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National communications and greenhouse gas inventory data from Parties included in Annex I to the Convention
Compilation and synthesis of fifth national communications from Parties included in Annex I to the Convention

Compilation and synthesis of fifth national communications

Note by the secretariat

Addendum

Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention

Summary

This document contains the second part of the compilation and synthesis report of the fifth national communications submitted to the secretariat by Parties included in Annex I to the Convention. It provides information on a range of issues relating to the implementation of the Convention, such as vulnerability assessment, climate change impacts and adaptation measures; financial resources and transfer of technology; capacity-building; research and systematic observation; and education, training and public awareness.

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I. Introduction

1. The compilation and synthesis report of the fifth national communications (NC5) of Parties included in Annex I to the Convention (Annex I Parties), prepared in accordance with decision 9/CP.16, consists of three separate documents. The main report, which includes information on all reporting elements following the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines),[1] is published in two separate parts: part one, presented in document FCCC/SBI/2011/INF.1/Add.1, contains a synthesis of the reported information on national circumstances, greenhouse gas (GHG) inventories, emission projections and policies and measures; and part two, presented in this document, contains a synthesis of the reported information relating to vulnerability assessment, climate change impacts and adaptation measures, financial resources, transfer of technology and capacity-building, research and systematic observation, and education, training and public awareness. An executive summary is contained in document FCCC/SBI/2011/INF.1. All references to Parties in these documents are to Annex I Parties, unless otherwise indicated.

2. This compilation and synthesis report for Annex I Parties includes information from all 41 Annex I Parties – from the 40 NC5s submitted by March 2011, and from the first national communication (NC1) of Turkey, which was submitted in 2007 and not included in the previous Annex I compilation and synthesis report.

II. Vulnerability assessment, climate change impacts and adaptation measures

A. Overview

3. In their NC5, Annex I Parties provided information on the observed and expected impacts of climate change, ways to assess their vulnerability, and possible adaptation measures, strategies and options. This information suggests that since the preparation of the fourth national communications (NC4) issues related to vulnerability and adaptation have received much more attention in the overall climate change strategies of Annex I Parties, even though mitigation remains the core of these strategies.

4. The key sectors of concern highlighted by the Parties include: water resources, coastal zones, agriculture and food security, human health, forestry, biodiversity and natural ecosystems, and infrastructure and economy. Some Parties also reported on other vulnerable areas, such as energy, insurance, transport, tourism, air quality, geological structures and permafrost. While some Parties provided a comprehensive explanation of the tools and models used for their sectoral vulnerability assessments, a number of Parties did not do so, which could be due to the lack of detailed guidance in the current UNFCCC reporting guidelines.

5. In their NC5, compared with in their NC4, Parties provided **new and more complete information on research efforts relating to adaptation options**. Examples include: the sustainable water management programme under way in Switzerland; the National Adaptation Research Plan developed by Australia; the KLIWAS (Impacts of climate change on waterways and shipping) research programme in Germany; the intensification of the FloodRisk II programme and the integration of future-oriented

[1] FCCC/CP/1999/7.

implementation strategies for integrated flood management in Austria; and research on adapting the materials and techniques used in highway works and construction to a changing climate in the United Kingdom of Great Britain and Northern Ireland. Parties pointed out the need to conduct more research, particularly in the areas of crop modelling, fisheries and economic models, and the need to appraise the potential costs and benefits of adaptation measures.

6. Several Parties noted the need to develop and apply **sector-specific methods and tools for risk assessment** (including models) as a precursor to effective adaptation. Compared with that provided in their NC4, Parties provided in their NC5 substantial additional information on adaptation measures and plans (see table 1), with concrete and practical examples for key vulnerable sectors (see table 2). However, **Parties reported that additional measures are needed in some key sectors, such as forestry and fisheries**.

7. Parties also noted the importance of **integrated assessments** for effective adaptation actions. The United States of America reported on its integrated assessment framework, which highlights the relationship between climate change and human health and takes into account the effects of multiple stresses, their interactions and humans' adaptive responses. A number of Parties highlighted the benefit, in terms of protecting biological diversity, of implementing integrated measures for biodiversity and natural ecosystems that make use of synergies between nature conservation, climate protection and adaptation to the impacts of climate change.

8. Parties are increasingly viewing, as reported in their NC4, **adaptation and mitigation as complementary parallel tracks in the development of their climate policy**. The United Kingdom, for example, is making efforts to ensure that its policies on adaptation and mitigation are integrated through collaboration between its cross-government Adapting to Climate Change Programme and the Department of Energy and Climate Change. The European Union (EU) project entitled "Adaptation and Mitigation Strategies: Supporting European Climate Policy" combined research on both adaptation and mitigation. Some Parties are planning to use **integrated assessments of climate change mitigation and adaptation actions** (EU and Switzerland).

Box 1
Examples of new development cooperation initiatives

- Canada's cooperation with African researchers and policymakers in developing their capacity to identify practical ways in which rural and urban people can adapt to climate change in Africa;
- The United States Agency for International Development's provision of support to climate change adaptation projects on community-based drought-preparedness planning in Cambodia, Timor-Leste and Viet Nam;
- Belgium's involvement as a part of the Consultative Group on International Agricultural Research in supporting 15 research facilities using science to ensure improved food security, improved human nutrition and health, a higher income for the poor, and improved management of natural resources;
- The Netherlands' cooperation with other countries in low-lying delta areas to ensure their protection against flood and the availability of sufficient clean water;
- The United Kingdom of Great Britain and Northern Ireland's cooperation with the United Nations Association of Regions partnership programme entitled "Towards Carbon Neutral and Climate Change Resilient Territories", which has the aim of sensitizing 500 regions in the global south to the issues around climate change and its threats, using experts from developed regions.

9. Some Parties reported on **new multilateral, bilateral and development cooperation initiatives with developing country Parties**, intended to enable those Parties to address and undertake research on the impacts of climate change and the required adaptation processes. These initiatives include cooperation in the water management, agriculture and health sectors, and examples are provided in box 1.

Table 1
Examples of national adaptation plans/strategies adopted/being developed by Parties

Party	*National adaptation programme/plan*	*Date*
Australia	National climate change adaptation framework	2007
Austria	National adaptation strategy	Expected in 2011
Belarus	National system of adaptation to climatic change and development as well as to natural and industrial catastrophes and hazards	Established and functioning effectively in recent years
Belgium	Belgian adaptation plan	Expected in 2012
Czech Republic	National programme to abate the climate change impacts in the Czech Republic (including adaptation)	2007
Denmark	Danish strategy for adaptation to a changing climate	2008
Estonia	National adaptation strategy	Expected in 2010
Finland	National strategy for adaptation to climate change[a]	2005
France	National adaptation strategy	2006
Germany	German strategy for adaptation to climate change	2008
Greece	National strategy for adaptation to climate change	Currently under implementation
Ireland	National climate change strategy 2007–2012	2009
Lithuania	National strategy for the implementation of the UNFCCC until 2012	2008
Luxembourg	National adaptation plan	2011
Netherlands	National adaptation strategy	2007
Portugal	National adaptation strategy	2010
Slovakia	National adaptation strategy	Preparatory works on the strategy have been launched
Spain	National plan for adaptation to climate change[a]	2006
Switzerland	National adaptation strategy	Expected in 2011
Ukraine	National plan for adaptation to climate change	Expected in 2011
United Kingdom	UK Climate Impacts Programme[a]	1997

[a] These plans were also reported in the Parties' fourth national communications.

Table 2
Examples of Parties' sectoral adaptation measures and activities

Vulnerable area	*Examples of adaptation measures reported*	*Parties*
Water resources	Pricing of municipal water services; desalination and distribution of potable water	Greece
	Establishment of a network of functional centres for data assimilation and processing and of a coordination unit for the management of water resources shared between the regions of Puglia and Basilicata	Italy
	Development of warning systems in relation to water-related risks	Estonia, Finland, Hungary and United Kingdom
	Undertaking forest-reclamation activities on river beds	Belarus
	Monitoring of bodies of water and water availability	Greece and Italy
Agriculture and food security	Mulching using plastics and fabrics to reduce weeds and increase water efficiency	Slovakia
	Development of a contingency plan to address the likely spreading of vector-borne diseases such as bluetongue (a catarrhal fever in ruminants spread by midges)	Finland
	Utilization of the FarmReady program, a component of the Farming Future initiative to enhance risk management and business management skills	Australia
	Promotion of procedures for improving soil fertility, soil structure, natural control mechanisms and optimization of soil treatment	Germany and Italy
Forestry	Undertaking afforestation and reforestation using beech instead of spruce species	Slovakia
	Undertaking structural changes in forests	Greece
	Reduction of the risk of increased populations of insect pests	Czech Republic
Biodiversity and natural ecosystems	Development of the Natura 2000 network of protected terrestrial and marine sites	Italy
	Designation of national protected marine areas	Canada
	Protecting and managing landscape corridors	Australia and Finland
	Regeneration of the urban landscape and creation of 'green rings' around settlements	Czech Republic
	Addressing the problem of invasive species	Germany
Coastal zones	Establishment of the coastal belt, comprising technical and protection belts	Poland
	Utilization of improved land and beach management practices	Australia, Netherlands and New Zealand
Fisheries	Adopting changes in the length and start of the fishing season	Norway
	Supporting the construction of passes for fish to migrate to suitable areas	Finland
	Adopting sustainable fishing methods	Netherlands
Human health	Installation of Heat Health Watch Warning Systems in 26 cities; implementation of a vulnerability registry in 25 cities; setting up of a national working group of experts for the preparation of local surveillance and response plans; and preparation of the HEAT LAB website on practical local experiences	Italy
	Designation of "Heatline" nurses to assist in the case of heat waves occasioning human health issues	United States
	Utilizing a warning and forecasting system for the level of tick activity	Czech Republic
	Promulgating regulations on building constructions and on federal heat wave and ozone peak plans	Belgium
Infrastructure and economy	Building higher bridges and higher roads with improved drainage systems	United States
	Reinforcement of infrastructures	Greece

B. Impacts, vulnerability assessment and adaptation to climate change

10. Key climate change impacts of concern reported by Parties include **sea level rise**, **floods**, **heat waves** and **water stress**. In addition, some Parties expressed concerns about **glacier retreat**, **permafrost thawing** and **wildfires**. A number of Parties reported findings from their national vulnerability assessments, while others presented reports on **regional vulnerability assessments**[2] (e.g. France, Ukraine and United States).

11. Parties used General Circulation Models and regional circulation models **to develop climate change scenarios**. Some of the models reported include RegCM3, REMO, NCAR RegCM, MRI-RCM20, ALADIN-Climate and HIRLAM. Emission scenarios from the Intergovernmental Panel on Climate Change (IPCC) *Special Report on Emissions Scenarios* (SRES) (e.g. A2, B1 and B2) were adopted by most of the Parties in order to project future climate change.

12. Since their NC4, Parties have utilized additional **models and tools for assessing vulnerability to climate change** (see table 3).

