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Workshop on reducing emissions from deforestation in developing countries

30 August - 1 September 2006, Rome, Italy

BACKGROUND PAPER FOR THE WORKSHOP ON REDUCING EMISSIONS FROM DEFORESTATION IN DEVELOPING COUNTRIES

Addendum 1

Synthesis of relevant information contained in national communications*

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* This paper has not been subjected to editing. The information synthesized in this paper relates to the topics addressed in part I and part II of the workshop's background paper (see also topics listed in paragraph 52 (a) and (b) of document FCCC/SBSTA/2006/5).

I. Introduction

A. Mandate

1. At its twenty fourth session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) decided that the workshop on reducing emissions from deforestation in developing countries requested by the Conference of the Parties (COP) at its eleventh session should provide an opportunity for Parties to share experiences and consider relevant aspects relating to reducing emissions from deforestation in developing countries. Specific topics to be discussed in the workshop will include:[1]

(a) Scientific, socio-economic, technical, and methodological issues, including the role of forests, in particular tropical forests, in the global carbon cycle; definitional issues, including those relating to links between deforestation and degradation; data availability and quality; scale; rates and drivers of deforestation; estimation of changes in carbon stocks and forest cover; and related uncertainties;

(b) Policy approaches and positive incentives to reduce emissions from deforestation in developing countries, including causes; short- and long-term effectiveness with respect to emission reductions; the displacement of emissions; bilateral and multilateral cooperation; activities of other relevant international bodies; enhancing sustainable forest management; capacity-building; and financial mechanisms and other alternatives – basing discussions on experiences and lessons learned;

(c) Identification of possible links between relevant scientific, socio-economic, technical and methodological issues and policy approaches and positive incentives that may arise from the consideration of the topics in subparagraphs (a) and (b) above.

2. The SBSTA requested the secretariat prepare for the workshop a background paper on the items contained in paragraph 1 (a) and (b) above, with a synthesis of relevant information in national communications and the submissions from Parties contained in FCCC/SBSTA/2006/MISC.5 and Add. 1, and those from accredited observers posted on the UNFCCC website (FCCC/SBSTA/2006/5, paragraph 54).

B. Scope of the synthesis paper

3. This paper provides a synthesis of relevant information in national communications (NCs) in response to the request by the SBSTA mentioned in paragraph 2 above. Information relevant to the items referred to in paragraph in 1 (a) and (b) above was compiled and synthesized from the most recent NCs from non-Annex I (NAI) and Annex I (AI) Parties. Annex I of this paper lists the NCs used in this synthesis, which is based on 132 NAI and 36 AI NCs. Where appropriate, information from the sixth compilation and synthesis of initial national communications from Parties not included in Annex I to the Convention (FCCC/SBI/2005/18) and the compilation and synthesis of third national communications from Parties included in Annex I (FCCC/SBI/2003/7) has also been taken into account.

4. NAI and AI NCs follow different reporting guidelines, neither of which require addressing specifically the issues related to deforestation referred to in paragraph 1(a) and (b) above. In addition, information related to deforestation varies in terms of coverage, depth and specificity, making robust findings and quantification of trends difficult. Even so, both NAI and AI NCs provide relevant information, which is synthesized with this qualitative synthesis. Where possible, numbers and percentages are provided to give an indication of the strength in trends. However, these data are qualitative in origin. To illustrate the richness of information provided in individual NCs and to further

[1] FCCC/SBSTA/2006/5, paragraph 52.

elaborate on issues as described by Parties, specific examples are provided throughout the synthesis[2] and selected direct quotes from NCs are provided in annex II of this paper. It should be noted that both the examples and the quotes have been included solely for these purposes, but are not intended to provide a comprehensive and complete coverage of all national experiences. The choice of examples does not preclude the existence of other examples in NCs which would be equally useful but were not reflected in this synthesis.

5. One hundred and three (78%) of the NAI NCs discuss deforestation trends in their country (annex I). The information in NAI NCs is relevant to several of the issues mentioned in paragraph 1 (a) and (b), and provides useful details on the perspectives and experiences of developing countries where deforestation is occurring. NAI NCs are particularly informative with regard to socio-economic issues that create conditions for deforestation, the role of forests in and the impact of deforestation on ecosystem services, rates and drivers of deforestation, forest cover data, emissions from deforestation (within the context of land-use change and forestry (LUCF) inventory data), and existing and potential policy approaches and positive incentives to reduce emissions from deforestation. NAI NCs also provide some relevant information on methodological, technical, and scientific issues and data availability, needs for capacity building and financial mechanisms.

6. AI NCs discuss deforestation in the context of aiding developing countries in reducing greenhouse gas emissions.[3] Thus, AI NCs are particularly informative about bilateral and multilateral cooperation, financial mechanisms for supporting forestry projects in developing countries, and providing assistance with capacity building. Some AI NCs provide descriptive summaries of projects implemented in developing countries to address deforestation trends.

7. There is limited information in either NAI or AI NCs on displacement of emissions, definitional issues, or activities of other relevant international bodies pertaining specifically to deforestation. Sustainable development and sustainable forest management are discussed in general terms, with occasional reference to deforestation.

8. A wide range of issues covered in NAI and AI NCs pertain to the land use change and forestry and agriculture sectors generally. This synthesis emphasizes trends and information discussed specifically with regard to deforestation.

9. The information summarized below broadly follows the outline of items listed in paragraph 1(a) and (b). Five annexes contain further data and details from the NCs.

II. Scientific, socio-economic, technical and methodological issues

A. The role of forests, in particular tropical forests, in the global carbon cycle

10. The role of tropical forests in the global carbon cycle is not specifically addressed in the NAI or AI NCs. However, some NCs briefly describe the relationship between land use change and forestry, deforestation, and carbon emissions, in the context of their national inventory (e.g., see page 21 of the Gambia NC). A description from Gambia's NC is summarized here: a portion of the carbon in forest biomass is released to the atmosphere when it is cleared; non-CO_2 gases are also released when forests are burned during clearing; forest conversions also result in carbon losses from the disturbance of soils, which causes oxidation of organic matter.

11. There are a number of examples of the ecological consequences of deforestation in NAI NCs (and in at least one AI NC), which are noted here. At least eighteen NAI NC's reference how deforestation can cause soil erosion and desertification, which in turn can disrupt water cycles and cause

[2] References to page numbers in the context of country examples refer to the NC of the respective Party.

[3] Parties with economies in transition have limited data on bilateral and multilateral cooperation in general, given the different requirements compared to Annex II Parties in this regard.

siltation (Belize, Bolivia, Comoros, Ecuador, Germany, Ghana, Sudan, Iran, Lao People Democratic Republic, St. Vincent, Samoa, Papua New Guinea, Philippines, Peru, Lebanon, Haiti, Venezuela, Mali). Specific quotes are provided in annex II.

12. At least four NAI NCs attribute landslides to deforestation (Bhutan, Nepal, Rwanda, Thailand) and three others attribute flooding to deforestation (India, Iran, Samoa). Niue describes permanent changes to ecosystems as a result of land use change (e.g., fern dominated shrublands replaced forests in cleared areas, see page 48). The role of mangrove forests in stabilizing sediments was noted in four NCs (Bangladesh, Guyana, Mozambique, Philippines) (see annex II for text from Guyana NC).

B. Technical and methodological issues

13. Information on technical and methodological issues related specifically to deforestation in developing countries is limited in NAI or AI NCs. Related information was noted from NAI Party's experiences with preparing national inventory estimates for the LUCF sector. For example, at least seven Parties noted difficulties in applying the IPCC Inventory Guidelines for LUCF (Antigua, Chile, Columbia, Dominica, St. Kitts and Nevis, St. Lucia, Tonga). Columbia found the guidelines not sufficiently clear with regard to whether natural woodlands should be included and how to account for carbon stock changes in "selectively intervened forests" . Guyana described difficulty in assessing the fraction of a forested area that is impacted by selective logging, which can be difficult to detect. Most Parties identified a need for better default data for the LUCF sector (discussed further in section E. Data availability, quality and scale).

14. Document FCCC/SBI/2005/18 (page 17-19, paragraphs 86-97) describes general methodological problems experienced by NAI Parties with preparing national greenhouse gas inventories, assessing measures and options for mitigating climate change, and projecting impacts and vulnerabilities to climate change, which include lack of data and analytical tools such as methodologies for integrated climate and socioeconomic assessments. However, these issues are not discussed in the NCs with any particular reference to deforestation. It is worth noting that most NAI NCs provide at least some analysis predicting the impacts of climate change on forest ecosystems and many report possible shifts in forest species composition. There is generally high uncertainty in these assessments. In addition, it is difficult to associate changes in species composition with deforestation trends.

C. Socioeconomic issues

15. A broad range of socioeconomic issues are covered in NAI NCs such as indicators of population growth, poverty level, the share of various sectors to gross domestic product (GDP), economic conditions and trends, energy resources. Among these broad indicators some general trends are apparent in the NAI NCs with regard to socioeconomic factors that provide conditions for deforestation. The trends below are drawn from NAI NCs that discuss deforestation in their country.

16. Most NAI NCs indicate a high dependence on natural resources for economic productivity and subsistence needs. In at least 35% of NCs that discuss deforestation, agriculture is cited as an important part of the economy (Albania, Belize, Brazil, Cambodia, Chile, Gambia, Ghana, Paraguay, Sri Lanka, Sudan, Zimbabwe, Bangladesh, Dominican Republic, Fiji, Eritrea, Guyana, Iran, Jamaica, Lao PDR, Mongolia, Mozambique, Nepal, Nigeria, Papua New Guinea, Solomon Islands, Swaziland, Cote d'Ivoire, Guinea-Bissau, Senegal, Sao Tomé and Principe, Guatemala, Panama, Tonga, Korea, Indonesia, Kenya, Democratic Republic of the Congo). Indonesia reports agriculture is an important economic sector and also notes a shift in economic importance away from traditional sectors such as agriculture to industrial service sectors corresponding to a shift in economic conditions (page 1-1).

17. There is a high dependency on forest products in NAI countries, particularly in rural areas, where wood and non-wood products are extracted for subsistence uses and informal trade. References to this dependence were noted in 27% of NAI NCs that discuss deforestation (Botswana, Ethiopia, Gambia, India, Sudan, Brazil, Jamaica, Lao People's Democratic Republic, Lesotho, St. Lucia, Solomon Islands,

Mali, Cote d'Ivoire, Burundi, Cameroon, Guinea-Bissau, Morocco, Tonga, Uganda, Chile, Mauritania, Burkina Faso, Democratic Republic of the Congo, Central African Republic, Belize, Gabon). For example, India estimates that about 200 million people depend of forests directly or indirectly for their livelihoods (page 94).

18. At least 43 percent of NAI NCs that discuss deforestation also report a high dependence on fuelwood and charcoal for energy needs (Ethiopia, Gambia, Comoros, Rwanda, Uruguay, Sudan, Zimbabwe, Sri Lanka, Albania, Azerbaijan, Cambodia, Eritrea, Guyana, Lao PDR, Lesotho, Malawi, Nepal, Nigeria, Pakistan, India, Mali, Cape Verde, Cote d'Ivoire, Congo, Sao Tomé and Principe, Haiti, Morocco, Tunisia, Uganda, Korea, Kenya, Mauritania, Burkina Faso, Democratic Republic of the Congo, Burundi, Niger, Cameroon, Senegal, Benin, Togo, Nicaragua, Chile, Central African Republic, Madagascar). Not all countries with a high dependency on fuelwood for energy have high deforestation (e.g., Uruguay). However, many relate this and other dependencies on forest products to deforestation trends. For example, see annex II for text from the Lao People Democratic Republic, where 80% of energy consumption is wood based.

