table 4. Past emission trends by sector for 27 reporting Parties (in per cent of base year emissions)

Sector	Base year–2003			Base year–1997			1997–2003		
	Annex I	EIT	Non-EIT Annex I	Annex I	EIT	Non-EIT Annex I	Annex I	EIT	Non-EIT Annex I
Energy industries	–7.8	–37.4	3.7	–12.4	–29.0	–5.9	4.6	–8.4	9.6
Energy use in industry	–5.0	–2.1	–5.4	–4.2	–30.4	–0.8	–0.8	28.3	–4.6
Transport	22.8	22.4	22.8	15.1	7.8	15.7	7.7	14.6	7.2
Energy use in other sectors	3.5	24.1	1.3	–1.6	–36.0	2.0	5.2	60.1	–0.7
Industrial processes	–26.0	–40.2	–23.1	–9.1	–44.4	–1.8	–16.9	4.2	–21.3
Agriculture	–16.7	–43.6	–10.6	–11.3	–40.4	–4.7	–5.4	–3.2	–5.9
Waste	–24.0	–29.8	–22.6	–8.6	–19.5	–5.9	–15.4	–10.3	–16.7
Total	**–6.4**	**–35.5**	**0.6**	**–5.4**	**–28.8**	**0.3**	**–1.1**	**–6.7**	**0.3**

63. Emissions from **transport** increased in both EIT (by 7.8 per cent) and non-EIT Annex I Parties (by 15.7 per cent) during the first period, mainly owing to increases in transport activity. The slowdown in transport emission growth in non-EIT Annex I Parties during the second period (to 7.2 per cent) is mainly due to decreasing emissions trends in Japan (by 3.9 per cent) and a slowdown of sector emission growth in the EU-15 countries.[16] However, accelerated growth in transport emissions in other non-EIT Annex I Parties (e.g. Finland, Greece and Spain) outweighed (in absolute terms) these reductions. In contrast to the non-EIT Annex I Parties, transport emissions in EIT Parties accelerated their growth (to 14.6 per cent) during the second period.

64. Emissions from **energy use in other sectors,** including residential, commercial and institutional sectors, declined by 1.6 per cent during the first period, with emission reductions in EIT Parties (by 36.0 per cent) compensating in absolute terms for emission increases in non-EIT Annex I Parties (by 2.0 per cent). The second period saw a reverse in trend towards a significant increase in emissions from EIT Parties (by 60.1 per cent) that was only partly compensated by a decreasing trend (of 0.7 per cent) in non-EIT Annex I Parties.

65. Within the **non-energy sectors,** emissions from EIT Parties dropped sharply during the first period, with decreases ranging from 19.5 per cent (waste) to 44.4 per cent (industrial processes) (see table 4). The second period saw a slowing of the reduction trend in these sectors, with changes ranging from –3.2 per cent (agriculture) to –10.3 per cent (waste). One exception is emissions from industrial processes which grew slightly in this second period (by 4.2 per cent). Non-EIT Annex I Parties observed a reduction trend in all non-energy sectors during the first period, yet to a much lesser extent when compared with EIT Parties, with decreases ranging from –1.8 per cent (industrial processes) to –5.9 per cent (waste). The second period saw an even stronger decreasing trend in all non-energy sectors in non-EIT Annex I Parties, with decreases ranging from –5.9 per cent (agriculture) to –21.3 per cent (industrial processes).[17] This could be explained at least in part by the implementation of effective policies and measures.

66. A summary of the information on past and projected emissions reported by Parties is provided in tables 5 and 6. According to this information, **total aggregated GHG emissions (excluding LULUCF) of**

[16] In both Germany and Japan, transport emissions peaked in 1999, and continuously decreased thereafter, by 10.4 and 4.1 per cent, respectively (in percentage of base year emissions from transport).

[17] Owing to partially incomplete and largely incomparable reporting (LUCF and LULUCF, reported high uncertainty), as well as the complex accounting rules under the Kyoto Protocol (Article 3, paragraphs 3, 4 and 7), GHG emissions and removals from this sector were not taken into account in this trend analysis. For an overview on planned LULUCF activities under Article 3, paragraphs 3 and 4, see section IV.

reporting Annex I Parties decreased by 6.4 per cent between the base year and 2003, which is about 1 per cent above the Kyoto target levels for the first commitment period for these Parties as a group.[18]

D. Projected greenhouse gas emissions

1. Projections under "with measures" scenarios

67. Total GHG emissions of reporting Annex I Parties were 6.4 per cent below base year levels in 2003 and, with current policies and measures, are projected to be 4.1 per cent below base year levels in 2010. Emissions from EIT Parties are projected to be 22.3 per cent below these levels, whereas emissions from non-EIT Annex I Parties are projected to be 0.3 per cent above these levels in 2010.

68. All six reporting EIT Parties are projected to meet their individual Kyoto targets with current policies and measures (see table 5). Most of the EIT Parties reported a strong decrease of emissions (by 17.6 to 50.0 per cent) during the first period, mainly due to the economic restructuring process. But also during the second period, GHG emissions from these countries continued to decrease (by 0.6 to 16.2 per cent), in spite of economic growth. For the third period, four EIT Parties (Hungary, Lithuania, Romania and Slovakia) project a reverse in trend from falling towards rising GHG emissions (by 3.2 to 25.0 per cent) during the third period.

Table 5. Past and projected total emissions by Party under "with measures" scenarios (in per cent of base year emissions)

Party	Past emission trends (%)			Projected emission trends (%)		KP target (%)
	Base year–2003	Base year–1997	1997–2003	2003–2010[a]	Base year–2010[b]	Base year–2008/12
Belgium	0.5	0.9	–0.3	0.6	1.2	–7.5
Czech Republic	–24.2	–17.6	–6.7	–1.5	–25.7	–8.0
Denmark	6.3	14.7	–8.4	–2.5	3.9	–21.0
Estonia	–50.8	–45.9	–4.9	–5.8	–56.6	–8.0
European Community[c]	–1.7	–2.4	0.7	0.1	–1.6	–8.0
Finland	21.5	7.9	13.6	–11.6	9.9	0.0
Greece	23.2	10.0	13.2	11.4	34.7	25.0
Hungary	–31.9	–31.3	–0.6	3.2	–28.7	–6.0
Japan	8.3	9.7	–1.5	–2.3	6.0	–6.0
Lithuania	–66.2	–50.0	–16.2	25.0	–41.2	–8.0
Netherlands	0.8	5.6	–4.8	0.4	1.3	–6.0
Norway	9.3	5.6	3.7	14.1	23.4	1.0
Romania	–46.0	–39.1	–6.9	6.3	–39.7	–8.0
Slovakia	–28.3	–25.1	–3.2	7.8	–20.4	–8.0
Spain	40.6	14.5	26.1	10.7	51.3	15.0
Sweden	–2.4	0.6	–3.0	1.5	–1.0	4.0
Switzerland	–0.4	–3.4	3.0	–2.8	–3.2	–8.0
United Kingdom	–13.3	–8.0	–5.3	–6.0	–19.4	–12.5

[a] The projected emission trend for the period 2003–2010 was calculated as the difference of the projected emission trend for the period Base year–2010 and the past emission trend for the period Base year–2003.
[b] For some Parties, absolute base year values used for projections differ slightly from those for inventories. However, this does not necessarily have an impact on the projected emission trend.
[c] Data for the European Community cover the EU-15 countries.

69. Within the group of non-EIT Annex I Parties, only the United Kingdom and Sweden are projected to meet their individual Kyoto targets with current policies and measures. The United Kingdom reported a steady decline in emissions of 5.3 to 8.0 per cent for the three periods, totalling 19.4 per cent for the entire period 1990–2010. Sweden reported slightly increasing emissions for the first and third periods (by 0.6 and 1.5 per cent, respectively) and a decrease (of 3.0 per cent) during the second period.