Table 3
Examples of models and tools used by Parties to assess sectoral vulnerability to climate change

Sector	*Models and tools used*	*Party*
Water resources	Simpa model	Spain
	CDAMP	Canada
	RexHySS	France
	TURC model	Slovakia
Agriculture and food security	ROIMPEL model, CERES GENERIC 3.0 and DSSAT Seasonal Analysis program	Bulgaria
	GIS-based ADST	Canada
	CROPSYST simulation	Greece
Forestry	GAP model	Bulgaria
	SIBYLA	Slovakia
Biodiversity and natural ecosystems	National methods	Russian Federation
Coastal zones	CLAD	Ireland
Infrastructure and economy	The Engineering Vulnerability Assessment Protocol	Canada
Other	Tropical cyclone risk model and Rapid Assessment of the	Canada
	Impacts of Climate Change	Slovakia
	Soil-plant-atmosphere system model	

13. **Information sharing and dissemination, as well as training and capacity-building** activities, were reported by many Parties as effective means of promoting understanding of the impacts of climate change and vulnerability. Also, **collaboration among governments,** provinces**, communities and businesses, and other stakeholders** was reported by many Parties as being key in implementing effective adaptation actions.

[2] Vulnerability assessments conducted in various regions within a country.

1. Water resources

14. Key climate change related hazards reported by Parties in the water sector include: **increasing intensity, duration and frequency of floods, droughts** and **increased risk of flash floods**. The latest projections have indicated that there will be up to 20 per cent more drought months in most of Australia by 2030 relative to 1990 levels, and even more drought months by 2070, under a high emissions scenario (SRES scenario A1F1). Also, the country estimated that, with a mid-range sea level rise of 0.5 m in the 21st century, high sea level events that now happen every 10 years would happen about every 10 days in 2100.

15. Some Parties reported the **intensification of conflicts attributed to the effects of climate change among the multiple users of water resources**. Italy reported that water scarcity and increased frequency of drought are causing competition for available resources shared between the regions of Puglia and Basilicata. Hungary also reported on a similar water-related problem.

16. From the information provided, it can be concluded that Parties are taking steps to safeguard water resources, including **restoring river systems, supporting healthy rivers and applying sustainable harvesting methods**. The systematic collection of data, monitoring and warning activities are under way in the water sector and many **Parties have established institutions to support these activities**. A number of the measures adopted by Parties also address flood control.

2. Agriculture and food security

17. Most Parties reported on **the potential damage or risk to production (possible harvest failure) in the agriculture sector** due to climate change impacts such as: increasing drought, heat stress, more intensive thunderstorms, frost, hailstorms, high and low temperatures, heavy rain, soil erosion, increasing plant disease epidemics and pests. A number of Parties stressed **the interlinkages between the water and agriculture sectors**, in particular the water stress due to agricultural consumption and productivity (e.g. Australia, Austria, Belarus, Canada, Italy, New Zealand and United Kingdom). An increase in the demand for water for agriculture (by 50–70 per cent) has been experienced in some regions (e.g. in the Mediterranean region) and this increase is expected to continue in the future. This is likely to result in increased competition for water resources between sectors. Some Parties reported a decrease in the quality of and ability to preserve agricultural food stock owing to the effects of climate change.

18. However, some Parties (e.g. Italy, Poland, Switzerland and United Kingdom) reported on the **potential yield increase in crop production** owing to changes in the length of the growing season and favourable temperatures, provided that the supply of water and nutrients is sufficient. Italy, for example, reported that, as a consequence of the expected lengthening of the growing period (by about 10–15 days per 1 °C rise in the yearly average temperature) and a shortening of the cold winter period, the cultivation of olives, citrus trees, vines and durum would become possible in the north of the country, but the cultivation of corn would be reduced in the south. These impacts would directly affect both farming practices (e.g. necessitating the introduction of new cultivars and species) and food and agricultural transformation industries (e.g. owing to changes in allocation or increased transportation costs).

19. Parties' main efforts to respond to the possible adverse effects of climate change have included land-use planning, integrated approaches to disease control, the reassessment of water and wastewater management systems, the prevention of the erosion of agricultural

land, the improvement of the efficiency of the existing irrigation infrastructure and the development and application of optimized irrigation regimes.

3. Forestry

20. Parties' assessment of the vulnerability of forests indicated that climate change will cause: changes in the **productivity of the forest ecosystem**; the shifting of the species composition from south to north, with the possible disappearance of existing species or the appearance of new ones; changes in the **structure of forest**, including reduction in the size of forest, as a result of changes in the level of subsoil waters; **increased risk of floods and forest fires**; the **reproduction of forest pests**; and the **stimulation of wood disease** (such as root rot).

21. To improve the resilience of the forest ecosystem, Parties have diversified the species and age of stands, and converted single-species stands into stable deciduous and mixed stands. Measures to reduce the risk of insect pests are also being implemented.

4. Biodiversity and natural ecosystems

22. Some Parties provided a detailed assessment of the impacts of climate change on biodiversity. The impacts of climate change on species include **phenological**, **distributional and genetic variation**. These impacts could be associated with the reduction in snow cover, hydrogeological risks and the invasion of pests. Projections suggest that between one fifth and one third of European species could be at increased risk of extinction if global mean temperatures rise more than 2–3 °C above pre-industrial levels.

23. Among other measures, Parties have created, further developed and/or extended networks of protected areas, with a view to protecting biodiversity. Maintaining original diverse habitats, creating biotope networks, undertaking renaturation projects and supporting species and biotopes are actions that are protecting a number of species from extinction.

5. Coastal zones

24. Key impacts of climate change on coastal zones reported by Parties include increased coastal erosion, storm-related coastal floods, deterioration of natural ecosystems, and saltwater intrusion into the waters of coastal aquifers. In addition, Parties identified economic impacts, including the risk to ports, the destruction of harbour constructions and the disruption of touristic and recreational business activities.

25. Parties' efforts to protect coastal zones against the adverse effects of climate change have included mainly **the construction of barriers, the recharging of the beaches with sand** and the protection of low-level rivers. Another way to limit the impacts of climate change on coastal zones was to regulate, restrict and control development in coastal areas, in the vicinity of inland waterways and in areas at risk of flooding.

6. Fisheries

26. Observed impacts of climate change on the fisheries sector include changes in the number, behaviour, migration pattern and mutual relationship of fish populations (e.g. reported by Croatia, Finland, Japan and Norway). The **invasion of new exotic, thermophilic species** in the Mediterranean Sea has been threatening some of the already declining species. Extreme weather events and sea level rise could **threaten fragile species**

such as biotopes of endemic Posidonia oceanica, as reported by Greece. A high rate of ocean acidification was reported by Iceland and Norway to occur in the Nordic and Icelandic seas, endangering marine species and their food chain.

27. Parties highlighted **some positive impacts on fisheries** owing to warming effects. Species such as the sea bream, which are better adapted to the higher sea temperatures, might have more favourable conditions in which to grow and develop (reported by Croatia). Japan reported increases in southern fish species.

28. The **renewal and reconstruction of fish ponds**, and **making changes to the duration, start and end of the fishing season** in order to harmonize with the changes in the reproduction cycle of species are some of the key activities Parties are undertaking to ensure sustainable fisheries. Japan reported its plan, as a potential adaptation option, to assess and utilize aquafarming fish types, which are highly resistant to high water temperatures, on the basis of genomic information such as DNA markers.

7. Human health

29. Parties reported several effects of climate change on human health, including mortality due to increased occurrence of severe heat waves. More than 70,000 excess deaths were reported in 12 European countries during the 2003 heat wave. In its NC5, the EU affirmed that heat waves are expected to become more common, with the risk of mortality increasing with the rise in temperature. Some key impacts on health reported by Parties include the spread of endemic and non-endemic pathogens, the expanded regional distribution of the tiger mosquito, and the infiltration of new encephalitis vectors from Southeast Asia in Japan. Parties also reported increases in pollen-associated allergies and illnesses due to worsening air and water quality, and increase in the risk of skin cancer.

30. Some Parties reported on the **unique health-related vulnerabilities of indigenous communities**. Canada highlighted the threat to aboriginal and northern populations due to a combination of climate change hazards such as sea level rise, melting ice, permafrost thawing, violent storms and vector-borne diseases. These hazards will pose increasing risks to sanitation, food safety and water quality and have an impact on the wildlife and plants used for the traditional diet of these communities. The communities are implementing **community-based impact assessment and adaptation projects** to identify and assess key vulnerabilities and impacts on health related to climate change.

31. Stimulating the development and transfer of knowledge, capacity-building and strengthening national and international collaboration on public health have been found helpful by Parties in addressing the health risks associated with vector-borne and waterborne infectious diseases.

8. Infrastructure and economy

32. For some Parties, climate change poses a great **risk to buildings and other structures**, necessitating **enhanced protection, emergency plans and insurance**. Parties reported on the increasing risk of flooding and landslides affecting roads, railways and airports. This poses major challenges to the transport and communication sectors. Also, Parties identified that increased occurrence of extreme weather conditions poses a risk to energy supply owing to damage caused to infrastructure, such as dams, electricity grids and petroleum installations, as well as to shutdowns of production. Many Parties noted the urgent need for the planning of and investment in adaptation measures.

33. Australia reported the **potential risk of the inundation** of up to 247,600 residential buildings under the scenario of a sea level rise of 1.1 m. Climate change impacts on infrastructure are projected to reduce Australia's gross national product by 1.23 per cent by 2050 and by 2.42 per cent by 2100, compared with a reference scenario without climate change. The United States estimated that the combination of climate change effects and land subsidence will produce an anticipated relative sea level rise of about 1.2 m. This may adversely affect 3,864 km major roadways and 396 km freight rail lines along the Gulf Coast over the next 50 to 100 years. In Alaska (United States), the cost of maintaining the state's public infrastructure is projected to rise by 10–20 per cent by 2030 owing to increases in average temperatures. This may cost the state an additional USD 4–6 billion, with road and airport maintenance accounting for about half of this cost.

34. Reinforcement of infrastructures, development of systems for the timely management and notification of environmental risks, and informative training for civil society are some of the adaptation activities being implemented by Parties in this sector. Major efforts such as the 'climate proofing' of roads (placing roads higher and improving road drainage systems) were considered vital.

35. Adaptation measures to strengthen energy security reported by Parties include the **frequent revision of electricity grids**, and **research on and investment in renewable energy** in the face of drought, in order to reduce the vulnerability of hydropower structures.

III. Financial resources, transfer of technologies and capacity-building

36. In accordance with the UNFCCC reporting guidelines, Parties included in Annex II to the Convention (Annex II Parties) are required to provide details of measures taken to implement their commitments under Article 4, paragraphs 3, 4 and 5, of the Convention. This includes: indicating what "new and additional" financial resources have been provided under Article 4, paragraph 3, and how the resources have been determined as such; reporting on the assistance provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change for the purpose of assisting them in meeting the costs of adaptation to those adverse effects; and providing information on financial contributions made to the Global Environment Facility (GEF) and other multilateral institutions, as well as on financial contributions made through bilateral and regional channels. Annex II Parties are also required to report information on steps taken by governments to promote the transfer of environmentally sound technologies and to support the development and enhancement of endogenous capacities and technologies of developing countries.

