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Reducing emissions from deforestation in developing countries: approaches to stimulate action

**Report on the workshop on methodological issues relating to reducing
emissions from deforestation and forest degradation
in developing countries**

Note by the secretariat

Summary

The secretariat organized a workshop on methodological issues relating to reducing emissions from deforestation and forest degradation in developing countries, as requested by the Subsidiary Body for Scientific and Technological Advice (SBSTA) in accordance with decision 2/CP.13. The workshop took place in Tokyo, Japan, from 25 to 27 June 2008. The discussions focused on how to address outstanding methodological issues relating to a range of policy approaches and positive incentives for reducing such emissions. Participants reached agreement on several areas, such as the need for robust and cost-effective methodologies, and for increasing technical capacities and strengthening capacities in policy and institutional frameworks. There was general agreement that discussions on policy approaches and positive incentives could already be initiated with the current knowledge on methodological issues and approaches. Participants also identified several topics requiring further consideration, such as addressing emissions from forest degradation and implications of different approaches. Next steps were proposed to advance the work of the SBSTA on this issue.

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I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by its decision 2/CP.13, paragraph 7, requested the Subsidiary Body for Scientific and Technological Advice (SBSTA) to undertake a programme of work on methodological issues related to a range of policy approaches and positive incentives that aim to reduce emissions from deforestation and forest degradation in developing countries.
2. The work by the SBSTA should include:
 - (a) Inviting Parties to submit their views on how to address outstanding methodological issues including, inter alia, assessments of changes in forest cover and associated carbon stocks and greenhouse gas (GHG) emissions, incremental changes due to sustainable management of the forest, demonstration of reductions in emissions from deforestation, including reference emissions levels, estimation and demonstration of reduction in emissions from forest degradation, implications of national and subnational approaches including displacement of emissions, options for assessing the effectiveness of actions in relation to paragraphs 1, 2, 3 and 5 of decision 2/CP.13, and criteria for evaluating actions. The SBSTA, at its twenty-eighth session, took note of the views of Parties;¹
 - (b) Requesting the secretariat, subject to availability of supplementary funding, to organize a workshop on methodological issues identified in paragraph 2 (a) above, before its twenty-ninth session, and to prepare a report on the workshop for consideration by the SBSTA at that session;
 - (c) Advancing the development of methodological approaches, taking into account the outcome of the workshop referred to in paragraph 2 (b) above, at its twenty-ninth session.
3. The COP also requested the SBSTA to report to it at its fourteenth session on the outcomes of the work referred to in paragraph 2 (a–c) above, including any recommendations on possible methodological approaches.²

B. Scope of the note

4. This document contains a description of the proceedings and a summary of the discussions, including main outcomes, on the outstanding methodological issues referred to in paragraph 2 (a) above during the workshop held in response to the above mandate. This document also covers issues relating to possible next steps that were raised during the discussions at the workshop.

C. Possible action by the Subsidiary Body for Scientific and Technological Advice

5. The SBSTA may wish to consider the information in this document and provide additional guidance on further actions to complete the work mandated by the COP at its thirteenth session.

D. Proceedings

6. The workshop took place on the premises of the United Nations University in Tokyo, Japan, from 25 to 27 June 2008, and was hosted by the Forestry Agency, Ministry of Agriculture, Forestry and Fisheries of Japan, with financial support provided by the Governments of Canada, France, Japan and Spain.

¹ FCCC/SBSTA/2008/MISC.4 and Add. 1–3.

² Decision 2/CP.13, paragraph 8.

7. In total 130 representatives from 16 Parties included in Annex I to the Convention, from 46 Parties not included in Annex I to the Convention (non-Annex I Parties) and from 18 organizations participated in the workshop.

8. Representatives of eight intergovernmental organizations (IGOs) and 10 non-governmental organizations were invited and attended the workshop as observers. The IGOs represented were the Center for International Forestry Research, the Food and Agriculture Organization of the United Nations, the Intergovernmental Panel on Climate Change (IPCC), the International Tropical Timber Organization, the Organisation for Economic Co-operation and Development, the United Nations Environment Programme, the United Nations Development Programme and the World Bank. In addition, five resource persons provided technical expertise.

9. At the opening of the workshop, the Honourable Masatoshi Wakabayashi, Minister of Agriculture, Forestry and Fisheries, Japan, and His Excellency Kyoji Komachi, Ambassador for Global Environmental Affairs, Ministry of Foreign Affairs, Japan, welcomed participants to Japan and to the city of Tokyo on behalf of the Government of Japan. Mr. Yoshitsugu Minagawa, Deputy Director-General of the Forestry Agency, welcomed participants on behalf of the Agency. The Chair of the SBSTA, Ms. Helen Plume, who chaired the workshop, addressed the participants, thanked the Government of Japan for hosting the workshop and expressed appreciation to all the governments that had provided financial support. She also introduced the mandate and goal of the workshop and briefed participants on the conclusions of this agenda item at the twenty-eighth session of the SBSTA. A representative of the secretariat delivered a statement on behalf of the UNFCCC secretariat.