[18] Under the Kyoto Protocol, Annex I Parties covered in this report have to reduce their total GHG emissions by 7.4 per cent of their base year emissions (calculated on the basis of their individual base year emissions and quantified emission reduction commitments).

70. The European Community reported a decrease in emissions for the **EU-15 countries** during the first period (by 2.4 per cent), followed by slight increases in emissions during the second and third periods (by 0.7 and 0.1 per cent, respectively) with current policies and measures. However, within the EU-15 countries, **Greece** and **Spain** reported a significant and continuous growth in emissions over the first period (by 10.0 and 14.5 per cent, respectively) and second period (by 13.2 and 26.1 per cent, respectively), largely reflecting their economic growth between 1990 and 2003. These two countries project a change in trend towards reduced growth of emissions (down to 11.4 and 10.7 per cent, respectively) under a "with measures scenario" for the third period.

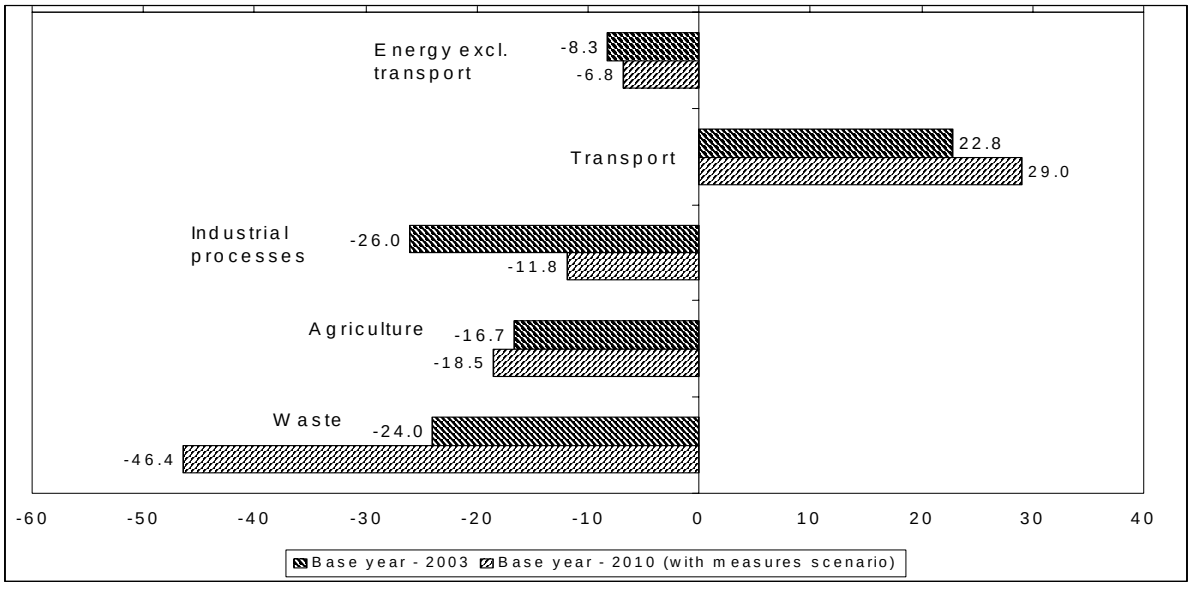
71. **Finland** and **Switzerland** projected a reverse in trend from rising emissions during the second period (by 13.6 and 3.0 per cent, respectively) towards falling GHG emissions (by 11.6 and 2.8 per cent, respectively) in the third period with current policies and measures in place. **Denmark** reported a slower decline in emissions (from 8.4 per cent during the second period to 2.5 per cent during the third period) with current policies and measures.

72. **Belgium** and the **Netherlands** projected a reverse in trend from declining emissions during the second period (by 0.3 and 4.8 per cent, respectively) towards rising GHG emissions (by 0.6 and 0.4 per cent, respectively) during the third period. **Norway** reported an accelerated increase in emissions (from 3.7 per cent during the second period to 14.1 per cent during the third period) with current policies and measures.

73. After a strong growth during the pre-Kyoto period (of 9.7 per cent), GHG emissions in **Japan** have already decreased (by 1.5 per cent) in the second period. This decrease is projected to continue and even accelerate during the third period (to –2.3 per cent) with current policies and measures.

74. **Projected emission trends by sector** of reporting Annex I Parties under "with measures" scenarios for 2010 show a pattern that is similar to the past trends: an increase in emissions from transport, and a decline in emissions in all other sectors (see figure 5). While emissions from agriculture and waste are projected to decrease even further between 2003 and 2010 compared with the past trend, emissions from energy (excluding transport) and industrial processes are projected to increase with current policies and measures and thus partly offset the decline achieved between base year and 2003.

Figure 5. Past and projected changes in GHG emissions by sector for 27 reporting Parties (in per cent of base year emissions)



2. Projections under "with additional measures" scenarios

75. With additional policies and measures, total GHG emissions of reporting Annex I Parties are projected to be about 9.6 per cent below base year levels in 2010. In addition to the eight Parties meeting their Kyoto targets under "with measures" scenarios (see paragraphs 68 and 69), two more Parties, Finland and Greece, are projected to meet their individual Kyoto targets with additional policies and measures (see table 6). Denmark, Norway and Spain did not provide a "with additional measures" scenario, in spite of a significant difference between their "with measures" scenario levels and the Kyoto target levels (of 22.4 to 36.3 per cent). However, Norway and Spain indicated that they may introduce additional measures (table 8).

Table 6. Past and projected total emissions by Party under "with additional measures" scenarios (in per cent of base year emissions)

Party	Past emission trends (%)			Projected emission trends (%)		KP target (%)
	Base year–2003	Base year–1997	1997–2003	2003–2010[a]	Base year–2010[b]	Base year–2008/12
Belgium	0.5	0.9	–0.3	–1.3	–0.7	–7.5
Czech Republic	–24.2	–17.6	–6.7	–3.9	–28.1	–8.0
Estonia	–50.8	–45.9	–4.9	–9.2	–60.0	–8.0
European Community[c]	–1.7	–2.4	0.7	–5.1	–6.8	–8.0
Finland	21.5	7.9	13.6	–24.0	–2.5	0.0
Greece	23.2	10.0	13.2	1.7	24.9	25.0
Hungary	–31.9	–31.3	–0.6	1.8	–30.2	–6.0
Japan	8.3	9.7	–1.5	–8.7	–0.5	–6.0
Netherlands	0.8	5.6	–4.8	–2.1	–1.3	–6.0
Norway	9.3	5.6	3.7	12.0	21.3	1.0
Romania	–46.0	–39.1	–6.9	4.1	–41.9	–8.0
Slovakia	–28.3	–25.1	–3.2	5.4	–22.9	–8.0
Switzerland	–0.4	–3.4	3.0	–5.3	–5.7	–8.0

[a] The projected emission trend for the period 2003–2010 was calculated as the difference of the projected emission trend for the period Base year–2010 and the past emission trend for the period Base year–2003.

[b] For some Parties, absolute base year values used for projections differ slightly from those for inventories. However, this does not necessarily have an impact on the projected emission trend.

[c] Data for the European Community cover the EU-15 countries.

76. In particular, **Finland** projected a reverse in trend from rising emissions during the second period (by 13.6 per cent) towards falling GHG emissions (by 24 per cent) with additional policies and measures. Projections for GHG emissions from **Greece** are also based on a major change in trend towards reduced growth of emissions (from 13.2 per cent during the second period to only 1.7 per cent during the third period) under a "with additional measures" scenario.