A. Overview

37. The overall figures for and trends in financial resources allocated to climate change by Annex II Parties in the 2005–2010 reporting period are presented in this chapter. It is important to mention that many data gaps and inconsistencies in reporting approaches among Annex II Parties and across periods still persist, which was also noted in the previous synthesis report,[3] and, thus, the following conclusions should be interpreted with due caution:

[3] FCCC/SBI/2007/INF.6/Add.2.

(a) Contributions from Annex II Parties through **multilateral institutions and channels in the 2005–2010 period show a marked increase** in relation to the 1998–2000 and 2001–2003 periods;

(b) Figures reported reveal that bilateral and multilateral channels remain the preferred choice for contributions, over the GEF Trust Fund, the Least Developed Countries Fund (LDCF), the Special Climate Change Fund (SCCF) and the Adaptation Fund under the Kyoto Protocol;

(c) **Contributions and pledges to the GEF as reported in Annex II Parties' NC5 show an important increase** compared with the total amounts presented for the 1997–2000 and 2001–2006 periods. Pledges for the fifth replenishment (2010–2014) of the GEF had not been finalized at the time of submission of the NC5; nevertheless, various Annex II Parties indicated an increase in their intended contribution compared with the last replenishment cycle (2006–2010);

(d) Owing to significant differences in reporting approaches between Annex II Parties as well as in reporting periods, especially in relation to a major contributor, it is difficult to assess the overall trend **in total bilateral contributions to mitigation-related activities**. However, approximations made on the basis of the reported figures seem to suggest that the **levels of such funding have remained stable since the last reporting period**. Following past patterns, the **energy and transport sectors continued to account for the largest share of total bilateral assistance** for mitigation between 2005 and 2010;

(e) Bilateral contributions for mitigation activities continued to dominate compared with funding for adaptation; however, **total bilateral contributions for adaptation-related activities** for the reporting period **reveal a significant increase** in comparison with those reported in the NC4. However, the comparison of the figures reported in the NC5 with those reported in the third national communications (NC3) and NC4 should be done carefully;

(f) In addition to contributions to the GEF Trust Fund, Annex II Parties reported contributions to **SCCF** and **LDCF**, as well as contributions to the **Adaptation Fund** under the Kyoto Protocol, in particular for the purpose of the operationalization of that fund;

(g) Nearly all of the Annex II Parties reported information on how they have encouraged **private-sector activities and public–private partnerships**, including providing examples of initiatives to stimulate private-sector participation in climate change action, **particularly in the context of the clean development mechanism (CDM)**, as part of their contributions of financial resources for climate change action. However, such references and figures are difficult to aggregate in a meaningful manner on the basis of the reported figures;

(h) Most Annex II Parties reported their pioneering use of **carbon finance through the establishment of carbon funds**, particularly under the CDM, as a means of transferring financial resources to support mitigation activities in developing country Parties. On a broader scale, EU member States reported the importance of fully operationalizing the European Union **emissions trading scheme** and integrating it with the international emissions trading mechanism under the Kyoto Protocol in facilitating the development of such carbon finance instruments. Funding related to carbon finance has not been limited to direct investments in projects generating emission reduction units, as Annex II Parties also reported contributions to complementary activities, such as capacity-building for the use of the CDM and transfer of clean technologies;

(i) The Climate Investment Funds (CIF) were highlighted and identified by several Annex II Parties as one of the main emerging channels for providing climate finance. CIF are two funds to help developing countries pilot low-emission (mitigation) and

climate-resilient (adaptation) development. With CIF support, many developing countries are piloting transformations in relation to clean technology, sustainable management of forests, increased access to energy through renewable energy, and climate-resilient development. Some Annex II Parties indicated that these funds aim to address the short-term financing gap between now and 2012 and to pilot approaches for the longer term;

(j) Several Annex II Parties reported the **development of risk management instruments** against adverse effects of climate change in developing country Parties. Key areas for which pilot experiences were reported include **insurance products developed according to pre-disaster analysis, and the development of indices as a reference or baseline against extreme weather fluctuations** (drought and floods);

(k) Several Annex II Parties made reference to expected significant increases in their provision of financial resources for the period between 2010 and 2012, particularly in the context of the fast-start USD 30 billion target suggested at the United Nations Climate Change Conference in Copenhagen as well as in the negotiations for the fifth replenishment of the GEF.

38. **Many Annex II Parties engage bilaterally with both developed and developing countries at all stages of the technology cycle** in activities relating to research and development, demonstration, deployment, diffusion and transfer of technology, in support of action on mitigation and adaptation. Work with developing countries focuses on the latter stages of the technology cycle, usually in the form of efforts to share knowledge and foster enabling environments in order to transfer technologies, while many of the efforts with other developed countries tend to focus on the early stages of the technology cycle, in the form of collaborative research, development and demonstration in relation to new technologies.

39. The majority of the **activities relating to technology transfer targeted mitigation and involved** technology **transfer in the energy sector**, in particular related to the deployment and diffusion of renewable energy and energy efficiency technologies. Most of the programmes and projects reported by Annex II Parties were implemented in Africa and Asia and the Pacific. **Many Annex II Parties consider partnerships between various stakeholders as an effective channel for the successful transfer of technology to developing countries**.

B. Financial resources

1. Overview of financial resources

40. In accordance with the UNFCCC reporting guidelines, all Annex II Parties submitted in their NC5 information on their financial contributions to the GEF, assistance provided to developing countries that are particularly vulnerable to climate change, and financial resources relating to the implementation of the Convention provided through bilateral, regional and multilateral channels. Annex II Parties reported their financial contributions made to the GEF Trust Fund, SCCF, LDCF and Adaptation Fund under the Kyoto Protocol, as well as through multilateral and bilateral channels. Also, Annex II Parties indicated how they have engaged the private sector in mobilizing additional resources, particularly for mitigation.

41. Annex II Parties reported information on their contributions to the GEF Trust Fund either for a multi-year period, for a replenishment cycle or for several years over a period. Some Annex II Parties reported their contribution as a total contribution to the GEF, while

other Annex II Parties reported only the estimated portion that was allocated to support the climate change focal area, and others did not specify the category of their contribution. In addition to providing information on their contributions to the GEF Trust Fund, Annex II Parties reported their contributions to LDCF and SCCF. This is the first time that contributions to these funds under the Convention have been reported officially by Annex II Parties. Nevertheless, the reported figures suggest that **multilateral and bilateral channels remain the predominant choice for Annex II Parties when providing financial resources for the implementation of the Convention**.

42. Information reported on contributions to multilateral institutions and programmes includes the following multilateral institutions: the World Bank, the International Finance Corporation, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the Inter-American Development Bank, the United Nations Development Programme, the United Nations Environment Programme (UNEP), the UNFCCC and others. In addition, and following the UNFCCC reporting guidelines, Annex II Parties also reported on their contributions to other multilateral institutions, such as the United Nation Convention to Combat Desertification, the World Health Organization, the World Trade Organization, The Global Fund to Fight AIDS, Tuberculosis and Malaria, the United Nations Children's Fund and the Joint United Nations Programme on HIV/AIDS, among others. While the identification of contributions directed to action on climate change is not specifically requested in the UNFCCC reporting guidelines, it is not straightforward in some cases to discern the amount that has been specifically allocated to the area of climate change.

43. Annex II Parties reported these data using differing timescales and currencies, as well as in various tabular and textual formats, which poses significant challenges in terms of carrying out a robust aggregation of the data in order to gain an understanding of the overall trends. Some Annex II Parties did not use the categories provided in the tabular format recommended in the UNFCCC reporting guidelines.

44. Key reporting issues:

(a) Around seventy per cent of the Annex II Parties reported on their contributions to multilateral institutions and programmes. Some Annex II Parties acknowledged difficulties in identifying the share of their contributions made to multilateral organizations targeting the implementation of the Convention and related activities, and only a few of them provided explicit details on such shares, also by using the Rio markers. Annex II Parties listed a wide range of multilateral institutions, including those specified in the UNFCCC reporting guidelines and other multilateral institutions;

(b) Nearly all Annex II Parties provided extensive and detailed information on how bilateral and regional financial contributions for mitigation and adaptation were provided. Most Annex II Parties indicated the subsectors that were targeted by such funding, using textual and/or tabular formats;

(c) Annex II Parties provided both quantitative and qualitative information on financial resources. On the qualitative side, many Annex II Parties provided descriptions of the programmes and projects that they support in the area of climate change. On the quantitative side, many Annex II Parties reported on financial resources in the tabular formats provided in the UNFCCC reporting guidelines. However, some Annex II Parties did not provide the three key tables on the GEF and multilateral and bilateral contributions;

(d) Although many Annex II Parties reported financial data, the detail and level of aggregation of these data vary significantly. The main challenges when comparing data across Parties relate to the differences in the sectoral categories used by Annex II Parties to

aggregate their financial data, and in the reporting periods/years and currency used by Annex II Parties;

(e) Although not prevented by the existing UNFCCC reporting guidelines, the use of different time bases makes any comparison or aggregation of data significantly difficult. Many Annex II Parties provided information on their financial contributions by year, multi-year period or GEF replenishment cycle, or for several years over a period. Reporting periods vary across Annex II Parties. Several Annex II Parties reported for a multi-year period without annual breakdown or provided information on their contributions over a GEF replenishment cycle;

(f) With regard to the base currency used by Annex II Parties for their reporting, the UNFCCC reporting guidelines indicate that Annex II Parties have to report information on their financial contributions following a specific tabular format in USD. This, however, is not a mandatory requirement for reporting on their multilateral, bilateral and regional financial contributions. More than half of the Annex II Parties provided financial data in their national currencies, including most EU member States, Canada, Japan, New Zealand, Norway and United Kingdom. The selection of rates for the conversion of the data into a single currency is highly sensitive and may have significant implications for the trends and conclusions suggested by the reported figures. For the purposes of this document, the exchange rates used were taken from the data set of financial indicators of the Organisation for Economic Co-operation and Development[4] for the relevant years.

2. Provision of "new and additional" resources

45. More than half of the Annex II Parties reported that they provided "new and additional" financial resources pursuant to Article 4, paragraph 3, of the Convention. Most of these Annex II Parties reported the provision of "new and additional" financial resources through a variety of bilateral, regional and multilateral channels, including through the GEF and funds under the Convention. However, in the absence of a common and official definition of the concept of "new and additional", the understanding of the nature of "new and additional" resources provided remains divergent and depends on the individual approach taken by each Party.

46. Five Annex II Parties defined their contributions as "new and additional" in relation to the pledges made in the Bonn Agreements on the implementation of the Buenos Aires Plan of Action. A few other Annex II Parties, including the United Kingdom, suggested that the "new and additional" nature of their contributions should be measured against the target of providing 0.7 per cent of their gross national income in official development assistance (ODA) by 2013.