10. During the first two days of the workshop, the discussions focused on the following main themes:

- (a) Session I: Methodologies and tools;
- (b) Session II: Development of methodologies specific for reducing emissions from deforestation and forest degradation in developing countries: reference emission levels, scale of implementation (national and/or subnational level), implications and guidance;
- (c) Session III: Estimating, monitoring and reporting GHG emissions from deforestation and forest degradation: methodological and monitoring issues, challenges and further areas of work;
- (d) Session IV: Options for assessing effectiveness of actions, and criteria for evaluating actions: lessons learned from ongoing work, capacity-building and technical assistance.

11. Each session comprised a series of presentations³ followed by general discussions. The second day of the workshop ended with a discussion on linking methodologies with policy approaches. During the third day of the workshop, several IGOs presented their ongoing efforts relating to reducing emissions from deforestation and forest degradation in developing countries. The workshop concluded with discussions on identification of needs, further technical work and actions to facilitate progress of work on methodological issues under the SBSTA. The Chair provided participants with a preliminary summary of all the discussions before closing the workshop. Summaries of the presentations and of the discussions are contained in chapters II and III, respectively, of this document.

³ All presentations are available at <http://unfccc.int/methods_and_science/lulucf/items/4289.php>.

II. Summary of presentations

A. Session I: Methodologies and tools

12. To introduce the session, a representative of the secretariat gave an overview of main elements of decision 2/CP.13 and provided a summary of the views on outstanding methodological issues submitted by Parties. The presentation included an update of the conclusions of SBSTA 28 and informed participants about the in-session workshop on “Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries” to be held during the Accra Climate Change Talks.⁴

13. Four technical experts presented technical overviews on existing methodologies, tools and techniques to estimate and monitor GHG emissions from deforestation and forest degradation in developing countries. The aim of this session was to address issues relating to the assessment of changes in forest cover and associated carbon stocks and GHG emissions.

14. A representative of the IPCC presented an overview of relevant methodologies in IPCC guidelines and good practice guidance. He underlined the basic methodological principles governing the land use, land-use change and forestry (LULUCF) sector in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the *IPCC Good Practice Guidance for Land Use, Land-use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF) and the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines) and noted that these had remained unchanged from 1996 to 2006. However, the IPCC good practice guidance for LULUCF and the 2006 IPCC Guidelines improved completeness by considering all carbon pools, providing improvements in guidance and default data to give more accurate and reliable results, and providing clarifications to ease inventory compilation.

15. A resource person presented the “Sourcebook” that is being drafted by the Global Observation for Forest and Land Cover Dynamics group. This Sourcebook contains methods which complement those of IPCC guidelines and good practice guidance. An overview of the basic elements needed for building a national carbon monitoring and accounting system was given. Although methodologies and guidance exist, many developing countries will probably encounter difficulties in meeting the requirements for completeness and accuracy of their estimates of GHG emissions and removals. The resource person recommended that developing countries start with conservative estimates and improve monitoring and estimation over time. Practical considerations that need to be taken into account when assessing forest area and forest carbon stock changes were also highlighted. For many developing countries, capacity-building is key for improving technical monitoring capabilities and employing IPCC methodologies and reporting guidance.

16. Another resource person made a presentation on the use of satellite remote-sensing in detecting and monitoring forest area changes. Examples were given of optical sensors (with coarse, medium and fine resolutions) for monitoring forest cover at different levels (from locating “hotspots” to validating results) and their technical features and costs. Several key methodological features for monitoring forest cover were highlighted. Deforested areas can be monitored with confidence, but the monitoring of degraded forest areas is more challenging. The resource person noted that the free data available from coarse-resolution satellite imagery are useful for global land-cover mapping, detection of hot spots where there are major land-cover changes, and determining land use following deforestation. The resource person also highlighted several current types of mid-resolution optical sensors and their technical features (e.g. resolution, coverage and costs). Indicative costs of operating monitoring systems using

⁴ Third session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, 21–27 August 2008, Accra, Ghana.

satellite data in a few developing countries were given. These range from USD 0.25–0.60 per km² for routine surveys to USD 15–25 per km² when the costs of developing the system are included.