19. References to degraded environmental conditions such as recent drought or history of poor land management, including deforestation, and the negative impact on resource availability were noted in seventeen NAI countries (Gambia, Paraguay, Rwanda, India, Sudan, Sri Lanka, Eritrea, Fiji, Mozambique, Algeria, Senegal, Haiti, Benin, Togo, Nicaragua, Panama, Mauritania). The Fiji NC (on page v.) describes how environmental degradation, driven in part by population pressure, urban development, deforestation, pollution, and over exploitation of natural resources has led to problems with coastal erosion and inundation. (See annex II for an additional example.)

20. Additional socioeconomic conditions cited by Parties as contributing factors for deforestation include: population pressures and poverty, noted in seven NAI NCs (Ethiopia, Rwanda, Malawi, Mozambique, Fiji, Burundi, Kenya); complex, unbalanced and conflicting land tenure systems, noted in eight NCs (Comoros, Paraguay, Sudan, Papua New Guinea, St. Lucia, Samoa); and political instability or inability to enforce laws noted in five NCs (Lao People Democratic Republic, St. Lucia, Paraguay Sao Tomé and Principe). (These NCs were noted because the conditions are described with reference to deforestation. Several of the NAI NCs discuss these issues more generally.)

D. Definitional issues

21. Discussion of definitional issues specifically related to deforestation and degradation (including links between them) was limited in NAI or AI NCs. Three references were found in NAI NCs regarding specific definitional issues with land use and management. Botswana notes discrepancies between FAO forest definitions and forest definitions in South Africa (NC, page 18) and lack of clarity over determining whether savannah fires are anthropogenic (NC page 39). Brazil comments that while native forests were not considered in their inventory because emissions and removals are not anthropogenic, they do consider these forests to be managed (NC page 85).

E. Data availability, quality and scale

22. According to FCCC/SBI/2005/18/Add.2 (page 4, paragraph 11), sixty-eight NAI Parties report that default emission factors provided by the IPCC Guidelines did not adequately reflect national circumstances, leading to uncertainties in the national GHG inventory estimates. This was reported more often for the industrial processes and waste sectors than for the agriculture and LUCF sectors.

23. In addition, according to FCCC/SBI/2005/18/Add.2 (page 4, paragraph 9) about half of NAI Parties report lacking access to important activity data for inventory development. For this synthesis, references were found in twenty-six NAI NCs regarding limited availability of data on forest cover and land use change (Ethiopia, Sri Lanka, Bangladesh, El Salvador, Columbia, Botswana, Bhutan, Cambodia, Guyana, Jamaica, Lao PDR, Lesotho, Nigeria, Philippines, St. Kitts and Nevis, Honduras, Mexico, Algeria, Burundi, Niger, Tajikistan, Burkina Faso, Djibouti, Nicaragua, Panama, Trinidad and Tobago).

The need for better access to and quality of forest cover data is mentioned both in the context of GHG inventory development and in improving capacity to identify and remedy deforestation trends. There is a need for both remote sensing and ground-based inventories. (See annex II for text from Ethiopia on plans to develop a woody biomass inventory in response to this need).

24. A few examples were found of NAI Parties assembling land cover data from existing resources in order to prepare national GHG inventories and some report receiving international assistance with this effort. (See annex II).

25. Bilateral and multilateral cooperation to develop land cover data is discussed in section III.E and examples are provided in annex V.

F. Rates and drivers of deforestation

1. Rates of deforestation

26. Annex III summarizes data collected from NAI NCs on forest cover, deforestation rates, and net LUCF emissions/removals. The form of data reported in NCs varies in terms of units, reference years, and time series. It is generally not clear from the information in the NCs whether net or gross deforestation rates are reported (i.e., whether they account for afforestation and reforestation) and exactly what forest types are included in the forest cover data. In a few NAI NCs, the change in forest cover compared to pre-colonial time periods is discussed. However, most NAIs discuss contemporary deforestation trends (i.e., over the last 30 years). These factors make direct comparisons and quantitative summaries of the data difficult. To improve comparability for the purpose of this paper, deforestation rates were standardized to hectares per year and/or percent per year, where possible, and presented in annex III.

27. Sixty-three NAI NCs (or 61% of NAI NCs that discuss deforestation trends) report data on deforestation rates (see annex III). Data reported include annual changes in forest cover, changes in cover over some time series, percent changes in cover, and qualitative statements about deforestation trends. Five NAI NCs report no change in forest cover (Bahamas, Cook Islands, Kazakhstan, Mongolia, and Mauritius) and three report recent increases in forest cover (South Africa, Uzbekistan, and Vietnam). The remaining fifty-four NAI NCs report decreases in forest cover (i.e., positive rates of deforestation).

2. Drivers of deforestation

28. Several drivers for deforestation were identified in the NAI NCs and are summarized in Table 1, which also cites the NAI Parties that report the driver in their NC. A number of the drivers are interrelated. For example, population pressure can lead to expanding settlements or can increase demand for forest resources and agricultural products forests.

Table 1 – Deforestation drivers reported in NAI national communications

Driver	Party
Forest conversion to agricultural uses (61 NAI NCs)	Albania, Bangladesh, Brazil, Columbia, Comoros, Costa Rica, Ghana, Ethiopia, India, Paraguay, Peru, Rwanda, Sudan, Zambia, Zimbabwe, Bhutan, Cambodia, Guyana, Iran, Lao PDR, Lesotho, Malawi, Micronesia, Mozambique, Nepal, Niue, Papua NG, Philippine, St. Kitts and Nevis, St. Lucia, Honduras, Mexico, Cote d'Ivoire, Burundi, Niger, Cameroon, Guinea-Bissau, Guinea, Djibouti, Morocco, Benin, Tunisia, Togo, Guatemala, Nicaragua, Panama, Tajikistan, Thailand, Tonga, Uganda, Tanzania, Lebanon, Bolivia, Ecuador, Indonesia, Kenya, Trinidad and Tobago, Democratic Republic of the Congo, Burkina Faso, Central African Republic, Belize,

Driver	Party
	Madagascar
Harvesting for fuelwood and charcoal (44 NAI NCs)	Bangladesh, Botswana, El Salvador, Ethiopia, Ghana, India, Morocco, Paraguay, Rwanda, Sudan, Zambia, Zimbabwe, Azerbaijan, Eritrea, Guyana, Iran, Jamaica, Malawi, Mozambique, Nepal, Nigeria, Papua NG, Philippines, St. Kitts and Nevis, Swaziland, Mali, Cote d'Ivoire, Burundi, Niger, Congo, Comoros, Cameroon, Guinea-Bissau, Senegal, Guinea, Benin, Tunisia, Togo, Tanzania, Korea, Kenya, Mauritania, Burkina Faso, Democratic Republic of the Congo
Improper forest management, including selective logging, uncontrolled cutting, and over exploitation (34 NAI NCs)	Botswana, Brazil, Gambia, India, Sudan, Zambia, Cambodia, Guyana, Iran, Lao PDR, Micronesia, Nepal, Papua NG, Philippines, Samoa, Solomon Islands, Honduras, Cote d'Ivoire, Guinea-Bissau, Sao Tome Principle, Djibouti, Morocco, Benin, Tunisia, Togo, Nicaragua, Thailand, Vietnam, Ecuador, Kenya, Trinidad and Tobago, Lebanon, Burkina Faso, Democratic Republic of the Congo
Fires and biomass burning (28 NAI NCs)	Brazil, Gambia, India, Mexico, Paraguay, Peru, Rwanda, Zimbabwe, Lao PDR, Mongolia, Mozambique, Honduras, Peru, Algeria, Cameroon, Morocco, Madagascar, Benin, Tunisia, Togo, Indonesia, Kenya, Palau, Korea, Trinidad and Tobago, Burkina Faso, Democratic Republic of the Congo, Lebanon
Population pressure (29 NAI NCs)	Brazil, Ethiopia, Gambia, Rwanda, Sri Lanka, Bhutan, Lao PDR, Lesotho, Malawi, Micronesia, Nepal, Samoa, Algeria, Burundi, Niger, Comoros, Cameroon, Djibouti, Morocco, Togo, Thailand, Tonga, Uganda, Tanzania, Vietnam, Burkina Faso, Democratic Republic of the Congo, Ecuador, Kenya
Development pressure, such as expanding urbanization, settlements, and new infrastructure (e.g., electricity lines and roads) (18 NAI NCs)	Botswana, Columbia, Gambia, Tunisia, Lesotho, Micronesia, Seychelles, Honduras, Brazil, Micronesia, Philippines, Algeria, Morocco, Ecuador, Kenya, Mauritania, Democratic Republic of the Congo, Lebanon
Illegal logging (15 NAI NCs)	Brazil, Albania, Azerbaijan, Cambodia, Lao PDR, Nepal, Peru, Mexico, Cameroon, Kenya, Democratic Republic of the Congo, Venezuela, Madagascar, Lebanon
Policies and laws that drive land use conversions (10 NAI NCs)	Brazil, Ethiopia, Paraguay, Sudan, Philippines, Samoa, Solomon Islands, Sao Tome Principle, Vanuatu, Kenya
Exploitation of mineral resources, mining (7 NAI NCs)	Guyana, Ethiopia, Nauru, Philippines, Ecuador, Democratic Republic of the Congo

29. Fifty-nine percent of NAI NCs that discuss deforestation mention forest conversion to agricultural as a driver of deforestation (61 NAI NCs). The agricultural practices vary and include conventional agriculture, shifting cultivation, agroforestry, "mixed farming" (includes crops and livestock) and livestock grazing. The Belize NC provides a detailed description of the "Milpa Cycle", which is a form of shifting cultivation, noting its impacts on deforestation (page 40). This category also includes the conversion of mangrove forests to fishponds and rice paddies (e.g., Philippines, page 55). Often the agricultural practices degrade the land, complicating forest regeneration and lead to problems with erosion. Examples from NAI NCs that describe the agricultural practices and the pressures contributing to agricultural expansion are provided in annex II.

30. Forty-three percent of NAI NCs that discuss deforestation cite fuelwood and charcoal extraction as driving deforestation (forty-four NAI NCs). In these cases, firewood is a primary source of energy,

typically for household purposes such as cooking. The pressures are greatest in rural areas and areas adjacent to forests. (See annex II for examples.)

31. Thirty-three percent of NAI NCs that discuss deforestation cite poor forest management, including clear cutting, uncontrolled cutting, and selective logging, as a driver of deforestation (34 NAI NCs). This phenomenon is linked to other drivers and confounding factors mentioned by NAI Parties in their NCs such as fuelwood extraction, illegal logging and illegal practices, and limited law enforcement or lack of legal protection. This is illustrated by examples in annex II.

32. Twenty-seven percent of NAI NCs that discuss deforestation reference fire as a driver (28 NAI NCs). The types of fires include: forest fires, bush fires, fires used in shifting cultivation, savannah fires, arson, indiscriminate use of fire, and accidental fire.

33. While many NAI NCs discuss population trends in general, twenty-nine cite population pressure specifically as a driver of deforestation. An example from Gambia is provided in annex II to illustrate the role of population pressure in deforestation, and the interrelationship between population growth and other drivers of deforestation.

34. Development pressure through urbanization, settlement expansion, and construction of infrastructure such as power lines and roads were cited by eighteen Parties as drivers of deforestation. Descriptive details are limited in NAI NCs.

35. At least ten NAI Parties link deforestation trends directly to policies and laws that provide incentives to extract natural resources or develop agriculture, generally for the purpose of economic development. Brazil in particular describes a number of policies aimed at economic development and reform that have led to deforestation of the Amazon by promoting agricultural development. The incentives in Brazil include: low land prices, tax credits, low interest rates for agriculture loans, guaranteed minimum prices for agricultural products, flexible rules for land title rights, low property taxes, and fiscal incentives for investment in development projects (page 243). Two settlement programs are described in the Brazil's NC as leading to deforestation, including a program in the 1970's that introduced agricultural settlements in the Northern Amazon region for a number of reasons such as increasing resource extraction and establishing sovereignty over the region (page 243). In addition, the 1988 Agrarian Reform program allowed for the expropriation of "unproductive land" for agrarian uses, under which forests were easily classified as unproductive (page 245). Sao Tomé and Principe cites a law to privatize land ownership and Kenya cites government programs to facilitate settlement in forest areas as driving deforestation.