47. Norway and Switzerland explicitly defined an individual baseline against which to measure the "new and additional" nature of their financial contributions. While noting that there is no internationally accepted definition, Norway stated that an increase in funding for climate change actions in the reporting period should be viewed as "new and additional". Switzerland reported that increases in its contributions to the GEF and funds under the Convention should be seen as "new and additional" finance. Others did not elaborate on their definition of "new and additional" finance, and Denmark stated that it is impossible to give precise figures on finance for climate assistance owing to methodological problems in defining "additionality".

[4] The relevant exchange rates were obtained from <http://stats.oecd.org/index.aspx?queryid=169>.

48. Several Annex II Parties, including Austria, Greece and Iceland, reported on their ODA contributions; however, the identification of the climate change component was not always straightforward. Others reported on activities which appear to have general development objectives, without determining to what extent those activities help address climate change. Belgium, for example, reported multilateral debt cancellation as part of its contributions.

49. Eight Annex II Parties, all European, applied the Rio markers for reporting on climate-relevant ODA. In the reporting period for the NC5, the Rio marker for climate change related aid applied to mitigation activities, especially in cases where Annex II Parties indicated that the funding would not have been provided if not for the climate change component. Germany, for instance, indicated that, at the time of submitting its NC5, the Rio "climate change" category did not yet include the aspect of adaptation to climate change.

3. Multilateral funding

50. Although negotiations for a new fund under the Convention and discussions on the role of the GEF in the context of the fourth review of the financial mechanism of the Convention are ongoing, Annex II Parties continued to provide funds to the GEF Trust Fund over the reporting period. The reported figures in the NC5 show that contributions to the fund have increased notably, when compared with what was reported in the NC3 and NC4. In total, Annex II Parties reported contributions of USD 1,741.40 million in their NC3 and USD 1,931.24 million in their NC4.[5] Contributions to the GEF Trust Fund have increased by 64 per cent as reported in the NC5 compared with those reported in the NC4, and were equal to USD 3,168.84 million over the reporting period.

51. The end of the reporting period coincided with the negotiations on the fifth replenishment of the GEF Trust Fund. Although such negotiations concluded in June 2010, some Annex II Parties already anticipated a significant increase in their pledges compared with in previous replenishment cycles.

52. In communicating their contributions to the GEF Trust Fund, Annex II Parties provided different levels of detail on how they categorized their contributions. For example, the Netherlands classified part of its contribution to the GEF as ODA and another portion as non-ODA. Also, Switzerland indicated that one third of its contribution to the GEF was for climate-related funding, of which 97 per cent counted as ODA.

53. Fifteen Annex II Parties reported on their contributions to SCCF and LDCF, both of which are operated by the GEF as an operating entity of the financial mechanism of the Convention. Annex II Parties reported data at different levels of aggregation. Some Annex II Parties, such as Portugal, reported their contributions to these two funds as one amount. Other Annex II Parties, such as Switzerland, provided information on their contributions to LDCF as well as separate information on their specific contributions under particular windows of SCCF. Relevant approximate aggregate figures are provided in table 4.

[5] Total figures were taken from document FCCC/SBI/2007/INF.6/Add.2.

Table 4
Financial contributions made by Annex II Parties to funds under the management of the Global Environment Facility[a, b]
(Millions of United States dollars)

Fund	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Other year range within the reporting period*	*Unspecified*	***Total***
GEF Trust Fund	492.45	350.38	307.15	272.61	26.00	26.00	1 529.91	164.34	**3 168.84**
LDCF	5.85	16.52	19.23	12.61			6.73		**60.94**
SCCF	4.46	14.46	4.34	30.66			11.93		**65.86**
LDCF and SCCF	1.33	0.06							**1.39**
Total	**504.09**	**381.43**	**330.72**	**315.88**	**26.00**	**26.00**	**1 548.57**	**164.34**	**3 297.04**

Abbreviations: GEF = Global Environment Facility, LDCF = Least Developed Countries Fund, SCCF = Special Climate Change Fund.

[a] Figures for the GEF Trust Fund include non official development assistance (ODA) and ODA/Montreal Fund ODA figures that were reported by some Parties.

[b] Table includes figures for the year range 2005–2010 only.

54. The figures presented in table 4 may not necessarily match those in official reports issued by the secretariat of the GEF or its Trust Fund, as the figures presented in this document are based only on what was reported by Annex II Parties in their NC5. Similarly, the use of certain exchange rates for the conversion of the data reported by Annex II Parties into USD may contribute to differences.

Table 5
Reported financial contributions made by Annex II Parties to multilateral institutions
(Millions of United States dollars)

Multilateral institution	*NC3*[a]	*NC4*[a]	*NC5*[a]
World Bank	6 037.5	3 884.5	15 028.0
International Finance Corporation	360.8	733.9	96.3
African Development Bank	1 113.1	727.4	1 195.2
Asian Development Bank	1 412.4	1 025.2	1 007.7
European Bank for Reconstruction and Development	326.8	248.7	225.3
Inter-American Development Bank	373.1	207.7	211.9
United Nations Development Programme	1 436.7	1 663.9	2 999.1
United Nations Environment Programme	105.6	108.4	292.8
UNFCCC	20.5	13.8	167.5
Others	6 297.6	11 012.3	22 810.2
Total	**17 484.1**	**19 625.8**	**44 034.1**

Note: See table 9 in the annex to this document for details on the annual contributions of each Party.

Abbreviations: NC3 = third national communication, NC4 = fourth national communication, NC5 = fifth national communication.

[a] NC3 covers the period 1998–2000; NC4 covers the period 2001–2004; and NC5 covers the period 2005–2010. The totals in the NC3 and NC4 columns were taken from table 4 of document FCCC/SBI/2007/INF.6/Add.2.

55. Table 5 provides aggregated information on Annex II Parties' contributions to multilateral institutions, as per the tabular format suggested in the UNFCCC reporting guidelines. Further details on the reported figures by Party can be found in the annex to this document. Table 5 shows the significant increase in financial flows channelled through

multilateral entities. Further, almost USD 300 million were reported to have been provided via CIF, as can be seen in table 6. It is worth highlighting the difference in the contributions to SCCF and LDCF in comparison with the levels of funding provided through CIF, which suggests that Annex II Parties showed a marked preference for channelling more financial resources through funds that are not necessarily under the Convention during the reporting period.

Table 6
Financial contributions reported by Annex II Parties to the Climate Investment Funds in the period 2005–2010[a]
(Millions of United States dollars)

	Australia	*Norway*	*Spain*	*Switzerland*	*United Kingdom*	***Total***
World Bank Climate Funds				10.0	168.4	**178.4**
World Bank Climate Funds – Carbon			7.3			**7.3**
World Bank Climate Funds – Carbon Finance Assist			5.6			**5.6**
World Bank Climate Funds – Clean Energy Investment Framework					3.5	**3.5**
World Bank Climate Funds – Clean Technology Fund	37.4		14.6			**52.0**
World Bank Climate Funds – Forest Carbon Partnership Facility	11.7	5.7	7.3			**24.7**
World Bank Climate Funds – Forest Investment Program	7.5					**7.5**
World Bank Climate Funds – Pilot Program on Climate Resilience	19.4					**19.4**
Total	**76.0**	**5.7**	**34.9**	**10.0**	**172.0**	**298.5**

[a] The table shows only the figures that were reported by the listed Parties. Some other Parties mentioned that they had provided contributions to the Climate Investment Funds, but no figures were indicated.

4. Bilateral funding

56. The reported figures for bilateral contributions are difficult to compare between reporting periods. This is particularly the case between the NC4 and the NC5. A significant distortion may be explained by the change in the reporting approach adopted by the United States, which is a major contributor. Table 7 shows the figures for bilateral contributions as reported by Annex II Parties, including those of the United States. The table contains additional categories for mitigation and adaptation that are not listed in the UNFCCC reporting guidelines but that may contain relevant information on the sectors targeted for financial support.

57. In the case of mitigation, the figures seem to depict a dramatic decrease in bilateral funding between the reporting periods of the NC4 and the NC5. However, these figures should be considered with extreme caution, owing to the distortions mentioned in paragraph 56 above.

Table 7
Bilateral financial contributions by sector
(Millions of United States dollars)

Sector		*Total reported in NC3*	*Total reported in NC4*	*Total reported in NC5*
Mitigation	Energy	5 802.70	17 832.80	5 154.91
	Transport	2 215.90	41 176.10	4 864.35
	Forestry	1 057.90	1 228.90	1 132.58
	Agriculture	799.40	7 512.10	345.35
	Waste	223.40	134.80	280.99
	Industry	950.10	71 885.60	76.07
	Capacity-building			15.75
	Other mitigation			578.02
	Total	**11 049.40**	**139 770.30**	**12 448.02**
Adaptation	Capacity-building	4 477.70	242.10	155.57
	Coastal zone management	713.70	31.20	71.41
	Other vulnerability assessment	236.80	71.30	525.60
	Land-use planning			0.46
	Rural development			4.16
	Water management, supply and sanitation			916.49
	Other adaptation			272.80
	Total	**5 428.20**	**344.60**	**1 946.49**
	Grand total	**16 477.60**	**140 114.90**	**14 394.51**

Note: In addition to the data reported by Parties under capacity-building and coastal zone management, Parties reported data under other categories that are different from those specified in the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

Abbreviations: NC3 = third national communication, NC4 = fourth national communication, NC5 = fifth national communication.

58. In relation to adaptation, bilateral funding seems to have grown remarkably between the reporting periods of the NC4 and the NC5. Even if some distortions are taken into account, the overall increasing trend in the allocation of funds for adaptation becomes apparent between the two reporting periods. Again, however, these figures should be considered carefully when taking into account the figures reported in the NC3.

59. Figures related to bilateral funding for mitigation by sector are presented in table 8, which shows the amounts provided by all Annex II Parties except the United States. The table has been prepared using information from tables 10 to 15 of the annex to document FCCC/SBI/2007/INF.6/Add.2.

60. Table 8 also shows that the energy sector has received the major allocation of bilateral funding for mitigation, followed by the transport and forestry sectors. The category other mitigation in the table comprises air quality and other unspecified sectors.

Table 8
Bilateral financial contributions for mitigation, by sector
(Millions of United States dollars)

		Total reported in NC3	*Total reported in NC4*	*Total reported in NC5*
Mitigation	Energy	5 710.30	4 101.10	5 075.55
	Transport	3 786.64	2 688.91	4 864.35
	Forestry	1 056.71	1 193.05	1 052.50
	Agriculture	1 098.10	92.00	345.35
	Waste	280.50	138.20	280.99
	Industry	1 015.60	141.20	76.07
	Capacity-building			15.75
	Other mitigation			578.02
	Total mitigation	**12 947.85**	**8 354.46**	**12 288.58**

Note: This table presents information that, as regards mitigation, is similar to that presented in table 7, but it excludes the data for the United States of America, for the reason outlined in paragraph 56 above.

Abbreviations: NC3 = third national communication, NC4 = fourth national communication, NC5 = fifth national communication.