17. A third resource person gave a presentation on assessment of the advantages and limitations of ground-based surveys and inventories of forest carbon stocks. Participants were informed that ground-based methods exist for measuring and estimating changes in forest carbon stocks. Ground-based measurements can be used to verify interpretation of land cover and area change data from remote sensing. Stratification by appropriate factors (e.g. by carbon stock or by area under most threat from deforestation) is a key step in reducing uncertainties in estimates and costs. A few general approaches to improving estimates of carbon stocks were given. When assessing the costs of ground-based measurements, it is necessary to consider the trade-off between uncertainty and resources available. It was noted that, in developing countries, the costs of ground-based measurements that achieve reasonable levels of certainty are modest.

B. Session II: Development of methodologies specific for estimating and monitoring emissions from deforestation and forest degradation

18. Several participants from non-Annex I Parties presented policy approaches, experiences and lessons learned from applying methodologies and tools to estimate and monitor emissions from deforestation in their countries or regions. They also presented their experiences on establishing reference emission levels and scale of implementation (national and/or subnational level).

19. The first presentation was by two representatives of Gabon. They provided an overview of the status of deforestation in Central Africa, which is low compared with that in other regions in the world. As part of their description of collecting the data needed for monitoring and deriving national estimates of deforestation, they highlighted ongoing studies on evaluation of carbon balance and production of a carbon map for Gabon. They noted that Central Africa has learned lessons from West Africa (where the only forests left are in protected areas). Central Africa is moving towards sustainable forest management, valuation of their forests and lengthening the rotation periods of timber concessions as steps to reduce deforestation.

20. A representative from Indonesia presented the steps taken by the Government to address methodological issues through a national study on reducing emissions from deforestation and the challenges being faced. Although many land-use mapping exercises are being undertaken, the data available are not yet sufficient or adequate for establishing reference emission levels and guiding future monitoring. Indonesia has started systematic mapping by satellite imagery to monitor and assess changes in vegetation and forest cover. Indonesia will still need assistance with capacity-building on data collection and assessment, and access to appropriate-resolution remotely-sensed data, and financial support for demonstration activities.

21. Two representatives presented the experiences of Papua New Guinea and the cross-sectoral approach being taken to prepare that country to take action on reducing emissions from deforestation and forest degradation. Papua New Guinea is testing different methodologies and assessing historical satellite datasets to track land uses and land-use changes and assess changes in forest carbon stocks. It was noted that basic data could be assembled for establishing a reference scenario and that this can be done cost-effectively using IPCC guidelines. However, establishing reference scenarios may need to be linked to policy discussions, taking into account national circumstances and ensuring consistent revenue streams.

22. A representative from Paraguay spoke on experiences with mechanisms to address deforestation in Paraguay. Large-scale conversion of forest to agriculture has been identified as the main driver of deforestation. The Government introduced a “non-deforestation” law in 2004 in the eastern part of the country and an environmental service law to promote conservation of remaining forests. A cost-effective monitoring strategy was implemented in the region. This monitoring system will be linked with GHG

inventories for the LULUCF sector in Paraguay's national communications and will provide estimates of forest cover changes and forest carbon stocks. The representative noted that Paraguay will require further technical capacity-building and financial assistance in order to undertake forest inventories and monitoring for the whole country and address land-tenure issues.

23. A representative from Mexico presented the policies and activities in that country in preparation for reducing emissions from deforestation and forest degradation at a national scale. The Government of Mexico is aiming for a zero-deforestation target. It has introduced several programmes to address deforestation, such as payment for environmental services, sustainable forest management, community forestry, soil conservation and restoration, strengthening environmental institutions and seeking new financing mechanisms. Various datasets are available for establishing a reference scenario and for analyses of historical trends of deforestation. A move to set up a nationwide land-use/land-cover change monitoring system is under way. Data on all carbon pools will be incorporated in the national forest inventory from 2009.

24. A representative from Costa Rica presented multiple policies to tackle deforestation under the national land planning strategy for conservation. These policy approaches include maintaining a system of protected areas, payment for environmental goods and services, recovery of forest areas and reforestation. For establishing reference emission levels, Costa Rica has experience with a national accounting system based on available and reliable historical data to measure changes in forest cover and carbon stocks. Monitoring is an important component of the programme. Risk of leakage is reduced by adopting a comprehensive approach. It was noted that the risks and pressures for maintaining carbon stocks should be taken into account when establishing a baseline. Some lessons learned are that there is a need for high-level political commitment, strong institutional and legal frameworks, and long-term financial sources, and that the overall values of forests shall be recognized.