36. Fifteen NAI NCs name illegal logging as a driver of deforestation, however there is little detail provided in the reports.

37. Seven NAI NCs mention exploitation of mineral resources, oil, and mining as drivers of deforestation. Additional drivers were noted in the review, however they were not commonly mentioned: hunting, tourism, and introduced species.

38. In addition, thirty NAI NCs discuss the potential for future climate change (leading to drought, erosion, fires, and sea level rise) and continuation of existing deforestation pressures to reduce forest cover in the future including economic and environmental implications (Peru, Cuba, Guinea-Bissau, Benin, Tunisia, Rwanda, Dominican Republic, Georgia, India, Sri Lanka, Sudan, Bangladesh, Belize, Cambodia, Dominica, Nigeria, Philippines, Mongolia, Algeria, Niger, Congo, Comoros, Guinea-Bissau, Benin, Guatemala, Panama, Tajikistan, Chile, Democratic Republic of the Congo, Palau).

G. Estimation of changes in carbon stocks and forest cover, and related uncertainties

39. The primary source of information in NAI NCs related to changes in carbon stocks is national GHG inventory estimates for LUCF. LUCF estimates may encompass carbon stock changes due to

deforestation as part of the IPCC subcategory of forest and grassland conversions. However, estimates of carbon stock changes specific to deforestation are generally not included in NAI NCs. About sixty-three percent of NAI NCs report being a net sink for LUCF and about thirty-two percent report being a net source for LUCF (annex III). About half of the NAI NCs reporting LUCF as a net source also report data on deforestation rates. Of those, nearly all (19 out of 20) report positive deforestation rates.

40. LUCF inventory data may be helpful for identifying potentially significant emissions from deforestation, particularly if carbon stock changes in LUCF indicate the sector is a net source of emissions and those emissions comprise a large portion of total national emissions. FCCC/SBI/2005/18/Add.2 summarizes detailed GHG inventory data from NAI NCs in Table 2 (page 14-18). From this data, it can be seen that eleven Parties report net LUCF emissions that are at least 50% of the national total, excluding LUCF, i.e. LUCF emissions are at least half the size of the total of all other emissions sources (Lesotho, Malawi, Niger, Togo, United Republic of Tanzania, Indonesia, Sri Lanka, Bolivia, Brazil, Panama, Peru). Seven of these NAI NCS report net LUCF emissions that are equal to or greater than total national emissions excluding LUCF (Malawi, Niger, Togo, United Republic of Tanzania, Bolivia, Brazil, Panama).

41. Data on forest cover was found in about eighty-five percent of NAI NCs (annex III). NAI NCs report on absolute forest area and/or percent of total land area that is forested.

42. Dependence on default emission factors and limited data on forest cover are attributed to high uncertainties in LUCF inventory estimates. Botswana reports uncertainties for LUCF ranging from 20-30% and Brazil reports an uncertainty of 39% for LUCF, compared to 5% and 7% for energy and industrial processes.

III. Policy approaches and positive incentives to reduce emissions from deforestation in developing countries

43. Both NAI and AI NCs address policies and incentives to reduce emissions and enhance removals in the forestry sector. NAI NCs discuss enacted policies and programs as well as proposed and priority measures. AI NCs describe involvement in international cooperation on forestry projects, which often complement policies and incentives discussed by NAI Parties. The information from AI NCs is summarized in section III.E Bilateral and multilateral cooperation.

44. Policies and incentives discussed in the NAI NCs address a wide range of objectives for the forestry sector. This synthesis summarizes the policies and incentives that are specifically identified as addressing deforestation in developing countries. Annex IV summarizes key policies and incentives for deforestation as referenced in multiple NAI NCs. For the purpose of this paper, the table distinguishes between NAI Parties that have enacted programs and those that have proposed or prioritized such programs but had not enacted them at the time of the NC submission. However, this distinction is tenuous as in some instances it can be difficult to discern with the information in the NCs. The level of detail reported varies widely.

A. Forest management[4]

45. Seventy-six NAI NCs (74% of NAI NCs that report on deforestation) identify afforestation/ reforestation as a mechanism to either restore previously deforested areas or to provide sufficient access to natural resources in order to reduce demands on existing forests. Thirty-two of those have implemented such programs and forty-four report them as a high priority.

46. Programs range in scope, including national feasibility studies, distribution of seedlings to rural households, mangrove reforestation, subsidies to farmers for tree planting, and national programs to promote afforestation/reforestation on degraded lands. Some Parties (e.g., Brazil) promote establishing

[4] Also covers enhancing sustainable forest management.

agroforestry projects on degraded lands to reduce pressure on existing forests (page 247). The Lao People Democratic Republic NC describes a national program to encourage afforestation/reforestation in the private sector as a means to regenerate previously deforested areas (see annex II for details).

47. Sixty-one NAI NCs (59% of NAI NCs that discuss deforestation) regard forest conservation as a viable approach to protecting against future deforestation, including establishing forest reserves and protected areas. Often the multiple benefits to forest conservation are cited such as protecting water reservoirs and biodiversity. In at least one NAI NC, protected areas were suggested as a way to allow for the potential expansion or migration of forest ecosystems under future climate change.

48. There are limited details available on the administrative approaches to establishing reserves. NAI Parties indicate that national forest policies or conservation policies are used to establish forest areas under administrative protection. In Bhutan, for example, "Forest policies were developed stating that a minimum of 60% of the land area must be under forest cover in perpetuity" (page 18). In Sri Lanka, forest protection is emphasized in the National Biodiversity Action Plan (page 32) as well as in the National Forest Policy (page 31). A 1993 Royal Decree on the Creation of Protected Areas established 23 protected areas in Cambodia (approximately 18% of the total land area) and the area is expected to increase up to 25% by 2005 with the establishment of additional forest reserves in the country (page 30). And, in the Philippines, the National Integrated Protected Areas System (PIPAS) provides for the perpetual existence of all native plants and animals through the establishment of a comprehensive system of integrated protected areas. (page 71).

49. The Brazil NC provides descriptive information about a national work plan to address deforestation, within which forest conservation is a component. Under the work plan, Brazil established a National System of Conservation Units (SNUC) with two types of conservation units administered by the federal government, fully protected areas and areas of sustainable development. There are a total of 226 federal conservation units covering an area of 44,835,960 hectares, or about 5.25% of Brazilian territory. In addition, a large number of conservation units are administered by the states (451, for a total of 29.8 million hectares). (See page 251 of the Brazil NC for more details).

50. A few NAI Parties mention that identification of sensitive or important forest areas without providing any administrative protections may provide at least a partial incentive to avoid deforestation (Namibia, Peru, Sri Lanka).

51. Fifty-two NAI NCs (50% of NAI NCs that discuss deforestation) identify improved forest management as a means to prevent and remedy deforestation through, for example, sustainable forest management, general management improvements, forest management planning, and laws governing management practices such as harvesting rates and planting requirements. For example, the Brazilian Federal Constitution declares the Brazilian Amazonian Forest, the Atlantic Forest, the Coastal Mountains, the Pantanal and the Coastal Zone to be national heritage areas with their use subject to practices established by law to ensure environmental preservation (page 70). In addition, Brazil mandated sustainable forest management starting in 1994 (page 244). As a condition for receiving a harvesting permit, Korea requires replanting after harvesting as a means to prevent deforestation (page 65).

52. While described separately above, afforestation/reforestation, forest protection, and forest management are often combined as components of a single forest management strategy. (For example, see annex II for text from the Lao People Democratic Republic regarding the Forestry Law of 1996.) The emphasis of different policy approaches varies. For example, Madagascar reports that afforestation activities and rational management of forest resources are more beneficial than conservation alone, with the overall objective of the new forest policy being to increase the current rates of afforestation/reforestation and accelerate harvesting to satisfy demands for wood and maintain ecological balance (page 55). In Belize, the Rio Bravo Conservation and Management Area is a forest reserve managed for extraction and conservation, including four areas under controlled management regimes to ensure sustainable use (page 4).

53. The Indonesia NC describes a National Forest Management Plan that is updated on a five-year cycle (each 5 year term is called a "Repelita"). There has been an evolution in forest management priorities over the years: Repleta I (1969-1973) and Repleta II (1974-1978) focused on promoting forest utilization (1969-1973); Repleta III (1979-1983) focused on rehabilitation, conservation, and reforestation; Repleta IV (1984-1988) emphasized balancing of utilization and conservation; and Repleta V (1989-1993); focused on sustainable management of forest resources along with strengthening related institutions; and Repleta VI (1994-1998) focused on maintaining conservation and sustainability of forest function, prioritizing conservation of natural resources and environmental issues, hydrologic functions, and promoting job opportunities in forest communities (page 2-15).

B. Legal aspects

54. References to specific legal actions to combat deforestation were noted in several NAI NCs (and one AI NC). These include laws in NAI countries that address illegal logging by instituting monitoring activities or establishing specific penalties for violation (Sri Lanka, Brazil, Bhutan, Cambodia, Georgia, Albania) and a law established by the European Community to reduce demand for illegal logging by eliminating imports of illegally harvested timber (see annex II for details).

55. Other legal actions noted in NAI NCs include temporary moratoria on licenses for forest exploitation, logging bans, increased taxes and other fees (Brazil, Philippines, Papua New Guinea Senegal, Thailand, Indonesia, Chad, Burundi, Guinea-Bissau, Benin), prohibitions on land use conversions (Brazil, Bhutan, Burundi, Lao People Democratic Republic), placing forest management formally under the public domain (Brazil, Bhutan, Philippines, Democratic Republic of the Congo, Cape Verde, Cote d' Ivoire), and consolidating and clarifying environmental legislation to clarify penalties and consequences for deforestation (Brazil, Mauritius, Lesotho, Seychelles, Algeria, Cameroon, Indonesia).

56. Five programs were noted in NAI NCs that use tax incentives or revenue to encourage actions that prevent or mitigate for deforestation. Two NAI Parties describe programs to compensation landowners or local governments for lost tax revenue as a result of taking forests out of production and placing them under protection (China, Brazil). In addition, the Brazil NC describes Private Natural Heritage Reserves, which are private land set aside in perpetuity with full protection. In return landowners do not pay Rural Property Tax and have priority in obtaining resources from the National Environmental Fund. The Democratic Republic of the Congo NC mentions a program where tax revenue from forest exploitation is used to finance reforestation projects. Chile mentions a one-time tax subsidy for tree planting.

C. Capacity building and technology

57. Thirty-four percent of NAI NCs that discuss deforestation also discuss programs that on some level involve local communities in forest management in such a way that could reduce deforestation pressure. The community based forest management programs described in NAI and AI NCs typically involve some combination of forest management approaches with measures for building the capacity of local communities to make and implement decisions regarding resource management (e.g., Village Forest Committees in India, page 202). Other features noted in NCs of community based forestry programs are the establishment of clear boundaries both of forests and of operational control, promotion of ecotourism, and generally improving the economic conditions of rural communities. Thirteen NAI NCs discuss the need to improve economic conditions of rural communities but not specifically in the context of community forestry. Seven AI NCs describe community forestry projects as part of their bilateral and multilateral assistance, which is discussed further in section E. Bilateral and multilateral cooperation. Annex II contains text from Samoa and Cambodia that illustrates the role of community forestry in sustainable development.

58. Thirty-five percent of NAI NCs that discuss deforestation also discuss increasing efficiency of energy use in rural communities to reduce demand for fuelwood. Rural energy efficiency programs include providing electricity to rural communities, promoting fuel substitution, or disseminating efficient

cook stoves, solar cookers, or natural gas fired brick kilns. Twenty-nine NAI NCs report a desire or need for such programs and seven indicate programs are already in place. (See annex II for descriptive text from Ghana on the potential role of such a program in reducing deforestation.)