77. In addition, few other non-EIT Annex I Parties, such as the European Community and Japan, projected a strong move towards achieving their individual Kyoto targets, with a considerably reduced distance to target, through the implementation of additional measures. The **European Community** reported a shift in trend from rising emissions in the second period by 0.7 towards falling GHG emissions by 5.1 for the third period. **Japan** projected an accelerated emission reduction by 8.7 per cent during the third period with additional measures in place compared to the reduction by 1.5 per cent only during the second period.

78. The Czech Republic and the Netherlands, reported a reduced decline in emissions (e.g. **the Netherlands** reported decline of 4.8 per cent during the second period and 2.1 per cent during third period) even with additional policies and measures in place. **Hungary, Romania and Slovakia** reported a change in trend from reducing emissions during the second period to increasing emissions during the third period.

IV. Evaluation of the aggregated effect of domestic policies and measures and their contribution to emission mitigation

A. Evaluation of the aggregated effect of implemented policies and measures

79. A summary of the estimates of effects from implemented policies and measures is provided in table 7. Effects are presented on an annual basis and the effects for 2010 reflect the average annual effect for the first commitment period. These estimates were obtained either as the difference between the "with measures" and "without measures" scenarios, or as expert estimates of the effects of individual policies and measures taking into account potential overlaps and synergies. Only Denmark, the Netherlands, Switzerland, Sweden and the United Kingdom provided ex-post evaluation of the effects of policies and measures for the years before 2005. However, this evaluation did not necessarily cover the effect of all implemented measures.

Table 7. Total effect of implemented policies and measures, estimated for 2005 and projected for 2010 by Party

Party	Base year emissions	Total effect of implemented policies in 2005		Total effect of implemented policies in 2010	
	Mt CO_2 eq.	Mt CO_2 eq.	% of base year emissions	Mt CO_2 eq.	% of base year emissions
Belgium	146.8	NA[a]	NA	9.8	6.7
Czech Republic	192.0	10	5.0	12.6	6.6
Denmark	69.6	16.7[b]	24.0	15.6–20.7	22.0–29.0
European Community[c]	5150.0	NA	NA	420.0–490.0	10.0–12.0
Greece	109.4	NA	NA	10.9	10.0
Hungary	122.2	NA	NA	NA	NA
Estonia	42.6	0.05	0.1	0.05	0.1
Finland	71.5	0.8	1.1	15.0-17.0	21.0–24.0
Japan	1237.0	NA	NA	NA	NA
Lithuania	50.9	4.5	8.8	5.1	10.0
Netherlands	213.0	12.0[c]	5.7	21.0–22.0	10.0
Norway	50.1	7.4–10.0	15.0–20.0	8.5–11.0	17.0–22.0
Romania	265.1	3.7	1.4	4.0	1.5
Slovakia	69.6	0.1	0.1	1.1	1.6
Spain	288.4	11.7	4.0	58.8	24.0
Sweden	72.2	8.5–10.2	14.5-17	17.0	21.0
Switzerland	52.4	2.8	5.3	2.2	4.2
United Kingdom	768.0	238.0[e]	30.0	62.0	8.0

[a] NA: not available

[b] This estimate of effects was provided by Denmark for 2001.

[c] The estimates of effects from measures for the European Community include measures implemented in all 23 member States that are also Annex I Parties. For the group of the EU-15 countries only the emissions in the base year were reported at 4145 Mt CO_2 eq.

[d] The estimates of effects for the Netherlands are for measures implemented since 2000. Estimates of effects of policies implemented before 2000 amounting to 26 Mt are included in the baseline scenario (see paragraph 80).

[e] The effects reported in the column for 2005 for the United Kingdom reflect estimates of effects in 2004 of all measures implemented since 1990. This includes energy efficiency and fuel switching being driven initially by objectives other than climate change. Since the effects of 62 Mt CO_2 eq. in 2010 are mostly those stemming from the 2000 United Kingdom Climate Change Programme, the overall effects should be much higher than this number if the effects of all measures implemented since 1990 would have been considered.

1. Estimated effects of policies and measures in 2005

80. Most of the non-EIT Annex I Parties provided estimates of the effects of their policies and measures achieved by 2005. Denmark, the Netherlands, Norway, Sweden and the United Kingdom are among those countries reporting the most substantial effects of policies and measures to date. The United Kingdom estimates emission reductions in 2004 of 238 Mt CO_2 eq., or 30 per cent of the base year levels. Denmark reports emissions reductions in 2001 amounting to 16.7 Mt CO_2 eq. or 24 per cent of the base year emissions. The Netherlands estimated reductions of 38 Mt CO_2 eq. in 2005, including the effects of policies implemented before 2000 of 26 Mt CO_2 eq. (included in the base-line scenario) and effects from policies implemented since 2000 of 12 Mt CO_2 eq. In total, estimated reductions reported by the Netherlands in 2005 equal 18 per cent of the base year emissions.

81. **In Sweden and the United Kingdom, policies already implemented have been sufficient to stabilize and reduce emissions**, despite strong economic growth. For the other Parties, except a few EIT Parties emissions, continue to grow, although at a slower pace than would be the case if no such policies had been implemented.

82. **Almost all EIT Parties assessed the effect of the policies and measures** implemented in the pre-Kyoto and early action period on their 2005 emissions (except Hungary). Many climate-relevant policies in the EIT countries implemented in the 1990s were driven by considerations other than climate change, such as improving economic performance and competitiveness through liberalization and privatization. Yet these measures helped these Parties to considerably reduce their emissions.

2. Estimated effects of policies and measures in 2010

83. Almost all Parties provided **estimates of the effects of the policies and measures implemented at the pre-Kyoto and early action period on the emission levels in 2010**. As a rule, Parties projected an overall increase in the effect of the implemented policies and measures over time. The Netherlands, for example, expects the effect of policies and measures implemented since 2000 to almost double between 2005 and 2010, from 12 Mt CO_2 eq. to 22 Mt CO_2 eq. The same holds true for Finland and Sweden.

84. The overall increase in the magnitude of the impact of implemented policies and measures shows some important dynamics, such as changes in the proportion of emission savings expected from policies targeting CO_2 and non-CO_2 gases in different sectors. In the Netherlands, for example, in 2005 the contribution of emission reductions stemming from CO_2 and non- CO_2 emissions to the overall emission reduction was approximately the same. In longer term, however, between 2010 and 2020, the impact from the package of policies aimed at reductions of non- CO_2 emissions, including economic incentives, is expected to decline as the market price of CO_2 allowances becomes the main driver to stimulate investments in CO_2 savings, mainly from energy efficiency by companies covered by the EU ETS.

85. A similar effect is expected from the United Kingdom Climate Change Programme (CCP), which was launched in 2000 with the objective of helping the United Kingdom to meet and even go beyond its Kyoto target of 12.5 per cent emission reduction in the first commitment period. The programme is expected to deliver annual savings of CO_2 emissions of 55 Mt by 2010. Savings of non-CO_2 emissions resulting mainly from measures targeting fluorinated gases and voluntary agreements with the industry are expected to reach 7 Mt CO_2 eq.