25. Some views on international emissions displacement (IED) were presented by a representative from Tuvalu. It was noted that IED may undermine efforts on reducing emissions from deforestation and forest degradation in developing countries and can occur either with market-based or non-market-based funding. The representative proposed four approaches that could address IED. One is an "all in" approach in which all tropical forest countries develop capacities to undertake national forest inventories and the necessary policy and legal frameworks to manage their forests on a sustainable basis. The other approaches are tackling illegal logging and trade, tackling demand-side management by creating disincentives and carbon deficit levies, and discounting carbon credits based on IED. The representative concluded that more work is needed to address IED.

26. In addition to the presentations by representatives of non-Annex I Parties, a representative of Japan spoke on Japan's initiatives and challenges in applying sustainable forest management (SFM) to activities relating to reducing emissions from deforestation and forest degradation in developing countries. He noted ongoing SFM efforts such as research and conservation, prevention of further expansion of shifting cultivation, rehabilitation of degraded forest land, introducing farm forestry to local communities, a log-tracking system to prevent illegal logging, control of illegal logging by state-of-the-art satellite technology (JAXA), forest fire hotspot detection, and policy development and coordination. Three key problems faced by ongoing efforts are limited human, infrastructural and financial resources, the multiplicity of stakeholders and of causes of deforestation, and difficulty in institutionalizing programmes. The representative also highlighted the various criteria and indicator initiatives that are available for SFM.

C. Session III: Estimating, monitoring and reporting greenhouse gas emissions from deforestation and forest degradation: methodological and monitoring issues, challenges and further areas of work

27. In this session, three participants gave technical presentations on issues and challenges relating to estimating, monitoring and reporting GHG emissions from deforestation and forest degradation, and on the technologies available.

28. The first presentation, on detection of selective logging for estimating and monitoring forest degradation, was given by a representative of Brazil, who provided an overview of methodologies and experiences from Brazil. She noted that the choice of forest definition has implications on estimates of emissions and that there are challenges to using readily available data from remote sensing. Not all types of forest degradation can be identified using remotely sensed data; assessing degradation often requires observations on the ground. In Brazil studies have been carried out on forest degradation in selectively logged areas using optical and radar systems. The monitoring of forest cover with DETER (Detection of Deforestation in Near Real Time) and DETEX (Detection and Monitoring of Selective Logging Activities) – two early warning systems for deforestation and forest degradation in Brazil – was also described. The representative pointed out that the estimation and verification of reduced emissions from forest degradation will require further work.

29. A resource person gave a presentation on remote-sensing techniques for policy implementation that addresses reductions in emissions from deforestation and forest degradation in developing countries – the use of such techniques for forest monitoring and detection of forest degradation and the latest technologies available. The interpretation of satellite images of land cover requires an interpretation technique, and pixel-based and object-oriented classification. Monitoring degradation and incremental changes in carbon stocks is a more complex process than monitoring deforestation. Forest monitoring using remote sensing is useful for clarifying historical trends in forest change and for planning and implementing actions after assessing such change. Several new technologies highlighted include the use of high-resolution satellite data for estimating biomass and three-dimensional forest measurements with LIDAR (Light Detection and Ranging) systems, but these systems are not yet fully available to all developing countries. The resource person highlighted technical issues that need to be considered when using remote-sensing techniques (e.g. topographic effects, locality and seasonality of data acquisition).

30. A representative from India gave a presentation on the Indian approach to the assessment of forest carbon stocks. India is considered among the pioneers in forest-cover monitoring. National level monitoring is supported by assessments of forest carbon stocks at regular intervals. Forest-cover is assessed on a biennial cycle based on digital interpretation of satellite data, intensive ground-truthing, forest-cover maps and accuracy assessment. More accurate estimates of biomass carbon and soil organic carbon are obtained by assessing growing stock, and developing biomass expansion factors and root:shoot ratios. Model-based projections of carbon stocks in the country's forests and tree cover indicate that carbon stocks will increase between 2005 and 2030.

D. Session IV: Options for assessing effectiveness of actions, and criteria for evaluating actions: lessons learned from ongoing work, capacity-building and technical assistance

31. Three participants provided information and updates on some ongoing efforts to build capacity for reducing emissions from deforestation and forest degradation in developing countries, on tools and techniques for forest monitoring and GHG inventories, and on examples of projects in several developing countries.

32. A resource person gave a presentation on an approach for estimating reductions in emissions from deforestation and forest degradation using the Agricultural and Land Use (ALU) inventory programme. The ALU software was developed for estimating GHG emissions from LULUCF and agricultural sectors, based on IPCC methods and good practices. It accommodates IPCC Tier 1 and

Tier 2 methods. The resource person highlighted several key features and provided illustrations on the modules and data requirements of the programme. The programme provides an option to integrate assessment of activities on reducing emissions from deforestation and forest degradation into national/subnational GHG inventories. ALU is able to assess changes in biomass carbon stocks resulting from deforestation and forest degradation in target areas, and potential leakage across a broader region. Data from remote sensing can be directly imported into ALU for emission calculations. The resource person concluded that regional capacity-building could be used to facilitate technology transfer and provide training for developing countries to take action on reducing emissions from deforestation and forest degradation.