59. Thirty NAI NCs discuss improvements in agricultural productivity as a means to reducing deforestation. The NCs explain that rehabilitating degraded agricultural land can reduce the demand for new land and thus reduce deforestation pressure. Agroforestry, terracing, and improved livestock grazing practices are some of the approaches identified to enhance land rehabilitation and prevent further degradation. (See annex II for a description in the Eritrea NC of one such program.)

60. The need to increase capacity to enforce forestry laws is noted in twelve NAI NCs. Expansive and remote forests make monitoring of illegal harvesting activities a difficult task, particularly with limited resources. Improvements in surveillance are cited as a key mechanism for improving enforcement. Brazil mentions a specific program using audits in large sawmills to track illegal harvesting activities and a growing capacity to monitor deforestation activities using new technologies such as remote sensing, satellite images, geo-referenced locations, and aerial sensors (page 246).

61. Nine NAI NCs discuss programs for improving capacity to map and monitor changes in forest cover to aid in detecting deforestation. In response to rapid deforestation, Brazil developed a forest-mapping program called the Project for Gross Deforestation Assessment in the Brazilian Legal Amazonia (PRODES) (page 14 and page 249). PRODES monitors land cover using satellite and other remote sensing data, allowing the annual estimation of gross rates of deforestation. The data are comprehensive and are used to identify critical areas based on the geographic location of high forest disturbance. PRODES also employs satellite communication systems in inspection vehicles to enable remote access to registries and verification of documentation. The PRODES program has helped Brazil identify strategies and implement measures aimed at reducing deforestation (page 14).

62. Twenty-two NAI NCs discuss fire detection, prevention, and control as important for reducing deforestation. For example, Brazil has a specific program for the Prevention and Control of Burning and Forest Fires in Legal Amazonia (PROARCO), which prohibits the use of fires in certain areas, integrates different levels of government to coordinate prevention and control while using decentralized execution of actions. The program has helped define the roles for different levels of government in combating forest fires (page 255).

D. Short- and long-term effectiveness of policy approaches with respect to emissions reductions

63. Little information is available in NAI or AI NCs on effectiveness of policy approaches specific to deforestation. Some information on successes and challenges with regard to deforestation policies and incentives is provided below.

64. Twelve examples were noted in NAI NCs regarding success in reducing deforestation as a result of policies and incentives (Gambia, Dominican Republic, Brazil, India, St. Lucia, Seychelles, Uruguay, Germany re: Brazil, Senegal, Tanzania, Burundi, Thailand). The extent to which these successes are described varies and it is difficult to draw strong trends from the information. In general, success was related to the ability to control the main drivers of deforestation. For example, the Dominican Republic reports considerably reducing deforestation since the 1990's as a result of controlling the main drivers of deforestation (e.g., agriculture, tree felling and burning, forest fires). India reports that laws, forest conservation, and reforestation programs have contributed towards the stabilization of forest area and consequently resulted in marginal rates of deforestation. In addition, India reports success with reducing pressure on forests for fuelwood and in the involvement of local communities in protection and management of forests (page 102). Thailand reports a decrease in deforestation from 450,000 ha/yr to 141,107 ha/yr following a logging ban and implementation of programs for afforestation/reforestation and forest protection (page 58). Senegal reports that increases in tax and license fees led to a tendency towards decreased fuelwood consumption and deforestation. More examples are given in annex II.

65. Examples were also noted in eight NAI NCs of limitations to effective policy approaches, including: financial constraints limiting ability to purchase land, compensate land owners for conservation activities, or generally run programs; land ownership issues and land tenure arrangements; inability to enforce existing laws; land degradation; and overexploitation in new regions as a result of placing some areas under protection (Costa Rica, Fiji, Bangladesh, Brazil, Paraguay, Sudan, Lesotho, Honduras, Benin, Kenya, Lebanon). See annex II for specific examples.

E. Bilateral and multilateral cooperation

66. Much of the information on bilateral and multilateral cooperation ("international cooperation") related to deforestation is found in AI NCs. This information is typically found in chapters on financial resources and technology transfer and, to a lesser extent, research and systematic observation and education, training, and public awareness. A few NAI NCs also contained information on international cooperation related to deforestation.

67. As reported in FCCC/SBI/2003/Add.1 (page 44, paragraph 125), all AI Parties provide information on international cooperation and the energy, transportation, and forestry sectors are the main areas in which assistance is provided to both developing countries and economies in transition. International projects in the forestry sector generally aim to improve forest management, create protected areas, and increase afforestation (page 45, paragraph 126). This synthesis found similar trends. While some of the international forestry projects specifically target deforestation in developing countries, there is sometimes not enough information to support this. Annex V summarizes the forestry projects reported in AI and NAI NCs that appear related to deforestation.

68. This synthesis found that international cooperation on forestry and deforestation involves approaches that are consistent with the policies and incentives promoted in NAI NCs to reduce and remedy deforestation. Specifically, assistance from AI Parties is provided for forest conservation, improved forest management, community based forest management, rural energy efficiency, afforestation, prevention of illegal logging, and fire prevention. In addition, AI Parties support and participate in international research collaborations that address forestry issues in developing countries and aid in developing necessary data resources for land cover mapping and land use monitoring. Annex V organizes forestry projects by these approaches. Some projects employ multiple approaches, however they are listed only once for simplicity.

69. The Pilot Programme for Brazil (PPG7), established by the G7 in response to the deforestation trends in the Amazon, is seen as a good model for international cooperation on tropical forest conservation and is discussed both by Germany and Brazil in their NCs. Germany describes key aspects of the pilot program (see annex II for details).

70. Details on the program areas of the PPG7 are found in the Brazil NC. The PPG is comprised of the Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA) (page 209), a Natural Resource Policy Program (page 209); demonstration projects for community based sustainable development and environmental education (page 209), a Conservation Areas and Management of Natural Resources Program (page 210), and a Science and Technology Program (page 210).

71. Six AI NCs and one NAI NC describe international programs to aid in forest conservation (Austria, Canada, Germany, Norway, Spain, US, Lebanon). Where specific projects are mentioned, they tend to target Southeast Asia and Latin America. For example, Canada describes a program called Tree Link, which supports development and implementation of policies and practices for forest renewal, conservation and protection; and Norway reports an AIJ project for forest conservation and replanting in Costa Rica. The US reports a number of initiatives that address forest conservation in developing countries, including the US Initiative on Joint Implementation and several NGO sponsored projects in Latin America.

72. Nine AI NCs and one NAI NC report on international cooperation to improve forest management (Australia, Belgium, Canada, Finland, France, Italy, Japan, Norway, UK). Specific projects target the Asia-Pacific region, Africa, Latin America, India, and Russia and seek to enhance sustainable forestry practices.

73. Six Parties describe international cooperation projects for community-based forest management (Australia, Austria, Finland, Germany, Netherlands, US). There are several projects spanning a range of countries. Australia reports working with communities in Inner Mongolia. Austria cites community-based forestry projects in Brazil, Columbia, Cameroon, Nicaragua, Guatemala and Panama. Finland cites projects in Namibia, Mozambique and Burkina Faso. The US describes working with communities in Indonesia and the Philippines.

74. Seven Parties are involved in international programs to address rural energy needs for the purpose of reducing demand for fuelwood (Australia, Austria, Belgium, Canada, Denmark, EC, Finland, Germany). Projects provide support to Zimbabwe, Bhutan, Cuba, Congo, India, Mozambique, Burkina Faso, Egypt, and Malaysia. Three Parties provide aid to Nepal and two to Zimbabwe for rural energy projects. Projects include solar thermal energy, power plants, small renewable energy systems, tree planting and enhanced wood production through forest management, and biogas systems.

75. Three AI Parties describe afforestation programs in developing countries (Belgium, EC, Japan), two of which are CDM projects. Two Parties describe international action to prevent illegal logging (European Community, Japan) and two more describe international action to prevent forest fires (Japan, US).

76. Ten AI Parties describe involvement in international research cooperation in the forestry sector including terrestrial observations, tropical forest research, remote sensing technology transfer, research support in developing countries, forest resources assessments and land use monitoring, forest ecosystem research programs, and scientific studies using remote sensing data (Australia, Austria, Belgium, Canada, Denmark, EC, France, Japan, Sweden, US). Six projects aim to provide better data on land use and land use change through remote sensing and monitoring programs, which is related to a key data need discussed in section II.E.

77. In addition two Parties report providing training programs that include forest resource management in developing countries (Japan, Sweden). The US has worked to reduce deforestation rates and promote carbon storage in Guatemala by supporting improved land use and resource use practices, an improved policy framework, and stronger local institutions through technical assistance, training and "farmer-to-farmer extension networks (page 130). The US also reports on the Nature Conservancy's International Partnership Program, which aims to strengthen capacity of local organizations to preserve biological diversity and forest resources by working with more than 70 partner organizations in 26 countries throughout the Asia Pacific, Caribbean, and Latin America regions (page 122). Japan describes a program to promote private sector CDM projects for afforestation by providing analyses and information regarding baselines, creating technical manuals for project participants, and training people involved in project applications, implementation, and management. (page 213)

78. Other related international projects address agriculture development to reduce deforestation pressure, prevention of desertification through forest conservation and afforestation, and poverty alleviation through improved resource management.

F. Activities of other relevant international bodies

79. While many NAI and AI Parties discuss involvement in other relevant international bodies, there is very little information that is specifically related to deforestation. A few references are worth noting. Japan describes how contributions to the International Tropical Timber Organization will aid in combating illegal logging (pages 213, 215). Italy reports hosting an international workshop to facilitate integration among desertification, climate change, biodiversity and forest-related multilateral activities,

with specific focus on Mediterranean area (page 154). St. Lucia reports that the national strategy developed for the Convention on Biological Diversity includes forest ecosystem protection (page 38). Djibouti reports that as a result of the ratification of the Conventions to Combat Desertification and the Convention on Biodiversity it set an objective of reduction of the rate of the degradation of forests by 50% (page 71). The Seychelles indicate that other international conventions have influenced their national forest policy (page 73).

G. Financial mechanisms and other alternatives

80. Most NAI Parties identify a need for financial assistance with implementing measures to reduce greenhouse gas emissions because of limited resources and other pressing issues such as poverty and hunger alleviation. The programs for international cooperation described in section E. provide support towards meeting this need. A variety of mechanisms are used to finance projects and international cooperation; it is difficult to associate specific mechanisms with deforestation activities, so mechanisms used to finance all types of forestry projects are discussed below.

81. Multilateral institutions such as GEF and the World Bank provide financial assistance for forestry projects. Fore example, assistance for the PPG7 program in Brazil was managed through the World Bank. In addition, the Carbon Prototype Fund of the World Bank seeks to develop local and global markets for environmental services including carbon sequestration in the LUCF sector. Programs through the UNEP and UNDP are mentioned by some NAI parties as providing assistance for forestry related activities (e.g., the UNEP Collaborating Center on Energy and the Environment and The UNDP Agenda 21 Program).

82. Mechanisms associated with the UNFCCC are also used to implement projects. Australia and Norway report on AIJ projects in forestry and Costa Rica reports receiving support through the Pilot Phase of Joint Implementation to help pay landowners within protected areas. A few Parties mention the potential utility of certified emission reductions through the CDM (Costa Rica, Morocco, Germany, Japan, Bolivia, Indonesia). Nepal and Papua New Guinea reference opportunities for carbon trading and sale of emission offsets.

83. National programs and agencies in AI governments provide international development assistance through direct aid, long-term loans and subsidies, and grants.

84. Public-private partnerships are used to implement forest projects and are facilitated by both AI and NAI governments. Gambia plans to involve private sector partners to implement its National Forestry Plan and the Lao People Democratic Republic involves private sector partners in afforestation. The US describes a number of partnerships with NGOs and reports working with the private sector to leverage funding for climate change projects in developing countries. For example, in the US, Starbucks coffee and Conservation International are working together to promote coffee production under the forest canopy. Japan is developing a private sector afforestation network. Italy is a member of the Climate Alliance, which is a partnership between European municipalities and communities indigenous to rainforests.