61. The beginning of the first commitment period of the Kyoto Protocol coincided with the second half of the reporting period of the NC5. This was reflected in the Annex II Parties' reporting on the use of carbon finance from the Kyoto Protocol mechanisms. Several Annex II Parties, particularly EU member States, as well as Japan, Norway and Switzerland, highlighted a variety of initiatives relating to the Kyoto Protocol mechanisms, such as:

(a) The Prototype Carbon Fund (of the World Bank), which finances projects that reduce GHG emissions in developing countries for the purposes of the Kyoto Protocol;

(b) The Carbon Partnership Facility (CPF) (of the World Bank), consisting of private and public buyers and sellers of carbon credits in both developed and developing countries. CPF aims at incentivizing private- and public-sector engagement in clean energy and clean technology investment in developing countries;

(c) The Forest Carbon Partnership Facility (of the World Bank), which was designed to assist developing countries to develop and carry out programmes for reducing emissions from deforestation and forest degradation in developing countries through its two funds: the Readiness Fund and the Carbon Fund;

(d) The multi-donor fund for sustainable development and environment (of the World Bank), which has two themes, namely Theme 2009: Adaptation to climate change and Theme 2010: Climate change impacts and responses, and food insecurity, financial shocks and vulnerability;

(e) The Renewable Energy and Energy Efficiency Partnership, which sets out ambitious goals for reducing poverty and promoting sustainable ecological, economic and social development over an operational timespan up to 2015.

62. Capacity-building mechanisms were reported by Annex II Parties, which have been implemented in parallel to efforts to accelerate the use of carbon finance tools. These capacity-building mechanisms aim to enhance the participation in, and use of, the CDM by developing country Parties. Such mechanisms include the World Bank programme of National Strategy Studies on CDM potentials, the World Bank Carbon Finance Assist trust

fund (a global programme for CDM-related capacity-building), Capacity Development for the CDM, implemented by the UNEP Risø Centre, and others.

63. Regarding adaptation, the main sector targeted for financial support between 2005 and 2010 seems to have been water management, supply and sanitation.

C. Transfer of technology

1. Overview of technology transfer

64. All Annex II Parties provided information on practicable steps to promote, facilitate and finance the transfer to other Parties, or other Parties' access to, environmentally sound technologies and know-how to give effect to their commitments under Article 4, paragraph 5, of the Convention. They also provided examples of their technology transfer programmes and projects. In providing this information, almost all of them followed the UNFCCC reporting guidelines. Almost all Annex II Parties included a separate section on transfer of technology in their NC5, and relevant information was provided also in their descriptions of multilateral and bilateral cooperation. Many Annex II Parties consider partnerships between various stakeholders as an effective channel for the successful transfer of technology to developing countries.

65. In reporting their technology transfer activities, many Annex II Parties differentiated between activities undertaken at the bilateral level and activities undertaken at the multilateral level. Many of the technology transfer activities undertaken by Annex II Parties at the bilateral level focus on the provision of technology assistance through development programmes and projects in developing countries, in particular the least developed countries. Some Annex II Parties have increased their bilateral collaboration with emerging economies.

66. Many Annex II Parties engage bilaterally with both developed and developing countries at all stages of the technology cycle, including research and development, demonstration, deployment, diffusion and transfer of technology, in support of action on mitigation and adaptation. **Work with developing countries focuses on the latter stages of the technology cycle**, usually in the form of efforts to share knowledge and foster enabling environments in order to transfer technologies, while many of the **efforts with other developed countries tend to focus on the early stages of the technology cycle**, in the form of collaborative research, development and demonstration in relation to new technologies.

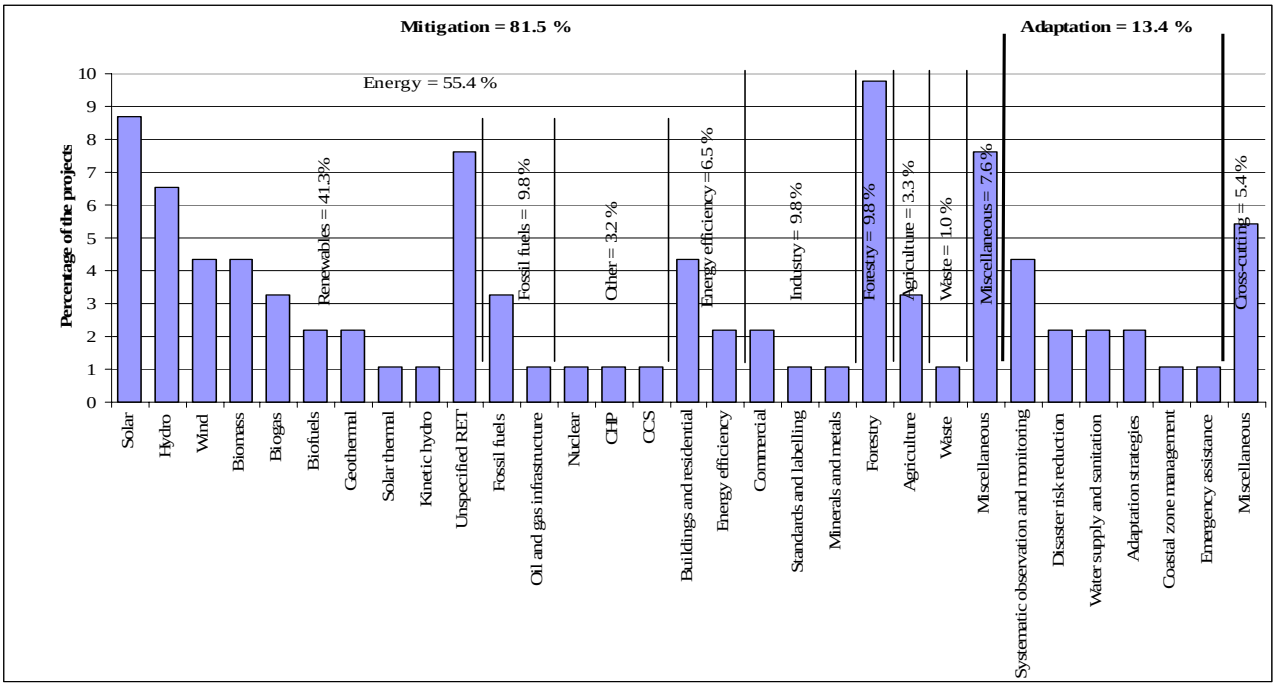
67. **Many of the programmes and projects reported by Annex II Parties were implemented through multilateral cooperation**. Some of these focused on the development of specific technologies, such as particular renewable energy technologies, while others had a clear focus on fostering appropriate enabling environments for the deployment and diffusion of particular technologies.

68. All Annex II Parties reported activities related to technology transfer, including success stories. Fifteen Annex II Parties provided, in the relevant table, information on a total of 93 programmes and projects that promoted practicable steps to facilitate and/or finance the transfer of, or access to, environmentally sound technologies. **The majority of these programmes and projects targeted mitigation and involved technology transfer in the energy sector, in particular related to the deployment and diffusion of renewable energy and energy efficiency technologies** (see figure 1). This is in line with

the findings reported in the compilation and synthesis report of NC4. Most of the programmes and projects reported by Annex II Parties were implemented in Africa and Asia and the Pacific (see figure 2).

69. Nine Annex II Parties presented various examples of cooperation at the regional level, aimed at promoting the exchange of knowledge and experiences within the regions and addressing specific regional technology needs. Examples include the regional cooperation on environmental protection within the Organization of the Black Sea Economic Cooperation, the Ibero-American Network of Climate Change Offices and the International Centre for Integrated Mountain Development.

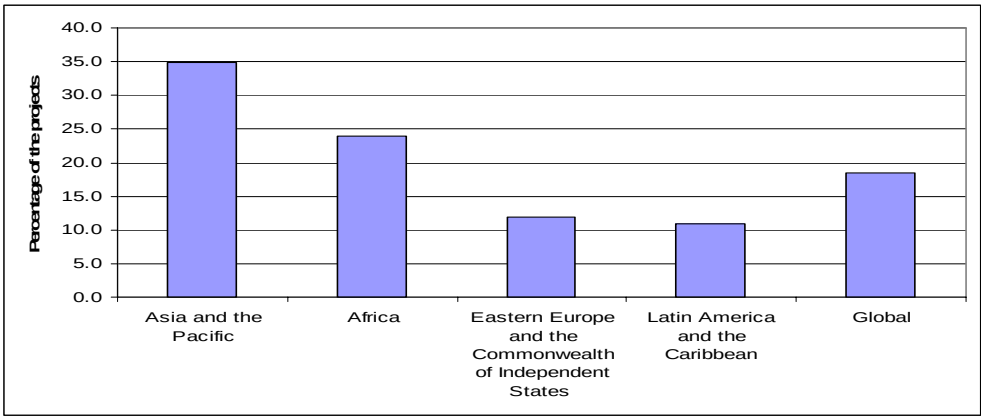
Figure 1
Distribution by sector and technology of selected technology transfer programmes and projects reported by Annex II Parties



Abbreviations: CCS = carbon capture and storage, CHP = combined heat and power, RET = renewable energy technology.

70. Twelve Annex II Parties reported on **success stories related to selected technology transfer** programmes **and projects**, and, in addition, highlighted factors which contributed to the successful implementation of these programmes and projects. The importance of **capacity-building and cooperation with local stakeholders** was frequently reported by Annex II Parties. Other success factors reported by Annex II Parties include: an integrated project approach; an adequate project preparation process, such as the preparation of feasibility studies; favourable enabling environments; the relevance, impacts and benefits of the project; access to information; replicability; and the market potential of the project.

Figure 2
Regional distribution of selected technology transfer programmes and projects reported by Annex II Parties



71. Eight Annex II Parties made explicit reference to **hard and soft technologies**. However, most of the Annex II Parties implicitly referred to both types of technologies, by providing information on hard technologies being transferred, as well as information on activities relating to soft technologies, such as local capacity-building, training programmes and information networks, such as the Livestock Emissions and Abatement Research Network, established by New Zealand.

2. Partnerships and cooperation between key stakeholders

72. Most of the technology transfer activities reported by Annex II Parties are managed by a number of government agencies and implemented by specialized agencies for development cooperation through partnerships with local stakeholders, such as: the Energy and Environment Partnership with Central America (see box 2), which was launched with the support of the Finnish Government in coordination with the Central American Integration System and the Central American Commission for Environment and Development to promote renewable energy in Central America; and the Asia-Pacific Partnership on Clean Development and Climate (APP), an effort established by Australia, Canada, China, India, Japan, Republic of Korea and United States to accelerate the development and commercialization of clean energy technologies and practices (see box 3).

73. Many Annex II Parties consider partnerships between various stakeholders as an effective channel for the successful transfer of technology to developing countries. Stakeholders reported by Annex II Parties include developers, owners, suppliers, buyers, recipients and users of technology; financiers and donors; governments; international institutions; and non-governmental organizations (NGOs) and community groups. The majority of Annex II Parties provided details on networks and programmes built in partnership, in order to facilitate the transfer of technology and know-how, to support developing countries in their efforts to mitigate or adapt to the adverse impacts of climate change. Some Annex II Parties stated that many of their adaptation, mitigation, capacity-building and technology cooperation programmes are administered through bilateral partnerships. In addition, Annex II Parties provided examples of partnerships between two or more Annex I Parties for the implementation of specific technology transfer projects in developing countries. For example, the Government of Norway collaborated with the Government of Denmark in supporting off-grid electrification using renewable energy technologies in Nepal.