33. A representative of Australia provided an overview of that country's International Forest Carbon Initiative (IFCI). The IFCI responds to decision 2/CP.13 and demonstrates that reducing emissions from deforestation and forest degradation in developing countries can be part of an equitable and effective international agreement on climate change and that market mechanisms can be used to address the issue. Capacity-building under the IFCI focuses on development of national carbon monitoring and accounting systems. The representative described some lessons learned from demonstration activities – that their design must be flexible, that robust criteria are required to guide how the activities are carried out, that the activities should inform development of national carbon accounting systems, and that methodologies for establishing baselines are necessary. Successful implementation of activities relating to reducing emissions from deforestation and forest degradation also require high-level political support, better understanding of the issues, implementation of the institutional requirements and robust estimations of opportunity costs.

34. The third presentation was by a representative of the European Community who spoke on experiences and challenges from four demonstration activities on reducing emissions from deforestation and forest degradation supported by the European Union. The first is on community-based inventories of forests and carbon stocks in 25 locations in Africa and Asia. Local communities are trained to map the boundaries and stratify their forests and to carry out local carbon assessment. Local understanding of forest cover acts as an incentive to reduce degradation and deforestation. The second example came from the French Overseas Department of French Guiana and concerned undertaking Kyoto-compliant inventories using stratified sampling and satellite imagery. The third example highlighted the development of sustainable management plans of logging concessions in the Congo basin; this is a regional approach for forest assessment based on robust ground-based and remote-sensing methodologies. The final example was a project in Madagascar with the aim of reducing carbon emissions, conserving native biodiversity, enhancing human welfare and restoring degraded land. Lessons learned from these projects were highlighted.

III. Main outcomes of the discussions

35. This chapter elaborates the main points from the discussions in each of the four sessions. It elaborates further, and is consistent with, the preliminary summary of the Chair mentioned in paragraph 11 above. The sections of this chapter cover the main methodological issues identified in the conclusions of the SBSTA⁵ at its twenty-eighth session, that require further consideration. This is to facilitate easy reference to the outcomes of the workshop when the SBSTA further considers the outstanding methodological issues at its twenty-ninth session.

36. This chapter also contains a section on issues relating to links between methodologies and policy approaches and positive incentives.

⁵ FCCC/SBSTA/2008/6, annex III.

A. Estimating and monitoring

37. Several issues relating to estimating and monitoring changes in forest cover and associated carbon stocks and GHG emissions, incremental changes due to sustainable management of the forest, and reductions of emissions from deforestation and forest degradation were identified by the SBSTA. These issues concerned national monitoring systems, options for robust, consistent methodologies, and applicability of the considered methodologies, including those in existing good practice guidance of the IPCC. Discussions at the workshop also touched on issues relating to estimation and monitoring, particularly in sessions I and III. The views expressed are summarized below.

1. Methodologies and tools

38. There was general agreement on the need for robust and cost-effective methodologies. It was mentioned many times that in order to implement such methodologies in monitoring systems and to adapt them to national circumstances, countries would need access to the necessary data, know-how and capacity-building.

39. Participants agreed that IPCC guidelines and good practice guidance provide methodologies that can be the basis for developing countries to estimate and monitor emission reductions from deforestation and forest degradation, and to monitor carbon-stock changes in their forests. However, it was pointed out that there is an urgent need to increase understanding of these methods and to assess their applicability under different national circumstances.

40. Under IPCC methodologies, estimating changes in carbon stocks due to deforestation is considered under the land-use change category “forest land converted to other land uses”. The methodology provides for estimating net changes in carbon stocks (gains and losses). A participant noted that any methodological approach selected should ensure that only the carbon losses from deforestation are taken into account.

41. It was noted that lessons can be learned from implementation of afforestation/reforestation project activities under the clean development mechanism. Participants noted that it may be better to have simpler, practicable but reliable methodologies for estimating emission reductions from deforestation and forest degradation. Although complex methodologies may be useful, there is still a need to know how much more time, costs and human resources will be needed to undertake these complex methodologies.

42. Cost-effective systems for estimating and monitoring emissions from deforestation and changes in carbon stocks can be designed and implemented at the national level. The view was expressed that a combination of remote-sensing assessments and ground-based measurements for a selected but representative series of plots that stratify the forestry types/classes in the country could be one suitable approach for many cases. Some countries have already initiated the implementation of such national monitoring systems and they shared their experiences with workshop participants; refer to paragraphs 19–24.