85. Two multilateral partnerships are also mentioned with regard to providing assistance for forestry projects: the Asia-Pacific Partnership (Australia) and the Asia Forest Partnership (Japan).

Annex I

National communications covered in this synthesis

Table 1.1 – National communications from non-Annex I Parties

Year of submission	Parties
1997	Jordan, Micronesia*, Senegal
1998	Armenia, Kazakhstan, Zimbabwe*
1999	Argentina (revision of the 1st NC), Cook Islands, Egypt, Georgia*, Indonesia*, Kiribati, Mauritius, Nauru*, Samoa*,
	Tuvalu, Uzbekistan*, Vanuatu*
2000	Azerbaijan*, Bhutan*, Bolivia*, Cape Verde*, Chile*, Costa Rica*, Democratic Republic of
	The Congo*, Ecuador*, El Salvador*, Grenada*, Honduras*, Israel, Jamaica*, Lao People's
	Democratic Republic*, Lesotho*, Malaysia, Mali*, Marshall Islands, Niger*, Philippines*,
	Republic of Moldova, Saint Vincent and Grenadines*, Seychelles*, Singapore, Sri Lanka*,
	Thailand*, Turkmenistan
2001	Algeria*, Antigua and Barbuda, Bahamas, Barbados, Botswana*, Burundi*, Chad*, Colombia*,
	Congo*, Cote D'Ivoire*, Cuba, Dominica*, Ethiopia*, Ghana*, Maldives, Mexico (2nd NC)*, Mongolia*,
	Morocco*, Nicaragua*, Niue*, Panama*, Peru*, Saint Kitts and Nevis*, Saint Lucia*, Togo*,
	Trinidad and Tobago*, Tunisia*, Yemen
2002	Albania*, Bangladesh*, Belize*, Benin*, Burkina Faso*, Cambodia*, Djibouti*, Eritrea*,
	Guatemala*, Guinea*, Guyana*, Haiti*, Kenya*, Mauritania*, Namibia*, Papua New Guinea*,
	Paraguay*, Swaziland*, Tajikistan*, Uganda*
2003	Central African Republic*, Comoros*, Dominican Republic*, Gambia*
2003	Iran (Islamic Republic of)*, Kyrgyzstan, Malawi*, Nigeria*, Pakistan, Palau*, Republic of
	Korea*, South Africa , Sudan*, The Former Yugoslav Republic of Macedonia*,
	United Republic of Tanzania*, Viet Nam*
2004	Brazil*, China*, Democratic People's Republic of Korea*, Gabon*, India*, Madagascar*,
	Malta, Nepal*, Solomon Islands*, Uruguay (2nd NC), Zambia*
2005	Bahrain, Cameroon*, Guinea-Bissau*, Rwanda*, Sao Tomé and Principe*, Saudi Arabia,
	Tonga*, Venezuela*
2006	Fiji*, Mozambique*, Suriname

Table 1.2 – National communications from Annex I Parties

Version reviewed (most recent submission)	Parties
NC1	Croatia
NC3	Austria, Bulgaria, Canada, France, Germany, Ireland, Italy,
	Lithuania (NC3/4), Poland, Portugal, Romania, Russian Federation,
	United States of America
NC4	Australia, Belgium, Czech Republic, Denmark, Estonia,
	European Community, Finland, Greece, Hungary, Iceland, Japan,
	Latvia, Liechtenstein, Netherlands, New Zealand, Norway, Slovakia,
	Slovenia, Spain, Sweden, Switzerland, United Kingdom

* NC's that discuss deforestation in their country

Annex II

Illustrative text from national communications

Paragraph of synthesis paper	Text from national communication (Party and page number included, direct quotes italicized)
Paragraph 11	*Destruction of tropical forests (including rain forests and forests in drier areas), with its serious impacts on global climate, on species diversity and on living areas of local populations, is one of the world's largest environmental problems, as the IPCC's most recent assessments have again confirmed. Forest fires and forest clearing destroy forest biomass, which binds carbon and thus is a natural CO_2 sink. Many developing countries' significant emissions sources include such activities, which release greenhouse-gas emissions and create irreparable damage – not only for the climate. Forest loss also brings about widespread soil erosion and desertification, disrupts water cycles and causes shortages of wood for cooking and building, effects that threaten the existence of many millions of people in rural areas of developing countries. (Germany, page 145)*
	Forests are essential for their vital environmental roles, as well. In Sudan, the most significant of these may be protection from desertification - a process that threatens large areas. The Gum Arabic Belt - a site of diverse Agriculture & Forestry activities that lies within the low rainfall savannah zone (as depicted in figure 3.7) - may be the most important forest in Sudan. The Hashab (gum arabic) tree plays an important role in the traditional rainfed Agriculture & Forestry system. This is recognized by its ability to fix nitrogen and thereby improve soil fertility, providing essential forest products and offering farmers an important source of offseason income. Perhaps most importantly, the Gum Arabic Belt also acts as a natural barrier to desert encroachment…(Sudan page 41)
	Important anthropogenic threats to PNG reefs are considered to be unsustainable fishing, including both overexploitation and destructive practices; sediment mobilization as a result of deforestation from forestry, agriculture, and other activities, as well as population increase and urbanization. (Papua New Guinea, page 21)
Paragraph 12	*In addition to their economic use, mangroves play an important role in coastal protection and sea defence. Depending on the width of the strip of mangroves, they can act as barriers to diminish or buffer wave action. Therefore, they play an important role in protection of the sea wall or embankment and reduction of damage to the sea defence system. Mangroves also help to accelerate the process of deposition of soil particles, which are suspended in tidal water thereby raising the level of coastal lands in the intertidal zone. (Guyana, page 96)*
Paragraph 18	*The forestry sector is an important source of export earnings and it also supplies construction material, fuelwood and other non-timber forest products. The sector contributed around 4.5% to GDP in 1995 and is a leading export earner. Forestry products include wood, rattan, bamboo, cardamom resins, and furniture. The principal challenge facing the authorities [is] finding a way to manage this resource in a sustainable manner. Illegal logging and slash-and-burn cultivation have been responsible for a rapid reduction in forest cover. Forests still cover around 47% of the country (although only half of this is commercially accessible), but this is a significant drop [from] the 55% in 1991. The government has issued numerous regulations limiting the amount of living timber that can be felled each year and banning the export of unprocessed logs, but they have proved difficult to enforce. (Lao People's Democratic Republic, page 33)*
Paragraph 19	*Land degradation including deforestation, loss of biodiversity and habitat loss still remain the most serious environmental problems in the country. The scale of impact of land degradation on the social and economic well being on the Eritrean population is incalculable. Since the majority of the Eritrean population depends on biomass fuel as source of energy, shortage of fuel wood, for example, is one of the most visible problems. (Eritrea, page 34)*
Paragraph 23	*In the EFAP report it is estimated that forests and woody vegetation are disappearing at a rate of 150,000 to 200,000 ha annually. It needs to be noted that the available information on the country's forest resources, location, extent, volume of the standing growth stock, annual growth rate and rate of depletion of are scarce and sometimes inconsistent. It is expected that the*

Paragraph of synthesis paper	Text from national communication (Party and page number included, direct quotes italicized)
	on-going Woody Biomass Inventory and Strategic Planning Project (WBISPP) being carried out by the Ministry of Agriculture (MoA) will provide up-to-date and reliable information on the woody biomass resources of Ethiopia. (Ethiopia page 34)
Paragraph 24	*It is generally known that Nigeria's forest estate has decreased from about 60million hectares (mha) to approximately 9.6 mha during the 20 th century. However not much data exist on annual evolution of land use types in the different geographical zones of Nigeria, the biomass stocks in them, including above and below ground biomass, annual biomass growth rates, biomass harvests and biomass burning in different parts of the country. The current data are from World Resources Institute (WRI), Food and Agriculture Organisation (FAO) and recent remote sensing study of the forest and savanna zones of Nigeria (FORMECU, 1996). The study provided the best estimate of land use change in Nigeria, comparing the 1976/78 land use classes with the 1993/95 vegetation and land use classes on comparative scales. However, even this data set is already close to 10 years old and needs update and re-validation. (Nigeria, page 101)*
	"A retroactive analysis from old satellite imagery using the same classification scheme applied in the 1998 forest cover assessment has shed some light on current deforestation rates. What is required is more information to be gathered in a timely and systematic manner to allow for evaluation and monitoring on a regular basis. Additional equipment will be necessary to build on the support being received. (Jamaica, page 56)
Paragraph 29	*Many factors have contributed to this situation, particularly the high demand for woodfuel (firewood and charcoal), which constitutes more than 70% of total national energy consumption. Agricultural expansion in the absence of proper land-use and forest management planning, has also led to the clearing of vast areas of forest. Sudan page 26*
	Open field culture is used for annual crops with very little or no associated trees. Fields are farmed from year to year without any crop rotation, ploughing, and intake of organic matters, and are sensitive to erosion. This system is currently expanding in Moheli and Anjouan because of the pressure for food. The traditional agroforestery system associates the production of food crop and fruit stocks in the same lot. It is a highly stable system that features a permanent vegetation cover of the soils and maximizes the use of space. The food production under a natural forest system is the typical encroachment of the forests by farming. In most cases, banana trees and a tuber crop such as yam are planted in a natural forest, under the tallest trees. The system first appears stable but soon, under demographic pressure, evolves towards the gradual deforestation of the area. Many species of trees, some of them endemic, are threatened by that system. Comoros page 2
	The transformation from subsistence to a cash-oriented economy combined with the rapid population expansion, however, have forced a change from the environment-friendly traditional systems into an intensified and extensive cultivation of root and tree crops at the expense of the forest (GWS 1992a; Pitt 1970; Thomas 1984). Samoa page 9
Paragraph 30	*In spite of their diversity, forest ecosystems are very fragile because of pressures from population explosion and the poor livelihoods of rural inhabitants. The collection of firewood is the first cause of the recession of forested areas, estimated at about 31,000 hectares per year. It is the first, if not the only, source of energy in most rural areas. Morocco page 9*
	Firewood represents almost 50% of the total consumption of energy, food cooking with firewood represents almost 60% in the urban areas and more than 85% in the rural areas, with a consequent growing deforestation… El Salvador page 4
Paragraph 31	*Timber extraction has been practiced for over 300 years in the Amazon; in the past few decades, clear cutting practices have increased, using large machinery; Brazil is the largest producer of tropical wood and is also a great consumer. Brazil, page 244*
	Forestry products particularly logs had been the country's major export between 1993-1997 accounting for a five-year average of 48% of total export and 38% of government revenue. These contributions were forthcoming in spite of a significant loss believed to have incurred on public collections through the granting of remissions. These were done under suspicious circumstances. The ease at which licenses were obtained together with high pricing in log markets provided