B. Evaluation of the projected aggregated effects of additional policies and measures

86. Many Parties that may not meet their Kyoto targets with existing measures noted their determination to attain their targets and to take further action in the context of their existing national programmes, or to launch new measures and programmes. Belgium, for example, stressed that it is determined to take further action with the new phase of its Climate Action Plan. Norway has plans for implementing additional measures, including a revised national emissions trading scheme for 2008–2012 period. Spain indicated its plans to develop a comprehensive package of additional measures to facilitate achieving of its Kyoto target in addition to the planned use of Kyoto mechanisms. Although the United Kingdom expects to meet the Kyoto target with the current measures, it envisages additional policies being introduced as a result of the 2005 review of its 2000 CCP.[19]

87. Although all EIT Parties expect to meet the Kyoto targets with the implemented measures, most of them noted their plans to launch additional measures. These measures targeted energy efficiency improvements and the promotion of renewable energy. They also targeted emissions from transport,

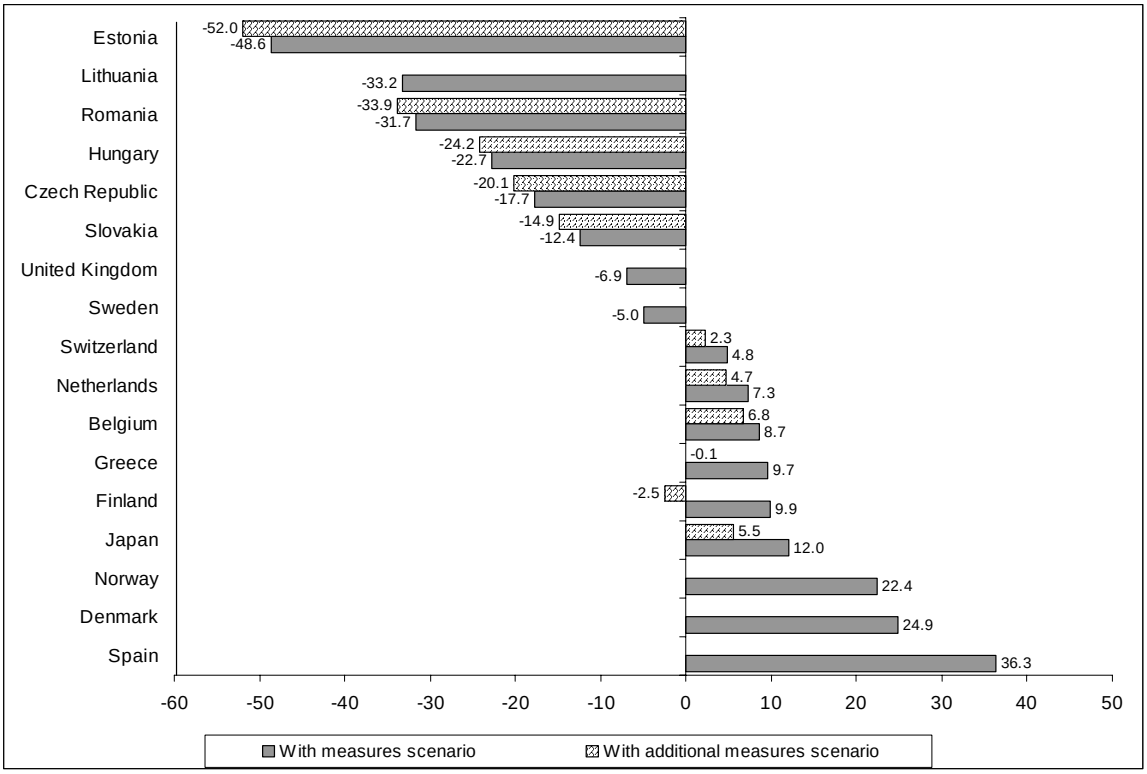
[19] These results were not available at the time of the publication of the United Kingdom's RDP.

which appears timely and necessary given the fast growth of these emissions as a result of economic and behavioural changes. A summary of the estimated effects from additional measures of reporting non-EIT Annex I Parties is provided in table 8.

88. Figures 6 and 7 illustrate the difference between emission projections for 2010 (as an average of projected emissions for the first commitment period) for "with measures" and "with additional measures" scenarios for individual Parties and for groups of Parties respectively. For the European Community (EU-15 countries), additional measures are expected to bring the emissions very close to but slightly above the Kyoto target (1.2 per cent). The same holds true for the reporting non-EIT Annex I Parties.

Figure 6. Difference between emission projections for 2010 for "with measures" and "with additional measures" scenarios and the Kyoto target for individual Parties

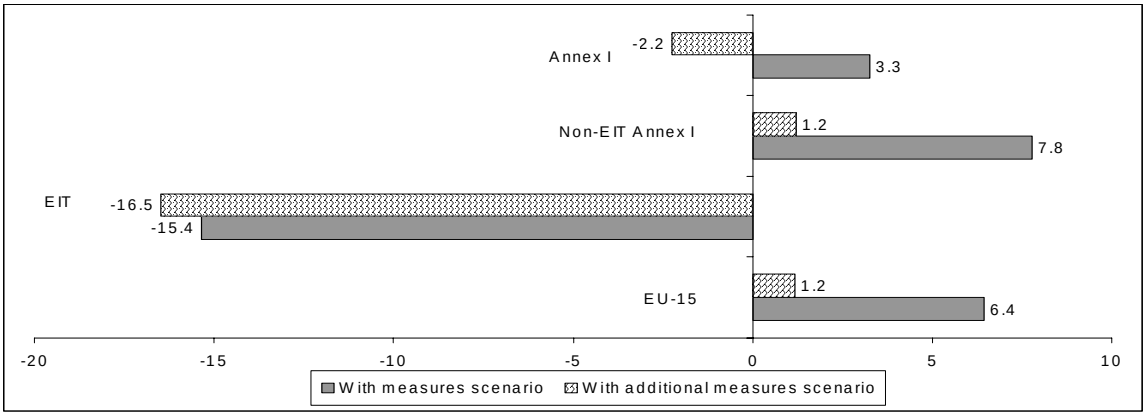
(in per cent of base year emissions)



89. Figure 6 illustrates that in two of the countries that implemented comprehensive packages of policies and measures to mitigate climate change, the effects of these policies is estimated to be sufficient to offset emission growth and to enable them to meet the Kyoto targets. These are **the United Kingdom and Sweden**. Also, **all EIT Parties expect to meet their Kyoto targets with existing policies and measures**. Although this is to a large extent a result of economic restructuring in the 1990s, implementation of the EU regulation and legislation gave an added impetus towards emission mitigation in these countries.

90. Additional measures are expected to bring emissions closer to the Kyoto targets in all Parties that envisage such measures. In several Parties, including Finland, Greece, Japan and Spain, additional measures are expected to bring substantial emissions reductions. **In Finland and Greece the additional measures are expected to be sufficient to meet the Kyoto target**, although for Greece the scope and coverage of these measures remain somewhat unclear.

Figure 7. Difference between emission projections for 2010 for "with measures" and "with additional measures" scenarios and the Kyoto target for groups of Parties (in per cent of base year emissions)



C. Use of the Kyoto mechanisms and land use, land-use change and forestry activities

91. Many Parties, including Austria, Belgium, the Czech Republic, Denmark, the European Community, Estonia, Finland, Germany, Greece, Italy, Japan, the Netherlands, Romania, Slovakia, Spain and Sweden, have advanced their efforts in preparing for the use of the Kyoto mechanisms.[20] **For nine of these Parties, Belgium, Denmark, the European Community, Finland, Japan, the Netherlands, Norway, Spain and Switzerland, use of the Kyoto mechanisms is expected to facilitate meeting the Kyoto targets** (table 8). The EIT countries, such as Czech Republic, Estonia, Romania and Slovakia, are expected to provide an opportunity for cost-effective emission reductions, e.g. through JI. Sweden and the United Kingdom are considering their participation in the project-based Kyoto mechanisms as a way to contribute to sustainable development and to strengthening international cooperation in combating climate change.