Box 2
Energy and Environment Partnership with Central America

The Energy and Environment Partnership with Central America, initiated by the Finnish Government, aims at finding support for public and private investments, developing effective and consistent strategies within the national energy policies of each country in the Central American region, and improving the sustainable development of renewable energy on a small scale. Other goals include strengthening effective rural electrification programmes and developing capacity in the areas of financing and technical engineering at the regional level.

So far, partial funding has been granted to about 200 projects. These include feasibility studies and research, pilot and demonstration projects in all fields of renewable energy and energy efficiency. The public and private sectors are participating in the programme, which has increased international banks' and funding institutions' interest in co-financing. Factors which have contributed to the programme's success include: the wide participation of the private sector, universities, donors and research institutes; the inclusion of capacity-building and training; and the conduct of studies on financing models, energy markets and energy resources.

Box 3
Asia-Pacific Partnership on Clean Development and Climate

The Asia-Pacific Partnership on Clean Development and Climate (APP) is an effort established by Australia, Canada, China, India, Japan, Republic of Korea and United States of America to accelerate the development and commercialization of clean energy technologies and practices. Partner countries work together and with their private sectors to meet goals related to energy security, the reduction of national air pollution, and climate change, in ways that promote sustainable economic growth and poverty reduction. Using a sectoral approach that breaks climate and clean development related challenges down into more manageable task forces helps APP Partners to take advantage of readily available opportunities to increase energy efficiency and reduce greenhouse gas emissions. In addition to their carrying out of such targeted, immediate actions, the sectoral focus enables APP Partners to lay the foundations for long-term market transformation. The Partnership has endorsed 175 individual cooperative activities, including 22 flagship projects that exemplify its goals.

74. Some Annex II Parties highlighted the **increased participation of civil society organizations** in development cooperation related programmes and projects. These Annex II Parties consider strategic, programmatic cooperation with civil society organizations as an effective channel through which to enhance technology transfer to developing countries.

75. Many Annex II Parties reported on their provision of support for the development and enhancement of endogenous capacities and technologies in developing countries. Capacity-building activities reported by Annex II Parties include education and training to enhance skills in the design, installation, operation and maintenance of specific technologies, and project development skills, and the strengthening of the capacities of national institutions relevant to technology transfer. **Capacity-building forms an integral part of many of the technology transfer programmes and projects reported by Annex II Parties, at both the individual and the institutional level**. Examples of these programmes and projects are the Seventh Framework Programme for research and

technological development of the European Commission (EC), the Asia-Pacific Network for Global Change Research and the US–China Clean Energy Research Center.

3. The role of the private sector in enhancing the transfer of technologies

76. Ten Annex II Parties included in their NC5 a separate section on the prominent role of the private sector in enhancing the transfer of technologies, while ten other Annex II Parties included information on the private sector's major role in the description of their activities related to technology transfer. Some Annex II Parties noted that, while public-sector funding for climate change activities is continuing to grow, it is private-sector investment that continues to lead, in terms of delivering resources, to addressing climate change in developing countries.

77. The following initiatives to facilitate private-sector participation in the transfer of environmentally sound technologies were most often reported by Annex II Parties:

(a) Providing assistance to governments in developing countries in creating enabling environments to ensure that the private sector can operate in an environment conducive to private-sector investment;

(b) Supporting investment-promotion activities, including market studies, feasibility studies, job-related training and temporary management, clean energy information systems and trade missions;

(c) Setting up networks between businesses in developed and developing countries;

(d) Providing financing and business development services in developing countries;

(e) Providing financial incentives for projects and programmes, including grants, soft loans, export credit guarantees, equity investments and venture capital.

78. Some Annex II Parties highlighted programmes in which **partner countries cooperate with the private sector** to meet energy security and climate change resilience related goals in ways that promote sustainable development and poverty alleviation. These partnerships aim to strengthen the presence of the private sector in developing countries. Examples include the Business-to-Business Programme initiated by Denmark, the Private Sector Investment Programme of the Dutch Government and APP.

79. Some Annex II Parties reported that financing for technology transfer is channelled through special funds, such as the Access to Energy Fund (see box 4). This fund was initiated by the Dutch Government and the Netherlands Development Finance Company and collaborates with local companies that provide consumers access to renewable energy.

Box 4
Access to Energy Fund

The Access to Energy Fund (AEF) is a vehicle initiated by the Dutch Government and the Netherlands Development Finance Company (FMO) to make it possible to fund private-sector projects that create sustainable access to energy services. FMO is targeting at least 75 per cent of the total capital of AEF for sub-Saharan Africa and/or the least developed countries and a maximum of 25 per cent for other emerging markets.

AEF provides financial leverage for renewable energy projects. It can provide equity financing up to an amount of USD 10 million or 75 per cent of the total transaction costs. Subordinated debt/senior loans of up to USD 20 million or 75 per cent of the total transaction costs can be made. AEF can offer longer grace periods and tenors, which are often necessary to launch such projects. It can also play a role in the development of new projects by providing grants.

By providing financing for projects in the areas of the generation, transmission and distribution of energy, AEF hopes to ultimately connect 2.1 million people to energy services in developing countries by 2015.

D. Capacity-building

80. Almost all Annex II Parties highlighted activities relevant to supporting the development and enhancement of endogenous capacities in developing countries. Eleven of them included a separate section on capacity-building in their NC5 and other Annex II Parties reported on capacity-building under their bilateral projects or by completing the relevant table with respect to adaptation.

81. Most Annex II Parties recognize that capacity-building is essential to enable developing countries to effectively implement the Convention and its Kyoto Protocol. In addition, most Annex II Parties reported paying increased attention to capacity-building needs since the submission of their NC4, supporting capacity-building across all areas identified in the UNFCCC reporting guidelines.

82. While capacity-building was recognized as a cross-cutting issue by most Annex II Parties, eight Annex II Parties included a separate section on capacity-building in their NC5 (Australia, Belgium, Italy, Japan, Netherlands, Norway, Portugal and Sweden). Two of these Annex II Parties, Italy and Netherlands, additionally made a distinction between their support to capacity-building activities for mitigation and their support to those for adaptation. Other Annex II Parties reported on their capacity-building activities within the sections of their NC5 on: multilateral and bilateral projects under financial resources and transfer of technology; adaptation; research and systematic observation; and education, training and public awareness.

83. While the focus in the reporting on capacity-building was on providing support to developing countries, some Parties with economies in transition (EIT Parties) (Bulgaria, Croatia, Czech Republic and Lithuania) and Turkey referred to support received by them to implement capacity-building activities in their own countries, in the context of joint implementation and/or through bilateral and multilateral support.

84. Parties reported on their support provided to developing countries and EIT Parties across the priority areas of needs identified in the framework for capacity-building in

developing countries established under decision 2/CP.7 and the framework for capacity-building in countries with economies in transition established under decision 3/CP.7, but they did not make direct reference to those frameworks. The areas of activity which received most support in the context of the implementation of the Convention and its Kyoto Protocol are:

(a) **Human and institutional development**: providing assistance to incorporate climate change issues into other development strategies and plans such as the United Nations Millennium Development Goals and national adaptation programmes of action, as well as supporting capacity-building for developing countries' participation in the CDM;

(b) **Adaptation**: provision of technical assistance to develop understanding of climate change impacts, assessment of risks and vulnerabilities, and development of adaptation options and methods for analysing precipitation regimes and validating climate models;

(c) **Mitigation**: providing technical support to promote the transition to a green economy by carrying out energy planning activities, including plans for the potential use of renewable energy, the establishment of large wind farms, the renovation of power stations, the promotion of energy efficiency and the promotion of the sustainable use of biomass as a fuel;

(d) **Research, and scientific and technology cooperation**: supporting research on climate change, including climate prediction services, and the development of renewable energy technologies;

(e) Training and education related to:

(i) Disaster risk reduction, the sustainable use and management of natural resources, rural development, water management, forestation and soil deterioration and food security;

(ii) The establishment of accounting systems to help monitor and mitigate GHG emissions from deforestation and forest degradation;

(iii) The effective participation of developing country representatives in meetings of the UNFCCC;

(iv) The establishment of CDM designated national authorities, especially in sub-Sahara Africa, and the active engagement of the private sector in carbon markets;

(f) **Knowledge-sharing and exchanging information**: providing technical support for the development of climate databases and supporting regional networking approaches, in order to improve the development and exchange of knowledge among climate change focal points and climate change professionals.

IV. Research and systematic observation

A. Overview

85. Information on research and systematic observation was provided by all Parties in their NC5. The structure and content of the reporting reflected mainly topics of national interest and priority activities in the area of research and systematic observation. Although the information provided covers a wide range of activities and research disciplines, the UNFCCC reporting guidelines were not in all cases adhered to entirely, as was also observed in the previous compilation and synthesis report of national communications.

86. In the reporting on global climate observing systems, considerable differences could be noted in the use of the "Revised UNFCCC reporting guidelines on global climate change observing systems", adopted by decision 11/CP.13. A few Parties provided the required information on this matter in the form of a detailed report (e.g. as an annex), while most Parties integrated the required information into the relevant chapters of their NC5, with varying degrees of detail and adherence to the aforementioned revised reporting guidelines. In addition, some Parties referred to the information provided in their separate reports on national activities with respect to implementing the *Implementation Plan for the Global Observing System for Climate in Support of the UNFCCC* (hereinafter referred to as the GCOS implementation plan).[6] These reports were provided to the Global Climate Observing System (GCOS) secretariat for the preparation of the report on progress with the GCOS implementation plan[7] that was submitted by the GCOS secretariat to the Subsidiary Body for Scientific and Technological Advice at its thirtieth session.

87. Many Parties reported that they continue their national research and systematic observation programmes and plans concerning climate change over the long term, and several Parties reported on an enhanced strategic focus on climate change research in particular.

88. Scientific information on climate change is increasingly connected to policy processes, the formulation of strategies to address climate change and the development of technological solutions in the context of sustainable development.

89. Many Parties reported on their continued efforts to reduce uncertainties associated with the physical science basis and the understanding of the climate system. **Climate change related research is increasingly incorporated into energy research and other sectoral research as well as into research and development in relation to innovative technologies**. In this regard, the energy, infrastructure and transport sectors were highlighted as priority areas for research by several Parties. **Many Parties reported on their continued or enhanced focus on interdisciplinary research on socio-economic aspects of climate change and adaptation measures. Research relevant to adaptation also covers the impacts of climate change, for example on health, tourism, energy and security**. A few Parties additionally emphasized their work relevant to **climate services**. In this regard, the need for the provision of climate information and services and for collaboration between the providers and end-users of such information and services was highlighted.