Paragraph of synthesis paper	Text from national communication (Party and page number included, direct quotes italicized)
	incentives for alarming rates of log extractions. This subsequently encouraged propensity in the public sector and high dependence on log receipts. Solomon Islands page 9
Paragraph 33	*Rapid population growth and increasing urbanization have posed a threat to the environment and put pressure on limited natural resources, thus aggravating environmental problems such as soil degradation, loss of forest cover, loss of biodiversity and poor sanitation. Gambia page 5*
Paragraph 46	*Promoting agroforestry systems to enhance regeneration of forests and involving private funds is an important component of the strategy. Afforestation of degraded forest area is being promoted through government efforts and by seeking participation from individuals and private enterprises. Individuals and private enterprises are allowed under present regulations to lease degraded or barren lands from the government for plantations. The legislation gives freedom to plant the area with short, medium, or long rotation species but specifies the species that can be grown in a particular area. Private parties are allowed usufruct rights within the regulations prescribed by the concerned authority. The government grants incentive in terms of credits, tax and duty rebates, increased lease area, etc. as per regulations. The land rights so devolved can be transferred with intimation to the concerned authority. The government heavily regulates logging and transportation for sale. The stress in promoting afforestation is through involvement of many small farmers and integrating it with agricultural activities. Lao PDR page 83*
Paragraph 52	*Sets the fundamental principles, regulations, and measures for the management, preservation, and use of forest resources and forest land, promotion of the revival afforestation and development of forest resources in the Lao PDR with a view to ensuring the balance of nature, of forests and forest land as the people's sources of livelihood and sustainable use, preserving water sources, preventing land erosion, preserving seeds, trees, aquatic animals, wild life, and the environment in contribution to the national social economic development. (Lao People Democratic Republic, page 42)*
Paragraph 54	*Tropical deforestation, sometimes associated with illegal logging, is a major source of anthropogenic greenhouse gas emissions. To build on a commitment taken at the World Summit on Sustainable Development, in May 2003 the Commission, with support from the timber trade in its development and implementation, published an Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT) 123 aimed at the reduction and eventual elimination of the imports into the EU of illegally harvested timber. Among the many other adverse effects of illegal logging, the action plan recognises that it "can be a contributory factor to the process of deforestation, and it can increase the vulnerability of forests to fires - both of which have climate change implications. (European Community, page 82)*
Paragraph 57	*Further, under the New Zealand bilateral assistance programme, the Community Forestry Project is now a major part of the Forestry Division of the MAFFM. The focus is now upon developing community capacity in managing their own forests and forest products. The project also considers impacts from CC and SLR so proper forest development and management are also highlighted. (Samoa page 23)*
	Community forestry is an important forest management alternative to industrial forest concessions, in which the forest management authority is conveyed to local communities. To date, approximately 22 small-scale community forests have been established in order to ensure the long-term security and stability of the livelihood of rural communities that depend on forest products and to increase forest cover. Community forestry has been recognized as an effective strategy for sustainable forest management. (Cambodia page 30)
Paragraph 58	*Promoting fuel substitution, particularly the use of less polluting fuels such as natural gas, hydropower and Liquefied Petroleum Gas (LPG). The wide use of LPG as a substitute for charcoal and fuelwood will make it possible to (a) slow down the rate of deforestation caused partly by the production and use of woodfuels and (b) reduce pollution arising from the direct flaring of LPG into the atmosphere. (Ghana, page 30)*
Paragraph 59	*"Soil and Water Conservation Activities: Deforestation, burning of grassland, rampant soil and water erosion, are leading to ecological degradation and habitat loss. This phenomenon drastically affects the soils capacity to store carbon, and in effect undermining sustainable*

Paragraph of synthesis paper	Text from national communication (Party and page number included, direct quotes italicized)
	agricultural production. The overriding objectives of the country, i.e. the achievement of food security and poverty reduction could not be achieved unless the problem of land degradation is solved. Cognizant of this fact the Government is making considerable efforts to mobilize its meager resources to tackle this problem. In this connection, high school students have regularly been mobilized to undertake terracing activities during summer since 1994. Under this program more than 75,772 km of terraces have been built for soil and water conservation purposes. These include cropland and hillside terracing. Figure 4.1 is an example that illustrates the various soil and water conservation and tree planting activities being carried out in the country. " (Eritrea, page 34)
Paragraph 64	Brazil reports success with local measures requiring forest management plans in the State of Mato Grosso where rural property owners are required to obtain an environmental license for forest harvesting. To get the licenses they have to provide the state government with a satellite map of the property and indicate the areas to be harvested, reserved, and permanently protected. The state agency crosschecks the map with satellite imagery to monitor activities and if they do not follow the submitted plan, owners are required to implement a restoration plan. Brazil reports a reduction in deforestation rates by 32% in one year and 53% reduction in forest fires (page 246)
	Seychelles report low deforestation rates since policies were enacted that discourage fuelwood gathering and provide provisions of electricity in rural areas (page 55)
	Since 1980 the Government has initiated a wide reforestation program. The reforested areas now are more than the natural forests lost, thus putting an end to the long-lasting regression of the forestry resources. Between 1978 and 1992, the share of forest cover has changed from 3 to 7,4 % or from 25 428 ha to 146 000 ha. Unfortunately part of this area was destroyed during the crisis (about 30 000 ha). At the same time practically all natural vegetation formations are in regressions or only lately stabilized. (Burundi, page 5, XIV)
	The programme's successes include clearly enhanced environmental awareness (regarding the importance of sustainable Amazon policy), Brazil's willingness to assume national responsibility for the programme, introduction of partnership processes in policy development and planning, strengthening of institutions relevant to the programme, demarcation of extensive protected areas for the indigenous population, the gaining of a fund of experience, via testing of improved forest-use and land-use methods, and reductions in greenhouse-gas emissions. (Table VII.5.1, page 163) (Germany, re: the G7 Pilot Programme in the Amazon)
	The updated inventory shows that the Land-use Change and Forestry Sector of The Gambia has changed from being a carbon source in the 1980s to a carbon sink in 1993. This change is mainly due to the intervention of the Gambia-German Forestry Project during the past 15 years and also the efforts of the Government of The Gambia in promoting tree planting and community forestry. " (page 25)
	The decline in annual deforestation rate during 1980-1990 may be attributed to a combination of factors including: the change of macro-policies; under-capacity utilisation of agro-industries; introduction of subsidies on fertilisers, kerosene and electricity; abandonment of large-scale plantations; decline in prices of cash crops; to significant increase in distances between the fuelwood supply side and market side. (Tanzania page 107)
Paragraph 65	Difficulties purchasing land for conservation (Costa Rica) (page xviii)
	Need money to pay landowners for conservation activities (Fiji, page 22)
	Preservation of one area does not ensure a net reduction in deforestation and in fact it may create scarcity of resources driving deforestation in other areas (Bangladesh page 138)
	Brazil describes the phenomenon of protected areas turning into “green islands” where external pressures still exerted on perimeter of areas and buffer zone requirements are rarely observed (page 253) Enforcement and monitoring of protected areas is difficult due to resource constraints and the large size of forest (particularly in the Amazon) (Brazil) (page 253)
	Lack of financial resources has affected ability to implement an afforstation/reforestation program, citing lack of loans for activities that support sustainability (Paraguay) (page98); Land ownership

Paragraph of synthesis paper	Text from national communication (Party and page number included, direct quotes italicized)
	issues (farmers generally don't own the land they occupy Paraguay page 98);
	" Indeed, the security of land tenure arrangements and land use rights are considered to be the most important challenges to sustainable resources use. There are widespread ambiguities and uncertainties in laws governing land tenure and use. Although each sector has its own policy, the absence of integration between these policies, lack of clearly defined mandates and responsibilities, and the piece meal nature of planning and implementation has created numerous problems, such as the expansion of agricultural area on the forest and range land areas...At present there is a growing recognition within the government and other concerned institutions that these problems pose serious barriers to the implementation of any sustainable development schemes. Some efforts are being made to overcome these shortcomings such as the establishment of the Higher Council for Environment and Natural Resources as a coordination body for policies, legislation and strategic planning in the field of environment and natural resources." (Sudan page 77)
	Difficult to implement measures reducing deforestation because of the marginal value of forest land compared to the value of land under other uses; e.g., price of fuelwood will drive consumption more than the availability of wood stoves; mitigation options should be evaluated in light of economic drivers. (Bangladesh page 137)
	Lack of funds, poor access to mountain forests, poor private sector participation; (Lesotho, page 48) Afforestation program started in 1960's has been limited by "hostile agro-ecological condition, poor soils, communal land tenure system, weak extension service, inadequate technical know-how and poor logistical support" (Lesotho page 87)
	Lack of resources for mitigation, rely on international cooperation; also no clear vision of the role of forests and its benefits; conflicts of interests; current economic system in consolidation process; institutional problems, i.e. lack of clarity regarding roles and responsibilities of the various institutions involved; cultural problems (Honduras)
Paragraph 69	*The project and support activities carried out in the various measures areas of the PPG7 are oriented to a range of different dimensions and aspects of deforestation problems, including approaches to protection of forest ecosystems and of living areas for indigenous peoples, sustainable management of useful forest resources and locations, relevant forest and natural resources policies, institutional development, effective participation and organisation of target groups and programme participants, research, etc. (Germany page 163)*

Annex III

Table 3.1 – Data on forest cover, deforestation rates and other related information from national communications

Party	Forest Cover (ha)	Percent forest cover	Annual Deforestation Rate (ha/yr)	Deforestation rate (% per year)	LUCF net source/sink
Albania		36%			Source
Algeria	2,300,000				Source
Antigua and Barbuda					Sink
Argentina					Sink
Armenia	334,100	11%			Sink
Azerbaijan		11%			Sink
Bahamas	1,620,000		No change from 1990-1994		Sink
Bangladesh		17%			Source
Barbados	20	2%	Wholly deforested in 1700's for sugar cultivation		Sink
Belize					Sink
Belize		74%	3,505 or 25,000 (depending on the study)	1.00%	Sink
Benin					Sink
Bhutan		73%			Sink
Bolivia	51,400,000	49%	150,000		Source
Botswana	32,170,000	55%	24,000	0.07%	Sink
Brazil			21,921,000 ha from 1988-1994; 2,913,000 ha from 1994-1995; average annual gross rate 2,113,000 (1978-1989)		Source
Burkina Faso	16,620,000		325,000		Sink
Burundi				0.13%	Sink
Cambodia	10,804,300	60%	140,000-175,000	0.6%-0.9%	Sink

Party	Forest Cover (ha)	Percent forest cover	Annual Deforestation Rate (ha/yr)	Deforestation rate (% per year)	LUCF net source/sink
Cameroon	38,825,300				Source
Central Africa Republic					Sink
Chad	23,086,000			0.60%	Sink
Chile	15,647,894	20%			Sink
China					Sink
Columbia	63,886	56%			Source
Comoros	800		500		Sink
Congo	19,735,800		32,280		Sink
Cook Islands	“small” forest area			“no deforestation”	Sink
Costa Rica		37%		Stabilization in deforestation rate	Sink
Cote d'Ivoire	2,100,000		240,000		Sink
Democratic Republic of the Congo	113,275,000	50%		0.60%	Sink
Djibouti	70,000				Sink
Dominica	51,752	66%		58% decrease in forest cover from 1961-1995	Sink
Dominican Republic	1,326,600	28%			Sink
Ecuador			60,000-360,000	0.5%-2.5%	Source
El Salvador					Source
Eritrea		0.43% or 2.4%			Source
Ethiopia		2.7% (down from 40% historically)	39,000 ha/yr in 1990;143,000 ha/yr in 1994		Sink
Fiji		48%	2,645		Sink

Party	Forest Cover (ha)	Percent forest cover	Annual Deforestation Rate (ha/yr)	Deforestation rate (% per year)	LUCF net source/sink
Gabon	23,000,000	85%		< 1%	Sink
Gambia		48%		6.00%	Sink
Georgia	2,900,000	40%			Sink
Ghana					Sink
Grenada	3,000				Sink
Guatemala	4,270,000		57,000		Sink
Guinea	2,550,000	19%	955,000		Sink
Guinnea-Bissau	2,100,000	64%	30,000-60,000		
Guyana	16,000,000	76%			Sink
Haiti		2%	40-50 million trees		Source
Honduras		50.7% or 75%	3,857		Source
India	68,000,000	20%			Source
Indonesia	132,663,118	70%			Source
Iran	12,400,000	8%	45,000	0.40%	Source
Jamaica	507,076		340	0.10%	Sink
Jordan	150,000	15%			Source
Kazakhstan	10,500,000	4%		No change in forest cover from 1990-1994	Sink
Kenya	48,600,000		Forest cover declining		Sink
Korea					Sink
Korea	8,906,000	65%	19,000	0.20%	Sink
Lao PDR	11,170,000	47%	60,000	0.50%	Sink
Lebanon	78,000				Source
Lesotho	34,685				Source
Macedonia	958,000	37%			Source
Madagascar	13,260,000				Sink
Malawi	2,600,000		50,000	2.80%	Source