43. It was noted that radar and remote-sensing technologies could complement each other. However, radar can also be sensitive to weather conditions in acquiring accurate data and images.

44. It was noted that new remote-sensing and radar technologies, which may allow estimation of changes in biomass, are emerging and could become available in the future for routine measurements in developing countries. Nevertheless, there is a need for guidance to ensure comparability of estimates when remote sensing is used. One participant highlighted the need to encourage Parties and organizations to ensure open and sustainable access to satellite data (historical and current sources).

45. It was noted that guidance is needed to ensure comparability of estimates between approaches. Different methodological approaches, whether by ground-based surveys and sampling plots, or

monitoring coupled with modelled approaches or remote-sensing techniques, often produce different results. It may be necessary to consider the implications of the different approaches and how they can capture inter-annual variability.

2. Forest degradation

46. Participants agreed that addressing emissions resulting from forest degradation is more difficult than addressing emissions from deforestation. However, it was recognized there are different types of degradation, and some types may be easier to measure than others. Nevertheless, it is important to ensure the consistency of the methodologies used across countries and regions.

47. One participant pointed out that forest degradation is more than changes in carbon stocks – it is a process which brings about persistent changes. Another participant noted that not all selective logging activities automatically lead to degradation, followed later by deforestation. Areas under sustained yield management should not be considered as degraded. Hence, there may be a need to define forest degradation as a process. Knowing the specific causes of degradation in the country and understanding the processes that trigger degradation would seem to be a promising starting point for estimating the associated emissions and losses of carbon.

48. High-resolution aerial photography could also be used to detect forest degradation but this could be an extremely costly exercise, particularly for big countries. It was pointed out that the costs of measuring emissions from forest degradation should be carefully weighed against the requirement to achieve accuracy of measurements.

49. Caution was advised over remote-sensing detection of “anomalies” in the forest cover and it was pointed out that this provides only ‘snapshots’ at specific instants in time. “Anomalies” do not necessarily indicate degradation that persists over time, or deforestation. Hence, ground-truthing may be required in combination with remote sensing.

50. There was general agreement on the need for further consideration of methodologies to address forest degradation and estimate associated emissions.

B. Reference emission levels

51. Participants discussed means to establish reference emission levels. It was noted that reference emission levels should be flexible and adaptable to accommodate different national circumstances, and be based on reliable historical data. It was pointed out that projected reference emission levels are difficult to establish as it is difficult to predict future trends. The need to periodically review reference emission levels was also noted.

52. Consideration of reference emission levels also needs to address the concerns of those countries that have stabilized their forest stocks, and whether an adjustment factor is needed to maintain stabilization.

53. It was also recognized that the implications of different approaches for establishing reference emission levels need to be considered further.

C. Displacement of emissions

54. The SBSTA has also identified the need for further consideration of means to identify and address displacement of emissions. It was generally agreed that actions on reducing emissions from deforestation and forest degradation in developing countries should result in real global emissions reductions.

55. The issue of international displacement of emissions was raised by some participants. There was a view that if provisions to avoid international displacement of emissions are put in place, they should not lead to unrealistic requirements.

56. Several participants felt that implementation of activities relating to reducing emissions from deforestation and forest degradation at the national level will also address displacement of emissions at the national level. Another view expressed was that the risk of leakage is reduced if a comprehensive approach is taken, which includes forest conservation and sustainable forest management. While broad participation is one way to address the international displacement of emissions, it was agreed that further work is needed on how to address this issue.

D. National and subnational approaches

57. Several Parties presented examples of national and subnational approaches for estimating and monitoring; see paragraphs 19–24. Broad support was expressed for the use of national approaches.

58. Views were expressed that subnational approaches for estimating and monitoring emissions can often constitute an initial step towards national approaches, and could be scaled up progressively in accordance with national circumstances, national capacities and the availability of resources.

59. There were several calls for further analysis and assessment of the implications of both national and subnational approaches. However, it was noted that this would be more of a policy-related discussion than a methodological one.

E. Capacity-building

60. Some experiences with capacity-building efforts were presented by Parties. In their discussions on methodologies and tools and on implementation of actions, participants also brought up issues relating to capacity-building and elaborated on capacity needs of developing countries, and these issues are also covered here.

61. Most of the participants emphasized the importance of timely and effective capacity-building to ensure successful implementation of robust monitoring systems. It was noted that national coordination and working together with all relevant stakeholders, including relevant national sectors, international and regional organizations and local communities, could provide a better enabling environment to ensure the effectiveness of capacity-building efforts. Regional cooperation and partnerships in capacity-building are equally important to ensure the effectiveness of efforts.