Table 8. Contribution of additional domestic measures, Kyoto mechanisms and LULUCF activities to meeting the Kyoto target

Party	Difference between "with measures" projections in 2010 and the Kyoto target		Effect of additional measures in 2010		Acquisition of Kyoto units, per year		Effects of LULUCF activities, per year	
	Mt CO_2 eq.	% of base year emissions	Mt CO_2 eq.	% of base year emissions	Mt CO_2 eq.	% of base year emissions	Mt CO_2	% of base year emissions
Belgium	12.7	7.0	2.8	2.0	8.6	6.0	0[a]	0
Denmark	17.3	25.0	2[b]	3.0	4.5	6.5	0.3	>0
Finland	9.3	13.0	8.8	12.0	2.4	3.3	–0.9	–1.1
Greece	10.8	9.8	10.9	9.8	NA	NA	NA	NA
Japan	148.0	12.0	80	6.5	20.0	1.6	48.0	3.9
Netherlands	20	10.0	5.4[d]	2.5	20.0	9.4	NA	NA
Norway	11.2	22.0	0.75–1.25	1.5–2.5	10.0	20	0[c]	0
Spain[e]	104.6	36.3	78.7	23.7	20.0	7.0	5.8	2.0
Switzerland	2.5	5.0	1.3	2.5	1.6	3.0	<1.8	<3.4

[a] Belgium expects no net carbon sequestration from activities under Article 3, paragraph 3, of the Kyoto protocol, but did not provide estimates for other LULUCF activities.
[b] The estimate of effect of additional measures for Denmark is a preliminary. An update of this estimate is expected by the end of 2006.
[c] Owing to uncertainties, Norway did not include effects of Article 3, paragraph 3, activities in its scenarios. It has not yet elected activities under Article 3, paragraph 4, (the cap was set by the Marrakech Accords at 1.5 Mt CO_2 eq. annually or around 3 per cent of the base year emissions).
[d] For the Netherlands, estimates of 5.4 Mt CO_2 eq. of additional measures reflects the differences between "with measures" and "with additional measures" scenarios. The maximum effect of these measures was estimated at 6.3 Mt CO_2 eq.
[e] Norway and Spain pain did not provide "with additional measures" scenario, but indicated that they may introduce additional measures.

[20] Information on Austria, Germany, Ireland and Italy is from the RDP of the European Community.

92. Several Parties expect their activities in the LULUCF sector to contribute to their efforts to achieve their Kyoto target (table 8). Japan expects activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol to contribute 48 Mt CO_2 to its effort to achieve the Kyoto target. Switzerland plans to include savings of up to 1.8 Mt CO_2 eq. from LULUCF activities in case emissions in the first commitment period are higher than the currently projected levels. Spain expects LULUCF activities to contribute to its Kyoto target by up to 5.8 Mt CO_2. Denmark, Finland and Norway expect the net emissions and removals from LULUCF to be very small and have yet to decide how these activities will contribute to their target.

93. According to the current estimates as shown in table 8, Belgium, Finland, Japan, the Netherlands, Norway and Switzerland expect that the use of Kyoto mechanisms and LULUCF activities together with the effects of additional measures should allow them to attain their Kyoto targets. Belgium, Denmark and Spain may need to take further steps to attain their targets.

D. Domestic policies and measures as a significant part of the overall effort to attain the Kyoto target

94. Many Parties stress their commitment to ensure that domestic policies and measures, including activities aimed at enhancing removals by sinks, comprise a **significant part of their overall effort** to meet the Kyoto target. Practically all Parties that intend to acquire Kyoto units expect also to have domestic policies contributing significantly to the overall effort to attain the Kyoto target. Japan, for example, expects that according to its recent "with measures" projections the difference between projected emission levels and the Kyoto target will be 12 per cent. It expects additional measures to bring the emissions down by 6.5 per cent. LULUCF activities will contribute another 3.9 per cent and the remaining 1.6 per cent will be covered by acquisitions of Kyoto units. Altogether, Japan expects that domestic policies and measures, including LULUCF activities, will contribute up to 86 per cent of its effort to attain to its Kyoto target, which constitutes a significant element of this effort.

95. The Netherlands expects that, according to its baseline projections (called "no measures" projections and include measures implemented before 2000 with a total effect of 26 Mt), the difference between projected emission levels and the Kyoto target will be around 40 Mt CO_2 eq. or around 20 per cent of the base year emissions. It expects measures implemented since 2000 according to the "with measures" scenario to bring emissions down by around 10 per cent (table 7) and a further 2.5 per cent to come from additional measures (table 8). As noted (table 1), it has already allocated financial resources to acquire around 20 Mt CO_2 eq. Kyoto credits per year, which will more than compensate for the remaining difference to the Kyoto target.

96. Switzerland estimated its overall emission reduction commitment at 4.2 Mt CO_2 eq. annually for the first commitment period. It then envisages more than half of this reduction, or a minimum of 2.2 Mt CO_2 eq., to be covered by domestic measures, 1.6 Mt CO_2 eq. maximum to be covered by acquisition of Kyoto units and 0.4 Mt CO_2 eq., to come from additional acquisition of Kyoto units by companies in complying with the national CO_2 emissions regulations.

97. These reports by Parties show that, taking into account both, the effect of implemented and additional measures (tables 7 and 8), the overall effect stemming from domestic measures is projected to outweigh the effect of expected acquisition of Kyoto units in the overall effort to meet the Kyoto target.

V. Fulfilment of commitments under Articles 10 and 11 of the Kyoto Protocol

A. Improving the national greenhouse gas inventory and establishing the national system

98. Almost all Parties dedicated a separate chapter for reporting on improvements of their national GHG inventories and the establishment of a national system as required by the Kyoto Protocol. Parties acknowledged the need for sustained efforts to increase the quality and completeness of the national GHG inventories and to strengthen the relevant institutional framework as a basis for the implementation of the Kyoto Protocol. Some EIT Parties received technical and financial support for the preparation of their national GHG inventories (e.g. the EU Phare project in Lithuania).

99. Some Parties have created permanent working groups of inventory experts or delegated the responsibility of national or sectoral GHG inventories to national organizations or regional inventory agencies that in future will be the core of single national entities under national systems (Belgium, Czech Republic, Lithuania and Romania). The work of these groups or institutions focuses on preparation of the national GHG inventories in collaboration with organizations responsible for collecting and managing data and/or discussing methodologies, experiences, information and improvements related to inventories.

100. These groups and institutions work under the guidance of the government, inter-institutional committees or ministries, which consider and approve the inventory submissions (in particular the national inventory report (NIR)). Some national GHG inventories are compiled according to procedures for inventory planning, preparation, management and reporting national law and international mechanisms for inventory preparation and reporting (e.g. EU Decision 280/2004/EC), which is in addition to the UNFCCC and Intergovernmental Panel on Climate Change (IPCC) guidelines as reported in Greece and Romania.

101. The strengthening of the institutional and legislative framework and capacity to prepare inventories has resulted in a steady increase in inventory quality. This includes submission of the Common Reporting Format (CRF) tables and the NIR using the UNFCCC reporting guidelines, and improved consistency and completeness of inventories by most of the Annex I Parties. Several Parties use the new UNFCCC reporting software (CRF Reporter) and CRF LULUCF tables containing estimates for the complete time-series for their 2005 inventory submission. A rigorous inventory review process, which is coordinated by the UNFCCC secretariat was seen by many Parties as a key element that helped to improve inventories and to strengthen national capacities.

102. All the actions taken by Parties for inventory improvements were seen as an integral part of the process of establishing national systems. These had already been established in some instances in 2004 (e.g. in Finland) or were planned to be operational by 2006 (e.g. in the Czech Republic, the Netherlands, Lithuania, Norway, Romania, Slovakia, Sweden and Switzerland). Parties highlighted the need to give financial support to the national systems and to enhance cooperation among various institutions for establishing the national systems within the framework of integrated air quality assessment and management systems, and to ensure organizational, institutional and legal frameworks for cooperation between authorities and public institutions.