Party	Forest Cover (ha)	Percent forest cover	Annual Deforestation Rate (ha/yr)	Deforestation rate (% per year)	LUCF net source/sink
Malaysia	19,000,000				Sink
Mali	17,400,000		8,700	0.05%	Sink
Mauritania	4,339,000		719,666		Sink
Mauritius	57,059	31%	"no deforestation"		Sink
Mexico		74%	700,000		Source
Micronesia	54,900				Not reported
Mongolia	17,500,000	8%		No change in forest cover from 1990-1998	Source
Morocco					Source
Mozambique		70%	150,000	4.27%	Source
Namibia		17%			Sink
Nepal	4,269,000	29%		1.70%	Source
Nicaragua	6,200,000	60%	60,000		Sink
Niger	16,000,000		190,400		Sink
Nigeria	9,600,000 (in 1990, down from 60,000,000 in 1980)	< 10%	336,000	3.50%	Source
Niue	18,200	64%	164	0.90%	Sink
Pakistan	4,224,000	5%			Source
Palau	31,261				Sink
Panama	3,052,304		33,333 or 50,000		Source
Papua NG	3,642,000	84%	250,000	7.00%	Not reported
Paraguay		20%			Source
Peru		56.2% or 58.9%	260,000		Source
Philippines	5,400,000 (down from 27,500,000 in 1575)	18%	130,000	2.00%	Sink

Party	Forest Cover (ha)	Percent forest cover	Annual Deforestation Rate (ha/yr)	Deforestation rate (% per year)	LUCF net source/sink
Republic of Moldova	325,000	10%			Sink
Rwanda	527,863	20%	Over a period of 41 years, the area of natural forests shrank from 634,000 ha to 221,200 ha i.e. a decrease of 65.11 % between years 1960 and 2002		Sink
Samoa	99,900				Sink
Sao Tomé and Principe	91,091,000	50%			Sink
Saudi Arabia					Sink
Senegal	11,900,000		80,000		Source
Seychelles	19,760				Sink
Singapore					Not reported
Solomon Islands	2,420,000				Not reported
South Africa	150,961,000		forest cover increased from 136,593,900 in 1994 to 150,961,000 in 1999		Sink
Sri Lanka	200,000	3%	42,000 hectares per year over 1956-1983 increasing to 54,000 hectares per year over 1984-1994.	27.00%	Source
St. Kitts and Nevis	8,400			Deforestation reported to occur, no rate provided	Sink
St. Lucia	23,157	38%			Sink
St. Vincent	12,689	28%	250	2.00%	Sink

Party	Forest Cover (ha)	Percent forest cover	Annual Deforestation Rate (ha/yr)	Deforestation rate (% per year)	LUCF net source/sink
Sudan		12%	Forests have shrunk from about 40% to 12% of total land area		Source
Suriname	15,000,000	91%			Source
Swaziland	630,000	36%			Sink
Tajikistan	410,000				Sink
Tanzania	39,208,000 or 44,000,000	50%	393,100		Source
Thailand	12,971,547		141,107 (down from 450,000)		Source
Togo					Source
Tonga	4,000				Sink
Trinidad and Tobago	248,000			1.45%	Sink
Tunisia	830,700	5%			Sink
Turkmenistan	19,761	0%			Reported as "zero"
Tuvalu					Not reported
Uganda	884,670	4%			Source
Uruguay					Sink
Uzbekistan	1,440,000	3%	"slight increase in forest cover"		Sink
Vanuatu	338,000	70%			Sink
Venezuela	47,493,757			1.10%	Sink
Vietnam	9,300,000 or 19,000,000	28% (down from 43% in 1943)	decrease in forest cover since 1943, slight increase in recent years		Source
Yemen	2,400,000	4%			Sink
Zambia					Source
Zimbabwe	20,500,000	53%	61,000	0.30%	Sink

Annex IV

Summary of policies and incentives for reducing emissions from deforestation in NAI national communications (and the European Community NC)

Policies and incentives	Established policies or programs	Proposed measures / high priority
Forest Management		
Promote sustainable forest management; developing forest management plans; improved management; laws governing harvesting practices, certification of forest products	(29) Dominican Republic, Brazil, Namibia, Sudan, Bhutan, Cambodia, Fiji, Guyana, Jamaica, Lao PDR, Samoa, Seychelles, Solomon Islands, Peru, Algeria, Chile, Gabon, Indonesia, Korea, Kenya Burkina Faso, Democratic Republic of the Congo, Belize, Madagascar, Guinea-Bissau, Senegal, Sao Tomé and Principe, Tunisia, Vanuatu, Chad	(23) Sudan, El Salvador, Peru, Ethiopia, Albania, Eritrea, Iran, Niue, Papua NG , Honduras, Mexico, Cape Verde, Burundi, Niger, Cameroon, Djibouti, Haiti, Togo, Guatemala, Panama, Uganda, Bolivia, Mauritania
Promote afforestation/reforestation or agroforestry to develop alternative sources of wood and forest resources (reducing need to extract fuelwood and other resources from natural forests thereby reducing deforestation pressure) or to restore deforest areas,	(32) Dominican Republic, Brazil, India, Namibia , Sri Lanka, Bangladesh, Bhutan, Cambodia, Iran, Uruguay, Lesotho, Nepal, Philippines , Samoa, Peru, Lao PDR, Central Africa Republic, Lebanon, China, Chile, Burkina Faso, Democratic Republic of the Congo, Chad, Algeria, Burundi, Tunisia, Panama, Thailand, Tonga, Vietnam, Madagascar, Kenya	(44) Sudan, El Salvador, Georgia, Zimbabwe, Botswana, Ethiopia, Paraguay, Albania, Azerbaijan, Eritrea, Granada, Guyana, Micronesia, Mozambique, Nigeria, Papua NG, St. Lucia, Solomon Islands, Mexico, Cape Verde, Cote d'Ivoire, Niger, Congo, Cameroon, Senegal, Sao Tomé and Principe, Guinea, Djibouti, Haiti, Morocco, Benin, Togo, Guatemala, Nicaragua, Tajikistan, Uganda, Tanzania, Bolivia, Ecuador, Venezuela, Korea, Indonesia, Mauritania, Belize
Forest conservation, establishing forest reserves and protected areas, often for purposes of protecting wildlife and biodiversity (may include connecting protected areas with corridors, protecting areas to allow for potential future expansion/migration of forest ecosystems),	(32) Brazil, India, Sri Lanka, Sudan, Bangladesh, Botswana, Uruguay, Bhutan, Cambodia, Dominica , Fiji , Niue, Philippines , St. Kitts and Nevis, St. Vincent, Seychelles, Peru, Lao PDR, Nepal, Democratic Republic of the Congo, Central African Republic, Belize, Gabon, Bolivia, Indonesia, Kenya, Burkina	(29) Zimbabwe, El Salvador, Georgia, Peru, Ethiopia, Albania, Eritrea, Iran, Mozambique, Nigeria, St. Lucia, Honduras, Mexico, Mali, Niger, Cameroon, Senegal, Guinea, Haiti, Benin, Guatemala, Nicaragua, Panama, Uganda, Tanzania, Chile, Bolivia, Venezuela, Mauritania

Policies and incentives	Established policies or programs	Proposed measures / high priority
Forest Management		
	Faso, Algeria, Cote d'Ivoire, Guinea-Bissau, Thailand, Vietnam	
Legal Actions		
Laws or actions specifically addressing illegal logging, e.g., monitoring, prescribing penalties for violation,	(5) Sri Lanka, European Community, Brazil, Bhutan, Cambodia	(2) Georgia, Albania
Temporary moratorium on licenses for forest exploitation; logging bans; increased taxes, license fees, stumpage fees	Brazil, Philippines, Senegal, Thailand, Indonesia, Chad	Papua NG, Burundi, Guinea-Bissau, Benin
Prohibitions on land use conversions,	Brazil, Bhutan, Burundi	Lao PDR
Consolidate/reinforce environmental legislation with clear definitions of environmental crimes and respective penalties, providing more serious consequences for individuals and companies,	Brazil, Mauritania	Lesotho, Seychelles, Algeria, Cameroon, Indonesia
Place forest management formally under public domain	Brazil, Bhutan, Philippines, Democratic Republic of the Congo	Cape Verde, Cote d'Ivoire
Technology development and capacity building		
Promoting decentralized or community-based forest management; including building the capacity of communities for sustainable resource management; establishing clear boundaries for community management (capacity building), sometimes involves promoting ecotourism,	(18) Brazil, India , Sri Lanka, Sudan, Zambia , Cambodia , Fiji, Micronesia, Samoa, Mexico , Mozambique, Nepal, Philippines, St. Lucia, Gabon, Senegal, Burkina Faso, Kenya	(17) Ghana, Botswana, Eritrea, Guyana, Lao PDR, Lesotho, Cape Verde, Niger, Cameroon, Senegal, Guinea, Panama, Thailand, Uganda, Tanzania, Vietnam, Ecuador
Reduce use of fuelwood through rural electrification, fuel substitution, or efficiency measures (e.g., efficient cook stoves, solar cookers, natural gas fired brick kilns)	(7) Malawi, Seychelles, Mexico, Algeria, Burundi, Kenya, Burkina Faso	(29) Ghana, Namibia, Sudan, Bangladesh, Eritrea, Iran, Lao PDR, Micronesia, Mozambique, Nepal, Solomon Islands, Mali, Cape Verde, Cote d'Ivoire, Cameroon, Guinea-Bissau, Senegal, Tonga, Mauritania, Central Africa Republic, Chad, Sao Tomé and Principe, Guinea, Haiti, Morocco, Benin, Togo, Ecuador
Improve agricultural productivity; develop agroforestry or terracing technology; improve livestock management to remove pressure for more pasture; rehabilitate degraded agricultural land to reduce pressure to convert more land to agriculture; prevent or control land degradation	(4) Eritrea, Mexico, Vanuatu, Bolivia	(26) Ghana, Guyana, Bhutan, Iran, Guyana , Iran, Lesotho, Malawi, Nepal, Nigeria, Honduras, Peru, Mali, Cape Verde, Cote d'Ivoire, Congo, Cameroon, Sao Tomé and Principe, Benin, Chile, Democratic Republic of the Congo, Chad, Burkina

Policies and incentives	Established policies or programs	Proposed measures / high priority
		Faso, Ecuador, Central Africa Republic, Belize
Mapping and monitoring changes in forest cover (capacity building)	(5) Brazil, Zimbabwe, India, Philippines, St. Lucia	(4) Niger, Cameroon, Djibouti, Trinidad and Tobago
Identifying sensitive or important forest areas for biodiversity of other purposes (w/out necessarily protecting them legally),	(2) Namibia, Peru,	(1) Sri Lanka
Forest fire prevention and control; early fire detection,	(5) Brazil, Seychelles, Mexico, Algeria, Togo	(17) El Salvador, Guyana, Iran, Mozambique, Burundi, Guinea-Bissau, Sao Tomé and Principe, Indonesia, Benin, Guatemala, Nicaragua, Tanzania, Korea, Burkina Faso, Belize, Chad, Lebanon
Increase surveillance of protected areas; or enhance enforcement of forestry laws	(6) Brazil, Cambodia, Philippines, St. Lucia, Seychelles, Mexico	(6) Ghana, Eritrea, Guyana, Solomon Islands, Bolivia, Indonesia
Improve economic conditions of rural communities; create jobs; poverty reduction	(3) Tunisia, Indonesia, Burkina Faso	(10) Ghana, Guyana, Lao PDR, Niger, Guinea, Benin, Panama, Uganda, Vietnam, Ecuador

Annex V

Summary of bilateral and multilateral cooperation on forestry projects related to deforestation in AI and NAI national communications