[6] A total of 23 Annex I Parties provided additional information on their national activities with respect to implementing the GCOS implementation plan, in response to the invitation made by the Subsidiary Body for Scientific and Technological Advice (SBSTA) at its twenty-third and twenty-seventh sessions. The submitted reports containing such information are available at <http://unfccc.int/items/4499.php>. A synthesis of those submitted reports was prepared by the Global Climate Observing System (GCOS) secretariat and is contained in document FCCC/SBSTA/2009/MISC.7/Add.1. According to that synthesis report, most reporting Parties followed the general approach suggested in decision 11/CP.13 in providing the required information on their national GCOS activities.

[7] The report on progress with the GCOS implementation plan is contained in document FCCC/SBSTA/2009/MISC.7, provided in response to the request made by the SBSTA at its twenty-third session for the GCOS secretariat to provide a comprehensive report at SBSTA 30 on progress with the GCOS implementation plan (document FCCC/SBSTA/2005/10, para. 94), in addition to the regular reporting requested by the Conference of the Parties in decision 5/CP.10.

B. General policies and funding

90. Parties provided information on general policies and strategies, institutional arrangements and responsibilities for research and systematic observation. Many Parties provided information on budgeting structures and the responsibilities of ministries and related public institutions, as well as on private-sector participation, often including quantitative information on the funding of and investment in climate-related research and systematic observation.

91. It is generally the responsible ministries which formulate the policy framework for climate change research and systematic observation, but research activities are often coordinated through **multidisciplinary programmes** with the objective of implementing the government strategy. Such research programmes either focus solely on climate change or include it as one research area. A few Parties, however, reported that the coordination of research activities needs to be further strengthened and that an overarching research strategy and programmatic approach, including sufficient government guidance, should be developed. It is generally the national meteorological services that have the main responsibility for carrying out systematic observations and data collection, and space agencies play an important role in providing space-based observations.

92. Funding for research and systematic observation includes funding provided through government budgets and agencies, public funds, national research councils, international and bilateral cooperation such as the EU/EC programmes and structural funds, and the private sector. **Several Parties reported a considerable increase in funding for climate change related research activities**, while few Parties reported only a moderate increase in funding or the insufficient availability of resources to carry out needed or planned climate change related research activities and systematic observation.

C. International and regional cooperation, including capacity-building activities in developing countries

93. **Parties generally engage actively in international research cooperation and programmes**. As in previous national communications, several Parties reported on their active participation in the work of the IPCC and their contributions to its assessment reports. Also, some Parties included information on their specific contributions and research feeding into the upcoming IPCC Fifth Assessment Report (AR5). In addition, with few exceptions, Parties highlighted their participation in relevant international research programmes, in particular the World Climate Research Programme, the International Geosphere–Biosphere Programme and the International Human Dimensions Programme on Global Environmental Change.

94. Many Parties cooperate also in **regional research activities**, such as the Framework Programmes of the EC and associated countries, and activities of the Asia-Pacific Network for Global Change Research. Parties highlighted their bilateral cooperation on research with neighbouring countries and their participation in various international research programmes and projects with a certain thematic or regional focus. Polar research (e.g. in the context of the International Polar Year) emerged as a prominent area for international cooperation on research. With regard to systematic observation, Parties reported on cooperation through networks for systematic observation and data exchange, in particular within the framework of GCOS and the World Meteorological Organization (WMO).

95. Information on providing support and capacity-building relevant to research and systematic observation in developing countries was provided by several Annex II Parties. The activities reported cover a variety of areas, including:

(a) Developing and improving regional research networks and identifying and implementing regional research projects;

(b) Enhancing partnerships with institutions to build up competence and capacity;

(c) Collaborating with private-sector partners, for example, in the development and deployment of clean energy technologies in ways that promote sustainable economic growth and poverty reduction;

(d) Cooperating in the areas of climate-related agricultural research, environmental technology, and environmental economics and policy;

(e) Enhancing the knowledge basis on and the understanding of regional climate trends and drivers and projections of various impacts, for example ocean acidification and sea level rise;

(f) Analysing vulnerability to climate change and various adaptation strategies and options;

(g) Analysing the driving forces affecting GHG emissions and options for reducing emissions;

(h) Building the capacity to make climate projections and gather climate-related information through strengthened systematic observation systems, including by supporting the implementation of GCOS Regional Action Plans;

(i) Enhancing climate data management systems and the capacity of the national meteorological and hydrological services and their staff;

(j) Providing support for the design of improved development policies, programmes and investments.

D. Research

96. Climate change related research priorities are often aligned with strategic national priorities reflecting specific national interests and concerns as well as regional characteristics. In addition to listing thematic priorities for research, Parties have increasingly reported on practices which aim to enhance the effectiveness and usability of knowledge created through research activities. These practices include identifying challenges and key areas where science must deliver information to inform decision-making, and efforts being made by research programmes to facilitate the dialogue between the scientific community, policymakers and the private sector. A few Parties also reported on their efforts to overcome barriers to exchanging data and information, for example through the close coordination of communication and research activities within their research programmes and by providing open access to data and information.

97. Parties provided information on all or some of the thematic areas outlined in the UNFCCC reporting guidelines. **Research on climate processes and the climate system continues to be a high priority for many Parties**. Examples in this thematic area include: research to improve understanding of atmospheric and oceanic processes, including for example the role of aerosols and clouds and the role of the ocean in the climate system; studies on the natural variability and stability of the climate system; trends in and the

occurrence of extreme events; the carbon cycle and the role of the GHGs in relation to the global climate; and proxy studies to increase understanding of the climate in the past.

98. **In addition, some Parties reported on activities relevant to the development and refinement of climate models**, including: a fully coupled Earth System Model (HadGEM2-ES) developed by the Met Office Hadley Centre in conjunction with United Kingdom university collaborators, used for projecting future climate change, studying mitigation pathways and understanding climate feedbacks within the Earth system; and Japan's continued efforts focused on the reduction of the uncertainty of climate change projections identified in the IPCC Fourth Assessment Report (AR4), using the updated Earth Simulator. The results of these efforts will contribute to the AR5. Further modelling activities include: studies using regional climate models for modelling changes in ocean and sea ice; the use of state-of-the-art ice sheet models for studies on the changes in the Greenland ice sheet; the development of models with a focus on aerosol and cloud parameterization and related radiative transfer effects; and regional climate modelling for evaluating the societal impacts of climate change. Also, some Parties reported on the development of national models and on model refinement and downscaling activities.

99. **Research relevant to adaptation, including on the current and future impacts of climate change, continues to be a priority area**. The impacts of climate change are being assessed in a number of sectors, such as hydrology and water resources, marine and terrestrial ecosystems, biodiversity, coastal zones, the alpine and arctic regions, and societies and the economy, including the fisheries, agriculture, forestry, human health, recreation, tourism and energy sectors. The development of scenarios of future climate changes is linked to studying the possible future impacts of climate change, with the aim of supporting adaptation measures and risk reduction.

100. **Interdisciplinary research activities, in particular relating to socio-economic analysis, were highlighted by many Parties**, and activities in this regard include studies on emission trends and the development of society, policy instruments, social and political aspects of climate change, tools and options for climate change adaptation, the economic assessment of climate change adaptation and mitigation strategies, options and strategies for regional responses, and the impacts and costs of climate change in various sectors of the economy.

101. Research on energy and research and development in relation to mitigation technologies was another high-priority area for Parties. Specific areas of interest relate to innovative and sustainable solutions for climate change mitigation, including: renewable energy sources; energy efficiency; energy modelling; the development of clean technologies; business concepts, products and services for the cost-effective mitigation of GHG emissions; and carbon capture and storage and methods to increase carbon sequestration. In addition to the energy sector, transportation, buildings and built environment are being given increased emphasis in mitigation studies and the development of sustainable solutions.

102. **Emerging priority areas** for further knowledge include, with increasing importance, the existing and likely implications of climate change for human prosperity, the development of society, innovation, and the competitiveness of trade and industry.

E. Systematic observation

103. **All reporting Parties included information on systematic observation in their NC5**. Most Parties reported on their contributions to GCOS and that they make data available in accordance with the WMO international data exchange policies. Detailed technical reports on systematic observations, as requested by decisions 4/CP.5 and 11/CP.13, were provided by Denmark, Germany, Netherlands, New Zealand and Spain. Five additional countries (Australia, Austria, France, Greece and Japan) also provided information in line with the relevant revised reporting guidelines (decision 11/CP.13), including the tabular information on their national contributions to observations of the essential climate variables, designed to record information on the national contributions of observations from well-established systems and networks. Some other Parties described their national contributions to observations of the essential climate variables in the atmospheric, oceanic and terrestrial domains, including information in line with the aforementioned revised reporting guidelines, within the relevant chapter of their NC5.

104. **Several Parties noted their efforts in response to the GCOS implementation plan**, which addresses climate observations of the **atmospheric, terrestrial and oceanic** observing **systems**. Most Parties operate observation networks for atmospheric climate variables, including hydrometeorological measurement stations. Many of these stations are part of the GCOS Surface Network, the GCOS Upper Air Network, the World Weather Watch Global Observing System surface network and the WMO Global Atmosphere Watch. Also, several Parties contribute to global oceanic and terrestrial observations, including through **the Global Ocean Observing System and the Global Terrestrial Observing System, respectively**. Related activities include operating monitoring and observation systems, in order to monitor, for example, sea surface temperature, salinity, biogeochemistry, sea level, currents and sea ice in the oceanic domain; and monitoring hydrosphere, cryosphere, albedo and various parameters relating to land cover, soil, biomass and terrestrial carbon in the terrestrial domain. **Together, the ground-based and satellite-based monitoring activities make a significant contribution to observations of the climate variables globally**.

105. In addition to providing information on sustained observation networks and programmes, a few Parties provided information on paleoclimatic activities, and data rescue and reanalysis.

106. Advances reported by Parties relating to systematic climate observations include progress made in improving the coordination of activities relevant to observations, for example in the oceanic domain. In addition, information was provided on activities initiated in response to the actions identified in the GCOS implementation plan. Also, many Parties highlighted the development of the Global Earth Observation System of Systems, which aims to bring together all available information on the state of the global environment, including GCOS as its climate observation component.

107. Though in general advances have been made in relation to the various monitoring systems, some Parties noted barriers to the full implementation of the planned observation activities, such as the lack of funding for carrying out more sophisticated and comprehensive measurements.

V. Education, training and public awareness

A. Overview

108. All Parties reported in their NC5 information on their accomplishments, lessons learned and experiences gained as well as information on gaps and barriers, as called for in the amended New Delhi work programme on Article 6 of the Convention.[8] Several Parties specifically mentioned in their reporting programmes and initiatives undertaken to implement the amended New Delhi work programme.[9] Highlights of these initiatives are provided in box 5.