B. Measures and programmes to adapt to climate change

103. With a few exceptions (e.g. Estonia, Japan, and Slovakia), Parties provided information on their current and future vulnerability to climate change, as well as on the impacts by sector and on existing and planned adaptation measures. While some Parties included a detailed vulnerability assessment in their RDP, most of them highlighted only impacts and adaptation measures by sectors. Most Parties reported

on comprehensive ongoing and future research programmes aimed at gaining a better understanding of projected climate change impacts on different sectors. Most Parties referred to their fourth national communication for further information (e.g. Denmark, Greece, Lithuania and Norway).

104. Parties reported on the **assessment of expected climate change, impacts on and vulnerability of economic sectors and ecosystems**. Regarding temperature increases and changes in precipitation, most Parties expect their winters to become warmer and wetter, and summers to become drier. Most Parties elaborated on expected adverse climate change impacts on agriculture, water resources, coastal zones, Human health, marine and terrestrial ecosystems as well as human settlements and infrastructure. Some Parties also underlined the potential positive effects on agriculture such as yield increases.

105. Parties reported on the identification of "no-regret" measures, in most cases as part of their impact and vulnerability assessment, aimed at decreasing current vulnerabilities, which would **contribute to adaptation to climate change** through increasing resilience and enhancing adaptive capacities (table 9).

Table 9. Adaptation options and measures by sector

Sector	Adaptation measures	Parties
Agriculture	Change of species composition	Switzerland, Czech Republic, Japan, Lithuania, Netherlands, Slovakia
	Change of farming methods	Switzerland, Czech Republic, Greece, Japan, Netherlands, Slovakia
Forestry	Change of species composition, increased diversity	Belgium, Czech Republic, Denmark
	Early warning system for forest fires	European Community
Water resources	Integrative management of drought risks	Greece
	Integrative management of flood risks	Belgium, Switzerland, Czech Republic
	Early warning system for floods	Netherlands, European Community
Coastal zones and marine ecosystems	Integrated coastal zone management	Belgium, Japan, Netherlands
Terrestrial ecosystems	Establishment of protective zones	Belgium, Greece, Lithuania, Netherlands
Human health	Planning and building for heat waves	Belgium

106. Regarding specific adaptation action, most Parties reported on undertaking short-term measures, which also address other pressure factors, including pollution and land degradation, while improving the basis for long-term decision-making through comprehensive studies. In October 2005, the EU, for example, launched the second phase of the European Climate Change Programme which will, among other issues, examine the European dimension of climate change adaptation strategies. To address adaptation in an integrative manner and not just by sector, many Parties report on the establishment of an institutional framework to prepare national adaptation plans and strategies

C. Impacts of response measures

107. Implementation of policies and measures to address climate change may reduce the demand for the import of some energy products and hence affect the economies of some countries, in particular developing countries, that rely significantly on the export of energy products. Few Parties had initiated research to define the possible extent of such impacts.

108. The United Kingdom stressed that it implemented its policies and measures in a way that takes into account the impact from response measures. It noted the use of the international emissions trading scheme, other Kyoto mechanisms, continued liberalization of its energy market and implementation of a diverse portfolio of policies and measures, including measures targeting non-CO_2 emissions, carbon sinks and encouraging carbon capture and storage as a way to address such possible impacts. Similarly, Norway acknowledged the design of cost-effective policies as a way of minimizing the unintended effects of response measures on its economy, which benefits from oil and gas production and export. However, it also acknowledged that its demand for energy imports is so small that it may not significantly affect the international energy market.

D. Cooperation in scientific and technical research

109. All Parties provided information in their RDPs on their efforts to cooperate in scientific and technical research on climate change and/or systematic observation. Parties continue to give priority to climate change research and observation systems, which are frequently included within national research priorities and policies. All Parties participate actively in promoting cooperative activities, either through the major international scientific global and climate change research programmes, regional and/or national programmes, and demonstrate commitment to promote development and strengthen capacity to participate in such international efforts, programmes and networks. In most cases research and observation activities are coordinated or undertaken by research centres, meteorological institutes, ministries, national agencies, organizations, universities, etc., and in some cases involve business.

110. Many Parties highlighted their contributions to **promoting joint climate change research** through participation in international scientific programmes, i.e. the World Climate Research Programme, the International Geosphere–Biosphere Programme and the International Human Dimensions Programme. Current priorities, projects and sub-programmes of these programmes cover a wide range of scientific and socio-economic disciplines relevant to climate change research, including understanding of the climate system and earth dynamics, climate variability and predictability, human causes and consequences of changes including human security, the societal responses to mitigation of and adaptation to global change, and others. Recently, participation in international projects concerned with modelling the climate system and estimation of climate change impacts has expanded. Also, contributions to the work of the IPCC was highlighted by Japan, the Netherlands, Norway and the United Kingdom.

111. The focus of **research and systematic observation activities at national level** as reported in the RDPs covers aspects such as development of climate-friendly technologies to reduce energy use; climate variability and predictability; occurrence of extreme events; modelling and projections; impacts and risk-assessment and response policies; operation of stations of monitoring networks including monitoring of air, marine/oceanographic and terrestrial systems and satellite observation; collection of long-term climate data; and complex inter-relationships between climate, economic and societal driving factors where increased emphasis is being given to research on mitigation, and, more recently, on adaptation.

112. In the Asia-Pacific region efforts are being undertaken to facilitate implementation of observation and monitoring throughout the region, including through promotion of the Asia-Pacific Network for Global Change Research as reported by Japan.

113. Cooperation in international efforts also includes participation in international observation and monitoring systems such as the Global Climate Observing System (GCOS), as explicitly mentioned by the Czech Republic, Japan, Norway, Sweden, Switzerland and the United Kingdom, for example by providing and maintaining measurement stations. Cooperation with the International Energy Agency, the World Meteorological Organization and international partnerships was also given high priority by a number of Parties.

E. Cooperation in the transfer of climate-friendly technologies, provision of financial resources and support for capacity-building

1. Transfer of climate-friendly technologies

114. The transfer of technologies results from actions taken by various stakeholders, including governments (national, regional, local), private-sector business (transnational, national, local), donors (multilateral banks, GEF, bilateral aid agencies), international institutions such as the Organisation for Economic Co-operation and Development (OECD), research institutions (research centres, laboratories,

universities), media/public groups (television, radio, newspaper, schools, community groups, non-governmental organizations), and individual consumers (urban, rural).

115. Partnerships between key stakeholders, including the private sector, which is playing an increasingly important role, are seen by many Parties as a centrepiece for enhancing the transfer of technologies. These trends are highlighted by 12 Parties (Belgium, Czech Republic, Denmark, the European Community, Finland, Japan, the Netherlands, Norway, Sweden, Slovakia, Switzerland, the United Kingdom) with each including a separate chapter on transfer of technology in their RDPs.

116. Parties reported on partnerships organized on a multilateral and bilateral basis. Some of the multilateral partnerships, such as the Renewable Energy and Energy Efficiency Partnership, aim to increase the deployment of technologies through capacity-building, removing barriers, and innovative financial instruments. Other multilateral partnerships try to foster international cooperation in the accelerated development and diffusion of technologies and practices such as through the Climate Technology Initiative.

117. Bilateral partnerships reported by the Parties focus on technology development and deployment at the regional level, such as the Energy and Environment Partnership of Finland with Central America. Such initiatives exist at the sectoral level, for example, the Energy Research Programme initiated by Denmark. They also exist at the municipal level, such as through the twin-town schemes reported by Sweden. Other partnerships have a clear focus on specific technologies, such as the EU–China Partnership on climate change, which includes research, development and demonstration of near-zero emissions coal technology through Carbon Capture and Storage and the deployment and diffusion of key energy technologies. None of the reporting Parties included information on the formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publicly owned or in the public domain.