Party	Program descriptions
Forest Conservation	
Austria	General emphasis on protection of rain forests through development assistance
Belize (NAI)	Rio Bravo Carbon Sequestration Pilot Project in Belize (page 55) (see also US programs below)
Canada	Tree Link, Southeast Asia: supports development and implementation of policies and practices for forest renewal, conservation, and protection. (page 113)
Germany	Supported nine projects in developing countries for tropical forest conservation (page 146)
	Provided the initiative for the Pilot Programme for Brazil (PPG7) through the G7 to conserve tropical forests (page 146, page 162)
Lebanon (NAI)	EU supported project "Protection of the Vegetal Cover in Lebanon" initiated in 1997, ending in 1999; UNDP-GEF funded forest protection program
Norway	AIJ project for forest conservation and replanting in Costa Rica
Spain	Cooperation programs on sustainable development in Latin America and protection of natural resources in the Mediterranean Region. (page xx)
US	Climate Change Initiative to address climate change through renewable and clean energy activities, energy efficiency, forest and biodiversity conservation, and reduced vulnerability to impacts (page 114)
	General support of international efforts to promote forest conservation and sustainable forestry, agroforestry, and improved agricultural practices (page 115)
	US Initiative on Joint Implementation, launched in 1993, supports the development of voluntary projects that reduce, avoid, or sequester ghg's; includes LUCF projects (page 118)
	Projects funded for purpose of biological diversity conservation, also include incentives to conserve forests and reduce deforestation (e.g., Madagascar) (page 130)
	NGO assistance:
	The Nature Conservancy and private sector partners implemented the Rio Bravo Carbon Sequestration Pilot Project in Belize; and the Noel Kempff Mercado Climate Action Project in Bolivia (page 115, page 230)
	Conservation International program Conservation Enterprise Fund with special emphasis on conservation and restoration of critical ecosystems (page 115).
	Parks in Peril, forest protection in Latin America (page 130)
	NatSource Institutional Energy Brokers, the Costa Rican Ministry of the Environment and Energy, and the Costa Rican National Parks Foundation started the Territorial and Financial Consolidation of Costa Rican National Parks and Biological Reserves Project. Project transfers primary forest, secondary forest, and pasture land declared as National Parks or Biological Reserves to the Costa Rican Ministry of the Environment and Energy. (page 129)
Forest Management	
Australia	The Papua New Guinea Forestry Human Resource Development Project, provides training

Party	Program descriptions
Forest Management	
	in forest resources to assist the Papua New Guinea Forest Authority with capacity to monitor and control logging (page 92)
	Forestry and land management are primary targets of Australia's bilateral funding, which is focused in the Asia-Pacific region (page 7) The Solomon Islands Forestry Management Project to assist with implementation of Solomon Islands Forestry Act of 1990 and re-establish monitoring capacity (page 92)
Belgium	Bilateral support for forest management and the integration of natural resources into wider poverty reduction programmes (e.g. in Kenya) (page 146)
Benin (NAI)	World Bank and International Development Agency funded project "Management Project for Forests and Bordering Soils
Canada	International Model Forest Network: multi-stakeholder approach to forest management. Model forests exist in Russia, Chile, and Mexico (planned for in Argentina) (page 114)
	Bilateral and regional financial to 18 developing countries for forestry related programs, (page 110)
Finland	Supported sustainable forest management in various countries by developing the partner country's own national forest plans, sector policies and development strategies for forestry. (page 184)
France	Supports two projects dealing with sustainable forest management (page 138)
Indonesia	Projects with Norway: Climate Change and Forestry Ecostrategy for Terrestrial Carbon Fixation; Feasibility study on sustainable reofrestation of degraded grassland (page 1-8)
Italy	Supported projects on sustainable management and environmental resource conservation in the Galapagos and in the Peruvian Amazon forest (page 156)
Japan	Project to Strengthen Monitoring, Assessment, and Reporting (MAR) on Sustainable Forest Management in Asia. (page 213)
Norway	Norway has provided support for projects on sustainable forestry and agroforestry,
Russia	Participated in Canada's Model Forest Network (page 101)
UK	Collaboration with India to look at impacts of climate change, including impacts on forests (page 80)
Vanuatu (NAI)	Sustainable Utilization Project and the South Pacific German Forestry Programme to improve forest management and maintain forest cover; Pacific Regional Agriculture Program to promote sustainable agriculture to reduce rates of forest conversion (page 16).
Community based forest management	
Australia	The Alxa League Environmental Rehabilitation/Management Project in Inner Mongolia (page 92)
Austria	Projects in Brazil, Columbia, Cameroon, Nicaragua, Guatemala, and Panama, working with NGO's and other AI parties to build capacity of local indigenous communities (page 120)
Finland	Projects in Namibia, Mozambique and Burkina Faso, concentrating on the involvement of rural populations in the management of fires and building capacity of national forestry organizations to promote such activities (page 184)
Germany	General: development-assistance programmes and projects are aimed at enabling people, especially local populations, indigenous peoples and non-governmental organizations, to participate suitably in forest-management planning and in earnings from forest uses. (page 147)

Party	Program descriptions
Netherlands	Netherlands fund community based forest management projects that emphasize sustainable supply of wood fuels, biodiversity conservation, general environmental protection, and economic benefits. (page 102)
US	Indonesia, capacity building for villagers to organize, create maps of, and impose rules on harvesting natural resources (page 130)
	Worked with communities in the Philippines to establish clear boundaries for community management, control agricultural clearing, and implement monitoring plans, transferring over 625,000 hectares to local management. (page 129)
Rural energy programs	
Australia	Karst Environmental Rehabilitation Project (page 92)
Austria	Solar thermal energy project in Zimbabwe to reduce dependence on firewood and reduce deforestation (page 120)
	Power plant project in Namche Bazar, Nepal. Specific purpose of avoiding deforestation by providing an alternative to fire wood for energy (tech transfer of power plant); similar project in Bhutan (page 124)
	Project to optimize oven technology in developing countries to reduce consumption of firewood (page 128)
Belgium	Technology transfer of small renewable energy systems to Cuba, Zimbabwe, and Congo (page150)
Canada	India-Canada Environment Facility (ICEF), which seeks to enhance Indian capacity to implement sustainable activities in energy and water sectors; several subprojects including projects dealing with forest conservation and afforestation, forest/land regeneration and conservation; and technologies leading to savings on fuelwood (page 114)
Denmark	Denmark provides support for sustainable energy supply, e.g., supporting poor women in planting trees for fuel, which provides income and protects the environment (page 217)
	Programme support to the energy sector in Mozambique, Burkina Faso, Egypt, Nepal and Malaysia includes promotion of sustainable use of biomass as a fuel. (page 229)
European Community	Assistance with enhanced energy efficiency (page 123)
Finland	Supports rural renewable energy programs to reduce emissions from energy-related sources; includes use of biomass via enhanced wood fuel production through sustainable forest management (page 185)
Germany	Incorporation of biogas systems for energy generation in rural households in Nepal. In cooperation with the Netherlands. (page 170).
	Priority area for future bilateral assistance (page 141)
Afforestation Programs	
Belgium	Special Programme for Africa under the International Fund for Agricultural Development (IFAD) (page 144)
European Community	CDM projects (page 137)
Japan	Grant Aid for Water Resources and the Environment (page 210)
	NGO cooperation through afforestation instruction in developing countries, dispatch of

Party	Program descriptions
Afforestation Programs	
	volunteer afforestation workers, and providing environmental education. (page 218)
	CDM projects (page 214)
Prevention of Illegal logging	
European Community	Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT) 123 aimed at the reduction and eventual elimination of the imports into the EU of illegally harvested timber (page 82)
Japan	"Asia Forest Partnership (AFP): promoting actions towards sustainable forest management in Asia through cooperation among Asian countries (primarily ASEAN countries), developed countries, inter-governmental organizations and civil society organizations in such activities as combat against illegal logging and its associated trade, management of forest fire, and rehabilitation and reforestation of degraded forests and lands. (page 205)
Fire Prevention	
Japan	Forest Fire Prevention Management Project in Indonesia, and the Science and Technology Center for Forest Tree Improvement Project in China (page 209)
US	Working with Mexico, and local NGO's, developed a wildfire prevention program to promote fire policies, improve collaboration, and provide training on wildfire management. (page 129)
Research capacity and Data resources	
Australia	Australia Centre for International Agricultural Research (ACIAR) supports collaborative research and development projects with developing countries. Projects in Papua New Guinea, India, Indonesia, and Zimbabwe. (page 96)
	Participates in international terrestrial observing programmes, i.e., the Global Terrestrial Observing System (GTOS). (page 8)
Austria	Promote international research networks thorough the Federal Ministry of Education, Science, and Culture; includes a tropical forest research node (page 132)
Belgium	Terrestrial observation via satellite imagery to monitor deforestation, partner with France, Sweden, Italy, and the EC (page 163) (not clear if monitoring tropical deforestation)
Canada	GlobeSAR-2 (RADARSAT) is a Canadian initiative to transfer remote sensing technology to South America, providing tools to distinguish between different types of surface textures (ground cover, crop type and maturity, forest type and clearance, and level of moisture) (page 113)
	International Development Research Centre (IDRC), Canadian government entity that provides development assistance, supports research in developing world with emphasis on scientific research, contributing to research on improved agriculture and forestry practices, watershed management, land and water conservation, measures to combat desertification, and protection of biodiversity. (page 109)
	Member of the scientific steering committee for the Inter-America Institute fro Global Change Research (IAI) (page 127)
Denmark	Riso National Laboratory has subprojects on the effects of climate change in developing countries for many sectors, including forestry (page 239)
European Community	" Joint Research Centre action on Terrestrial Ecosystem Monitoring, includes monitoring of land management issues in Africa, forest resources assessment and sustainable forest

Party	Program descriptions
	development in Russia (page 154)
France	Priority area of international research collaboration is "the fight against deforestation", as well as efficient land use, carbon storage in biomass, biomass energy; France has several agencies/institutions involved in such research collaborations (page 144)
Japan	Observation of Forestry Statuses Using Satellite Data, in order to resolve the worsening degradation that has been observed in forests in the eastern part of Asia (page 216)
Sweden	Financial support to several international research institutions: Consultative Group for International Agricultural Research (CGIAR), International Council for Research in Agroforestry (ICRAF) and the Center for International Forestry Research (CIFOR); climate related research programs include biodiversity, forest ecosystems and food crops, among others. (page 94)
US	Provides technical information, satellite imaging and other surveillance, analysis and research related to climate change, predictions, and weather trends: as well as analysis of shifts in the conditions of forests, natural areas, and agricultural zones (page 115)
	Addressed "rapid deforestation in the Amazon tropical rain forest by funding scientific studies that use satellite imagery to analyze deforestation trends to better understand specific risks from drought, Illegal logging, accidental fires, and agricultural practices. (page 129)
Training programs	
Japan	Japan International Cooperation Agency (JICA) Training Courses JICA provides a variety of training courses relevant to climate change adaptation such as disaster prevention, water resources management, forest resources management, river management, and national land development. JICA will continue providing these courses in the future as well. (page 206)
	International Expert Meetings on Forests for promoting IPF/IFF Proposals for Action in Asian (page 215)
Sweden	Sweden funds international training programmes for developing countries for several sectors, including agriculture and forestry, environmental administration, and land use planning
Other related programs	
France	France describes a FFEM project (French Fund for the GEF) on "ecological farming" citing one benefit of limiting deforestation by improving agricultural practices. Project proposed at time of NC) (page 142)
Japan	"Prevention of Desertification The loss of forests and other green land through desertification leads to the loss of important carbon dioxide sinks. In this sense, the prevention of desertification is important as a means of preventing global warming. Japan has been promoting a variety of desertification prevention-related projects through conservation of water resources, forest conservation and afforestation, agricultural development, and Official Development Assistance (ODA) including capacity building." (page 218)
Australia	The Sri Lanka-Australia Natural Resource Management Project: alleviates poverty through improved resource management, develops models for improved and equitable resource management (page 92)

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