62. One participant gave an example of successful ongoing South–South cooperation involving the sharing of technology and data, at no cost to developing countries. In many cases capacity-building exercises were limited to specific areas. To ensure success in a future system for reducing emissions from deforestation and forest degradation in developing countries, these exercises need to be scaled up and focused on the needs identified by the country.

63. It was generally agreed that capacity-building is still needed in many areas, including data collection and archiving, use of remote-sensing technology (including interpretation and adequate application to specific national circumstances, such as complex topography and persistent cloud cover), developing and implementing national monitoring systems, and forest carbon inventories. Capacity-building will also need to involve national higher education systems to ensure long-term development of skills. It was estimated that there is likely to be a large need for capacity-building in these areas over several years and this would involve high start-up costs.

64. Some participants pointed out that it is essential to assess capacity-building needs. There is no “one size fits all” and a country needs to have flexibility, based on national circumstances, in deciding its capacity-building gaps and needs. An example highlighted was the project idea notes submitted by

developing countries to the World Bank Forest Carbon Partnership Facility; these provide useful information on capacity needs of these applicant developing countries.

F. Effectiveness of actions

65. Several Parties and international organizations presented information on activities on reducing emissions from deforestation and forest degradation in developing countries that have already been, or are being, implemented, in accordance with the provisions of decision 2/CP.13 (e.g. demonstration activities or pilot projects, capacity-building activities). Some participants expressed the view that as more resources become available to support developing countries there will be a need to ensure the effectiveness of all activities through, inter alia, focusing on specific needs of developing countries, avoiding duplication of efforts, taking into consideration potential co-benefits and synergy, and ensuring that experiences gained lead to enhanced implementation of future activities.

66. A few presentations and the discussions also touched on the lessons learned from demonstration activities, including the following:

- (a) The purpose of demonstration activities is not to create carbon credits for the market but to test methodologies and work out the necessary conditions for market approaches;
- (b) These activities also provide information about the development of monitoring systems and the identification of institutional requirements, and help to build understanding. It is important that there is sustainable access to satellite data;
- (c) Various activities are testing the establishment of reference emission levels based on historical rates or future levels of emissions, depending on national circumstances;
- (d) These activities have shown that forest policies need to address all drivers of deforestation. It was emphasized in one of the presentations that experiences and lessons learned from SFM should be incorporated into strategies for reducing emissions from deforestation and forest degradation in developing countries;
- (e) Demonstration activities still need to address the issue of leakage, and robust criteria are needed to guide their implementation.

G. Cross-cutting issues

67. Several cross-cutting issues were raised during the discussions. The varying views expressed are summarized below.

1. Financial implications for implementing methodological approaches

68. Cost implications of requiring more accurate methodologies and data should be carefully considered.

2. Institutional requirements for implementing methodological approaches

69. Several participants noted the need to address institutional requirements and arrangements to build confidence in efforts to reduce emissions from deforestation and forest degradation in developing countries. The effectiveness of institutions for undertaking actions remains a concern. Participants noted that strengthening institutions should be country-driven and provide means to encourage and facilitate exchange of information.

70. There was general consensus that many developing countries will need to build their capacities on developing appropriate policy and institutional frameworks.

3. Implications of methodological approaches for indigenous people and local communities

71. Some participants stressed the importance of involving local communities in the sustainable management of forests. It has been shown that training these communities enables them to manage their forest resources on a more sustainable basis.

72. It was noted that social implications, particularly for indigenous people and local communities, associated with any system for reducing emissions from deforestation and forest degradation in developing countries should be taken into consideration.

4. Means to address non-permanence

73. Views were expressed that diebacks, including those associated with climate change, may affect the non-permanence of carbon stocks in the future.

74. There was still concern over non-permanence and whether financing via market options would address this issue at all. On the other hand, there was the view that permanence will be less relevant if a country continues to engage over the long term in any mechanism/process to reduce emissions from deforestation and forest degradation in developing countries. However, sustained positive incentives will be required to ensure long-term engagement.

5. Implications for the promotion of co-benefits

75. Parties discussed the importance of promoting co-benefits, for example protecting biodiversity and water resources. It was noted that good policy design ensures the promotion of co-benefits. In turn, co-benefits are often the main drivers of positive changes in forest policies.

6. Implications of different definitions of forest and relevant forest-related activities

76. Some views were expressed that discussions on definitions may be difficult. It was noted that it may be better to consider the minimum requirements needed to use the methodologies proposed by the IPCC, rather than to define thresholds that are part of definitions.