118. Many Parties highlighted the **increasing role of the private sector in enhancing the transfer of technologies to developing countries** and providing market incentives for the private sector to enhance such transfer of technology. This was deemed important given that most technologies are owned by the private sector. To ensure technology transfer to developing countries, governments could stimulate the private sector transactions by providing market incentives. To that end, some Parties report relevant policies and programmes that include partnerships with private sector parties and enterprises (the United Kingdom Technology Partnership; the Renewable Energy Promotion in International Cooperation (REPIC) in Switzerland), programmes to stimulate the private sector to participate in technology transfer projects (Programme for Cooperation With Emerging Markets and the Development-related Export Transactions Program in the Netherlands) and direct financial incentives such as export credits (Swedish Export Credits Guarantee Board).

2. Provision of financial resources

119. All non-EIT Annex I Parties provided information in their RDPs on financial assistance provided to developing countries. Some Parties provided detailed descriptions of their activities (the European Community, the Netherlands and Switzerland), whereas others provided direct reference to data in their national communications (Denmark, Japan, Norway and Sweden). The rest of the Parties provided only a very general overview of activities.

120. In providing information on financial assistance for climate change activities, most Parties highlighted the need to consider **climate change in the broader context of development assistance**. They indicated the importance of considering development benefits of projects and technical cooperation in addition to environmental ones.

121. Parties continued to **provide financial assistance on a bilateral and multilateral basis**. All non-EIT Annex I Parties and two EIT Parties provide information on bilateral financial assistance to and technical cooperation with developing countries. In addition, non-EIT Annex I Parties report information on financial assistance provided through multilateral institutions such as regional banks and intergovernmental organizations. Most of them (Denmark, Finland, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom), report on their **contributions to the GEF**. A new element is the contributions to the Special Climate Change Fund (reported by Norway, Sweden and Switzerland), and the Least Developed Country Fund (reported by Denmark, Finland, the Netherlands, Norway, Spain, Sweden and Switzerland).

122. Financial assistance has been provided in a variety of sectors to support adaptation and mitigation activities as well as cross-cutting issues such as strengthening of the institutional capacity and environment protection. In the **area of mitigation**, support was provided for projects and programmes aimed chiefly at promoting renewable energy technologies and supply, followed by transport, energy efficiency in industry and efficient building practices. Some Parties also reported on assistance with regard to district heating projects (Finland) and waste management (Belgium, Slovakia).

123. In the **area of adaptation**, support was provided mainly for the preparation of adaptation strategies and raising awareness on adaptation, followed by water management, disaster preparedness, climate observation and warning systems. Some Parties also referred to projects relating to the protection of marine coastal areas (Finland), flood control (Finland) and adaptation in semi-arid areas (Switzerland). **Assistance to forestry and agriculture activities** (Belgium, the European Community, Finland, the Netherlands) **and land-use planning** and monitoring (Czech Republic and Slovakia) were also highlighted as cross-cutting issues for both adaptation and mitigation support.

124. Most Parties have also reported on support specifically aimed at facilitating the **implementation by developing countries of the Kyoto Protocol**, in particular financial assistance provided to promotion and participation in the **CDM.**

125. Parties have also reported on **financial assistance for other issues related to climate change**, such as the protection of the environment (Belgium, the European Community, Japan, Spain), economic infrastructure and services (the European Community), regional cooperation among decision-makers (Spain) and **funding for participants at sessions** of the bodies of the UNFCCC and the Kyoto Protocol (Belgium, Denmark, Norway, Sweden, the United Kingdom and Switzerland).

126. Owing to the differences in reporting information on financial assistance it is difficult to set clear trends of the overall amounts of funding provided by all reporting non-EIT Annex I Parties on the area of climate change. Yet **several non-EIT Annex I Parties declared at the seventh session of the Conference of the Parties (COP 7) that they would collectively contribute USD 410 million** a year in extra funding for developing countries by 2005, with this level to be reviewed in 2008. Many Parties (Finland, the Netherlands, Norway, Sweden and Switzerland) emphasized that their financial assistance to developing countries has followed this commitment**.** In addition, Japan referred to the implementation of an initiative it launched at COP 3 to assist the efforts of developing countries to address climate change.

127. For those Parties that provided information on the amount of funding over time it is possible to see **an overall increase of funding** between 2001 and 2003 (Denmark, the European Community, Japan, the Netherlands, Norway, Spain, Sweden and Switzerland, through cross reference to their national communications). For the three Parties that provided information on both adaptation and mitigation, the amount of **financial assistance for mitigation was slightly higher than that for adaptation** (Belgium, the Netherlands and Sweden).

128. A number of non-EIT Annex I Parties (Greece, the Netherlands, Switzerland and the United Kingdom) have also provided **information about assistance to the EITs**, in particular to enable these Parties to participate in the Kyoto Protocol and in particular in JI.

3. Capacity-building

129. The need for capacity-building to assist Parties, especially developing countries, to respond to climate change is clearly recognized in the areas of technology transfer, national communications and funding under the Convention and the CDM under the Kyoto Protocol. The **framework for capacity-building in developing countries** agreed at COP 7 provides a useful tool to advance the effort to support capacity-building.

130. In their RDPs, Parties generally recognize that capacity-building in developing countries is key to enabling them to address climate change mitigation and adaptation. Many emphasized the increased attention and priority given to cooperation and provision of technical and financial support for capacity-building in recent years (Czech Republic, Denmark, the European Community, Sweden, the United Kingdom). A few Parties made references to a strategic approach to environment in development cooperation (Denmark, the European Community, Norway) in the context of the EU Action Plan, including support for capacity-building in the area of climate change.

131. Overall, Parties reported capacity-building activities directed at developing or enhancing the institutional framework of developing countries to address climate change, including assistance for Designated National Authorities to implement the Kyoto mechanisms, support for the preparation of national communications, and building up knowledge bases, skills and capacities (the European Community, the Netherlands, Norway, Sweden, Switzerland). They also reported capacity-building activities to support the transfer of technology (Belgium, Czech Republic, the Netherlands, Switzerland), and to enhance adaptation capabilities (Norway).

132. Most Parties support capacity development through: a) financial contributions to bilateral and multilateral institutions and programmes; b) regional and/or bilateral projects including technical assistance and training seminars; c) support for participation from developing countries to intergovernmental process; and d) strengthening of environmental information systems and legislations. An example in this context is the strategy for environmental work in developing countries implemented by Denmark, called "A world of difference". This strategy for work in the area of environment in developing countries is one of the first to gather all environment activities under one common goal – combating poverty – and also one of the first to integrate environmental efforts with the overall development assistance. The strategy emphasizes that environmental efforts include climate change efforts; for example, one of the elements in the strategy is to support climate change efforts through capacity-building. The strategy covers the possibilities for countries to administer work within the international environmental agreements and to create opportunities for the development of CDM projects. This could later lead to purchases of CO_2 credits.

F. Cooperation in education, training and public awareness

133. **Education, training and public awareness programmes continue to play a significant role** in Parties' response to climate change. Activities in this area aim at engaging all stakeholders and major groups in the development and implementation of related policies. This reflects recognition by the Parties, stemming in part from the New Delhi work programme on Article 6 of the Convention, that regional, subregional and international cooperation on education and outreach activities can enhance the collective ability of Parties to implement the Convention.

134. In their RDPs, Parties reported on a continuous rise in the level of awareness on climate change issues. Recent initiatives typically complement and build on existing outreach programmes (e.g. the

United Kingdom) and educational programmes. On the latter, some Parties report on their efforts to develop primary and secondary schools curricula, including several examples of content relevant to the commitments under the Kyoto Protocol (e.g. Norway) and use curricula and teacher training that focuses on climate change as methods to integrate such issues at all educational levels and across disciplines (e.g. Estonia, Lithuania).