Box 5
Highlights of activities, products and policies related to Article 6 of the Convention reported in Parties' fifth national communications

- Notable efforts made to report on the six elements of Article 6 of the Convention, in line with relevant provisions of the amended New Delhi work programme on Article 6 of the Convention;
- Enhanced action in formulation and implementation of national strategies for education on climate change;
- Increased regulatory activity on issues related to Article 6;
- Increased attention to vocational training for business groups;
- Increased awareness of the importance of the media and the Internet in promoting climate change issues;
- Development of innovative awareness-raising tools (e.g. carbon footprint calculators);
- Provision of larger number of online information products;
- Intensification of initiatives to promote public participation in decision-making processes.

109. In their NC5, Parties covered, in depth, matters related to education and public-awareness activities, while their reporting on public participation, public access to information and international cooperation was somewhat limited. All Parties recognize the important role of NGOs in promoting public awareness and understanding of climate change through research, lobbying, education, training and media activities.

B. Education and training

110. There is **broad consensus among Parties on the importance of education on climate change**. This is evident from the growing number of national strategies that have been prepared and implemented since the Parties' NC4. Among the priorities set by Parties is the integration of climate change into official curricula as a stand-alone subject (Liechtenstein, Netherlands, Norway, Romania and United States) or within environmental studies (Belarus, Croatia, Japan, Lithuania, Poland, Portugal, Slovakia, Slovenia, Sweden and United Kingdom). Similar activities are under way in other Parties. Several Parties (Denmark, Kazakhstan, Russian Federation and Spain) reported a significant increase in the number of university courses related to climate change.

[8] Decision 9/CP.13.

[9] For further information, see document FCCC/SBI/2010/23, a comprehensive interim review report on progress in and remaining needs for and barriers to implementing the amended New Delhi work programme, drawing on information provided by Parties in their national communications and other sources.

111. For many Parties (Austria, Belgium, Canada, Czech Republic, Denmark, European Union, Greece, Japan, Netherlands, Norway and Portugal), the **United Nations Decade of Education for Sustainable Development,**[10] **which runs from 2005 to 2014, provides a valuable framework for educational activities, both in schools and in non-formal education** settings. Many Parties reported on their participation in world-renowned education programmes, such as GLOBE[11] and Eco-Schools[12] (Croatia, Czech Republic, Estonia, Iceland, Japan, Liechtenstein, Lithuania, Poland, Portugal, Slovenia, United Kingdom and United States).

112. The **growing need for 'green' skills and knowledge**, necessary to enable the transition to a low-carbon society, underpins Parties' efforts in developing training programmes for the benefit of the current and future workforce. Some Parties, such as Australia and New Zealand, are proactive in providing targeted assistance to small and medium-sized companies and business groups, informing them on sustainable business practices, in the context of the transition to a low-emissions economy. In particular, Australia has put in place a national framework for the development of specific training programmes needed for the implementation of adaptation and mitigation strategies. As pointed out in Poland's NC5, the training of media is another area which should be given due attention, considering their relevance in fostering a better understanding of environmental and climate change issues and of the measures needed to address them. Some Parties, such as New Zealand, have engaged in educating media houses on climate change, in order to assist journalists in presenting issues in a more informed way. On the other hand, several **Parties noted that many of the training initiatives are small-scale and one-off activities and they stressed the need to adopt a more comprehensive and inclusive approach when developing training programmes**. Many Parties reported on training initiatives undertaken at the national and international levels, the latter in the form of courses and workshops benefitting developing countries.

C. Public awareness, public participation and public access to information

113. Almost all Parties reported having developed public awareness raising campaigns to build broad-based support for action on climate change. Parties' awareness-raising efforts are increasingly characterized by a participatory approach, whereby several stakeholders, such as government agencies, enterprises and businesses, NGOs and civil society, join forces to reach out to target audiences and help them acknowledge the importance of their impact on the environment and a changing climate. Some Parties noted that climate scientists and related agencies could play an active role in disseminating their findings.

114. To raise public awareness, Parties are using a variety of different and increasingly innovative tools, including events, competitions, networks and information. There is a **clear trend in the use of videos and online tools, such as carbon footprint calculators, to educate consumers and encourage them to reduce their emissions**, possibly in an attempt to minimize the production of printed materials for clear environmental reasons, as the EU pointed out in its NC5.

115. Parties generally recognize that **media coverage of climate change is one of the most** effective **ways of influencing public opinion**. Several Parties (Belarus, Belgium, Finland, France, Germany, Greece, Italy, Japan, New Zealand, Norway, Sweden and United States) referred to the fact that media coverage of climate change began to expand in 2007

[10] See <http://www.unesco.org/en/education-for-sustainable-development/>.
[11] See <http://globe.gov/>.
[12] See <http://www.eco-schools.org/>.

with the release of climate change reports, such as the IPCC AR4 and the Stern Review,[13] and documentaries examining the impacts of climate change, such as Al Gore's film "An inconvenient truth". Other international events, such as the award of the 2007 Nobel Peace Prize to the IPCC and former United States Vice-President Gore, and the publication of national reports, such as the Garnaut Climate Change Review[14] in Australia, undoubtedly contributed to this heightened interest in climate change.

116. A few Parties that reported on public participation in their NC5 broadly covered the critical role of the active and effective participation of civil society in climate change decision-making and implementation in order to combat climate change at the national, regional and local levels.

117. Some Parties (Lithuania, Portugal and Romania) reported that **public participation is included as a specific element in their national strategies on climate change**. A number of Parties (Austria, Czech Republic, Denmark, Estonia, Greece, Latvia, Lithuania, New Zealand, Portugal, Slovenia, Spain and Switzerland) use participatory multi-stakeholder processes, sometimes following a social partnership model, such as in Austria, to prepare national programmes and strategies on climate change, as well as their national communications or national adaptation projects. Networks or umbrella coalitions of NGOs often play an important role in channelling the views of large numbers of organizations sharing common interests. Among the measures taken to solicit the views of stakeholders and the public are round-table discussions and conferences (France), advisory councils (Netherlands) and citizens' forums (United Kingdom). Some Parties (Estonia and New Zealand) have established procedures for the public to comment on draft legislation concerning climate change. A few Parties (Italy, Netherlands, New Zealand and United Kingdom) have adopted mechanisms to ensure that youth are sufficiently represented in climate change decision-making processes. For many European Parties (Belarus, Belgium, Croatia, Czech Republic, Denmark, Greece, Lithuania, Luxembourg, Netherlands and Ukraine), the United Nations Economic Commission for Europe Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)[15] provides the main international framework regulating matters relating to public participation.

118. **Parties provided limited information on the topic of access to information**, probably because of the possible overlapping of this area with the area of public awareness. Most Parties have taken measures to actively increase the availability of information related to climate change. Most Parties agree that the Internet is one of the most effective means of spreading information and engaging the public. Parties provided comprehensive reporting on the design of websites and the development of a wide range of online tools and resources, including databases and directories, with a view to making information on climate change widely available and more easily accessible.

D. International cooperation

119. Most Parties included information on their cooperation with and provision of support to developing country Parties specifically related to Article 6 of the Convention (Australia, Austria, Belgium, Canada, Czech Republic, European Union, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Portugal, Russian

[13] Stern N. 2007. *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.

[14] Garnaut R. 2008. *The Garnaut Climate Change Review*. Cambridge: Cambridge University Press.

[15] See <http://www.unece.org/env/pp/>.

Federation, Slovakia, Slovenia, Sweden, Switzerland, Ukraine and United States). Generally, these Parties reported on the level of financial assistance that they have provided to support the implementation of specific projects focusing on education and outreach activities or the integration of these activities into the organization of training workshops. The amount of financial support provided and the capacity-building activities organized varies among the Parties.

Annex

Financial contributions to multilateral institutions and programmes as reported in Parties' fifth national communications

Table 9
Financial contributions to multilateral institutions and programmes as reported in Parties' fifth national communications
(Millions of United States dollars)

Donor	*World Bank*[a]	*International Finance Corporation*	*African Development Bank*	*Asian Development Bank*	*European Bank for Reconstruction and Development*	*Inter-American Development Bank*	*United Nations Development Programme*	*United Nations Environment Programme*	*UNFCCC*	*Others*	*Total*
Australia	77.11			5.53				2.68	3.25	160.51	249.08
Austria									1.67	0.08	1.75
Belgium	773.46									2 380.63	3 154.09
Canada	1 042.03	20.29	242.82	289.97	11.77	42.17	296.42	3.99	2.03	1.26	1 952.75
Denmark	14.85						3.15	32.62	32.54	26.26	109.42
European Union	36.90				19.20		58.36	35.45	10.38	64.23	224.51
Finland	219.60		100.53	24.09		3.06	101.99	20.61	11.68	896.49	1 378.04
France	1 850.21	2.11	700.15	162.00	62.97	8.63					2 786.07
Germany											0.00
Greece[b]	131.14						1.69	4.30	0.53	731.43	869.09
Iceland	19.56	0.37					3.37	0.10		66.42	89.82
Ireland	122.71	3.45		40.84	1.22		84.41	3.29	0.35	29.97	286.23
Italy	841.45		5.19			5.02	73.07	15.70	4.32	449.81	1 394.56
Japan	411.17	23.36	32.75	279.47	17.07	51.25	392.30	14.45	2.77	20.68	1 245.26
Luxembourg	65.36			7.06	4.21		51.33	1.85		108.24	238.06
Netherlands[c]	17.20		1.85	1.85	1.85	1.85	10.47	7.66		41.13	83.85
Norway	31.15		14.16	3.48			11.50		10.13	48.58	119.01
New Zealand	41.86			30.59			22.31	0.71	0.76	42.28	138.50

Donor	*World Bank*[a]	*International Finance Corporation*	*African Development Bank*	*Asian Development Bank*	*European Bank for Reconstruction and Development*	*Inter-American Development Bank*	*United Nations Development Programme*	*United Nations Environment Programme*	*UNFCCC*	*Others*	*Total*
Portugal	71.00		62.93	77.05	4.98	1.82	16.37	0.18	0.58	985.81	1 220.72
Spain	40.84			8.42		9.29	100.81	8.41	8.28	13.47	189.52
Sweden	1 149.50		6.00	76.10	28.30	10.10	752.30	69.60	3.94	2,351.90	4 447.74
Switzerland	558.55	39.19	3.67		25.58	1.20	176.40	15.39	1.90	244.52	1 066.40
United Kingdom of Great Britain and Northern Ireland	2 730.90	7.57	11.10	1.28	12.03	13.39	318.43	3.60	40.78	176.94	3 316.02
United States of America	4 781.50		14.10		36.10	64.10	524.39	52.25	31.64	13 969.53	19 473.61
Total	**15 028.03**	**96.34**	**1 195.25**	**1 007.73**	**225.28**	**211.86**	**2 999.08**	**292.82**	**167.54**	**22 810.17**	**44 034.09**

[a] World Bank figures include contributions to the International Development Association, the Multilateral Investment Guarantee Agency, and other institutions listed as part of the World Bank Group, as well as contributions to the Climate Investment Funds in some cases.

[b] Greece's report includes contributions to the Joint United Nations Programme on HIV/AIDS, The Global Fund to Fight AIDS, Tuberculosis and Malaria, the World Health Organization and others.

[c] Figures for regional banks were provided as a single aggregated figure; the breakdown presented in the table represents a simple arithmetic average.