7. Means to deal with uncertainties in estimates

77. It was pointed out that many developing countries would encounter difficulties in meeting the requirements for completeness and accuracy in their estimates of GHG emissions and removals in forest carbon inventories.

78. It was noted that uncertainties in estimates could be dealt with through the use of conservative estimates which ensure no over-estimation of reduction in emissions and increase the credibility of estimates with uncertainties. Conservative estimates could also stimulate broad participation as countries without complete and accurate estimates could also participate. Such estimates also could facilitate the comparability of estimates across countries.

8. Others

79. Views were expressed that there is need to understand the contribution of natural effects versus anthropogenic changes in carbon stocks and GHG emissions by sources and removals by sinks when addressing emissions from deforestation and forest degradation and changes in carbon stocks.

80. When considering incentives, it was suggested that these should address changes to management practices to avoid degradation and promote sustainable management. However, a question was raised on how it could be shown that it was the improved practices that brought about the reduced emissions.

81. It was recognized that support from international organizations, in particular from the United Nations system, will be important to advance the implementation of decision 2/CP.13, the

conclusions from SBSTA 28 and any future activities relating to reducing emissions from deforestation and forest degradation in developing countries. One participant proposed that United Nations organizations should work closely with developing countries to assess capacity and institutional needs. Such practical information could facilitate implementation of efforts relating to reducing emissions from deforestation and forest degradation in these countries.

H. Issues relating to links between methodologies and policy approaches and positive incentives

82. Some methodologies will be common for all policy approaches or positive incentives, but some would be linked to specific choices of policy approaches and/or positive incentives. However, there was broad consensus that methodologies for any policy approach and/or positive incentive selected will need to be robust.

83. Participants noted that the choice of methodologies for establishing reference emission levels may have implications for policy approaches. Some participants also noted that implications of both national approaches and subnational approaches should be further analysed and assessed when considering policy approaches.

84. Some participants expressed the view that the use of robust methodologies in national systems for estimating and monitoring emissions, and the establishment of necessary institutional arrangements in developing countries, will be important for ensuring the delivery of transparent and verifiable information on estimates and the effectiveness of activities relating to reducing emissions from deforestation and forest degradation. In addition, this will create an enabling environment for ensuring the provision of the necessary level of resources by stakeholders, including governments and organizations.

85. Several participants expressed the view that sufficient resources need to be made available as soon as possible to enable developing countries to start implementing actions at the national level.

IV. Relevant remarks

86. From the discussions during the sessions of the workshop, there was general agreement among participants on the following:

- (a) There is a need for robust and cost-effective methodologies, designed and implemented at the national level, to estimate and monitor changes in forest cover and associated carbon stocks and GHG emissions, incremental changes due to sustainable management of forest, and reduction of emissions from deforestation and forest degradation. A combination of remote-sensing and ground-based assessments could be one suitable approach for estimating and monitoring reductions in emissions from deforestation and forest degradation;
- (b) IPCC guidelines and good practice guidance provide methodologies that can form the basis for how developing countries estimate and monitor emission reductions from deforestation and forest degradation and changes in forest carbon stocks;
- (c) There is a need to increase technical capacities in developing countries to undertake forest carbon inventories, and to estimate and monitor emissions and changes in forest areas and carbon stocks. There is also a need to build and strengthen capacities in policy and institutional frameworks. It is essential to assess capacity-building needs;
- (d) Addressing emissions from forest degradation is more difficult than addressing emissions from deforestation, and there is a need for further consideration of methodologies to estimate and monitor emissions and changes in carbon stocks from forest degradation;

- (e) Discussions on policy approaches and positive incentives could already be initiated with the current knowledge on methodological issues and approaches. However, the needs and implications of the methodologies chosen for different policy approaches will need to be further explored.

V. Next steps

87. In the light of the still outstanding methodological issues relating to estimating and monitoring emissions and changes in carbon stocks from forest degradation, the Chair of the SBSTA has proposed that an informal meeting of technical experts be convened to address and discuss the relevant technical and methodological issues and to define what further work is needed. The outcomes of this meeting will be shared with the SBSTA at its twenty-ninth session.

88. At its twenty-ninth session the SBSTA will continue to consider the main methodological issues on the basis of the annex to the conclusions of its twenty-eighth session,⁶ and report its progress and its work plan on this matter for 2009 to the COP at its fourteenth session.

89. The close link between the work of the SBSTA on the main methodological issues and general methodological approaches, and the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention on “policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries”, makes it necessary to continue and enhance the sharing of outcomes from these subsidiary bodies. Ensuring the complementarity of the work of these bodies is important for arriving at a meaningful conclusion of this matter in a future agreement.

⁶ FCCC/SBSTA/2008/6, paragraph 94 and annex III.