135. Several Parties report on new initiatives: setting up a dedicated research centre to assure access to information on climate change (Norway); the use of new communication tools such as web portals (Lithuania, Spain, the United Kingdom). Some Parties noted that they are still lacking strategies and approaches for the training of scientists, technicians and managers, as well as for education and public awareness activities to contribute to achieving the commitments under the Convention and the Kyoto Protocol (e.g. Slovakia).

VI. Conclusions

136. Annex I Parties reported **noticeable progress in organizing government-wide efforts to address climate change** in the implementation of the Kyoto Protocol. Portfolios of different types of policies and measures advance action on climate change, spanning a wide range of activities, sectors, actors and institutions within and outside of governments. This includes activities aimed at establishing national systems for inventory preparation and registries to support implementation of the Kyoto Protocol including the implementation of Kyoto mechanisms.

137. **Four general trends in mitigation policymaking** emerge in reporting countries: First, there is growing evidence of more significant policy infrastructure and policymaking capacity to deal with climate change in many countries compared with earlier years. Second is the strengthening of integrated policy approaches, which aims to address climate change principally through sector policies (e.g. through energy sector or waste policies). Third is the increased coverage and scope of climate change mitigation through climate-specific policies, such as the EU ETS. These measures complement previous measures such as voluntary agreements with industry, cross-cutting measures such as CO_2 and "green" energy taxes, or waste policies that target methane capture at landfills, thus providing even more comprehensive coverage of policies to GHG-emitting sectors. Fourth trend is the emergence of governance on climate change issues at various levels, such as local and national governments as well as non-governmental actors.

138. One of the recent and **significant innovations** is the emergence of international and national emissions trading systems (e.g. across the European Community). Also, many countries reported proactive energy efficiency and renewable energy policies as a cornerstone of their national policy portfolios in the energy sector. An example in the area of renewable energy can be seen in the policy portfolios designed to stimulate use of biofuels in the transport sector; these include policies that are also likely to influence forestry and agriculture sectors as they prepare to support the production of such fuels. The number and type of innovative financing mechanisms is growing to support and leverage mitigation investment in energy and non-energy areas.

139. Parties are at **various stages of accounting for LULUCF** activities under the Kyoto Protocol. Estimates of potential use of these activities to achieve the Kyoto targets are reported by only a few Parties, e.g. the United Kingdom, Japan and Switzerland. Many countries are actively monitoring these activities, or preparing to do so, and in some cases have active policies to increase the carbon uptake from them.

140. Almost all Parties are preparing to **use the Kyoto mechanisms** as part of their mitigation strategies. The relevant legislative arrangements are being put in place to make the Kyoto mechanisms operational. In all cases use of the Kyoto mechanisms is seen as a tool to achieve the dual objective of

delivering emission reductions at a lower cost compared with domestic measures and contributing to international cooperation on climate change mitigation.

141. **Total aggregated GHG emissions** (excluding LULUCF) of reporting Annex I Parties decreased by 6.4 per cent between the base year and 2003, which is about 1 per cent above the Kyoto target level for these Parties. This decrease resulted mainly from a strong decline in emissions (of 35.5 per cent) from EIT Parties, whereas emissions from non-EIT Annex I Parties increased slightly (by 0.6 per cent). Most of the overall decrease in total aggregated emissions occurred by 1997, where they decreased by 5.4 per cent compared with the base year, whereas there was an increase in these emissions of 1.6 per cent after 1999.

142. **Strong growth in GHG emissions from transport (by 22.8 per cent), in contrast to decreasing emissions in most other sectors, noticeably changed the share of individual sectors in total GHG emissions of reported Annex I Parties between the base year and 2003**. The contribution of transport grew from one in every seven tonnes of GHG in the base year to one in every five tonnes of GHG in 2003. There was a marked decrease in emissions from non-energy sectors (agriculture, industrial processes and waste), as well as in the energy-related sectors (energy industries and energy use in industries) with the exception of energy use in other sectors (residential, commercial and institutional).

143. In 2003, aggregated emissions from all reporting EIT Parties were well below the base year level. Several other Annex I Parties demonstrated considerable progress in developing a policy capacity and infrastructure to address climate change and have managed to stabilize or reduce emissions compared with 1990 or to limit emission growth. Countries with notable developments include the Netherlands, Sweden, Switzerland and the United Kingdom, where emissions have remained stable or are declining, and Denmark, Japan, and Norway, which have managed to limit growth in total GHG emissions in the period 1990 to 2003 to less than 10 per cent.

144. **According to projections of GHG emissions for "with measures" scenarios, all six reporting EIT Parties, as well as the United Kingdom and Sweden, are projected to meet their individual Kyoto targets**. Most of the other Parties outlined additional policies and measures to achieve Kyoto targets, and two of them, Finland and Greece, project that they will meet their Kyoto targets according to their "with additional measures" scenario.

145. In the reporting Annex I Parties, **policies are already delivering noticeable emission reductions compared with base year emissions.** Denmark, the Netherlands, Norway, Sweden and the United Kingdom are among those countries reporting the most substantial effects of policies and measures to date. Climate policies in these countries rely on a mix of instruments, with prominent use of economic instruments, and they target both CO_2 and non-CO_2 emissions. In Sweden and the United Kingdom, policies already implemented have helped to reduce emissions, despite strong economic growth. In EIT countries, policies relevant to climate change are driven by the aim to improve economic performance and competitiveness through liberalization and privatization.

146. Overall, **Parties expect the magnitude of the impact of implemented policies and measures to increase**. Moreover, most Parties have in place plans for additional policies and measures that could help to reduce the difference between their projected emission levels for the first commitment period and their Kyoto targets. In addition, Parties estimated the potential impact of the use of the Kyoto mechanisms and LULUCF activities in meeting the Kyoto targets. These estimates suggest that the use of such mechanisms and activities could help Belgium, Finland, Japan, the Netherlands, Norway and Switzerland to attain their Kyoto targets. Belgium, Denmark and Spain may need to take further steps to attain their targets.

147. In outlining **mitigation policy development**, reporting Parties summarized their efforts to assess the performance of policy portfolios and efforts to prepare for the use of the Kyoto mechanisms to bring themselves into compliance with their commitments vis-à-vis the Kyoto targets. In all instances where data are reported, countries expect **domestic policies and measures to form a significant part of the overall effort to achieve the Kyoto target**.

148. Annex I Parties reported on their **progress on a range of commitments under Articles 10 and 11 of the Kyoto Protocol**. These include improving the national GHG emission inventories and establishing national systems for monitoring performance under the Protocol, as well as measures and programmes to adapt to climate change and to assess impacts of response measures. These also include strengthening cooperation in scientific and technical research relating to climate change; cooperation in the transfer of climate-friendly technologies; provision of financial resources and support for capacity-building; and activities in education, training and public awareness on climate change.

149. Many Parties reported **significant progress in establishing institutional frameworks to implement adaptation** and to mainstream adaptation into existing sector policies. The Czech Republic, Denmark, Finland, Lithuania, Norway, Romania, Spain and the United Kingdom have all reported either the adoption or the preparation of a national framework to guide national action on adaptation.

150. A number of Parties highlighted the **partnership between key stakeholders, multilateral and bilateral partnerships and the increasing role of the private sector as a centrepiece for enhancing the transfer of technologies**. Many stressed the need to consider climate change in the broader context of sustainable development. They noted that in fulfilling their commitments under both the UNFCCC and the Kyoto Protocol they continued to provide financial and technical assistance, and assistance for capacity-building to developing countries.

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