X/5. Indicators for assessing progress towards, and communicating, the 2010 target at the global level

The Subsidiary Body on Scientific, Technical and Technological Advice,

Recalling the guidance provided in decision VII/30 on the identification, development and use of indicators and ways of communicating progress towards the 2010 biodiversity target,

Emphasizing the value of indicators to evaluate achievements and progress in the implementation of the three objectives of the Convention and the achievement by 2010 of a significant reduction in the current rate of loss of biological diversity,

Aware of the need for strengthening national capacities, especially in developing countries, in particular the least developed and small island developing States among them, and countries with economies in transition, to enable them to contribute to the indicators used for assessing progress towards the 2010 target and, where so desired by Parties, to use the same indicators at the regional, subregional, national and local levels as tools for the implementation of the Convention and of national biodiversity strategies and action plans,

1. *Welcomes* the report of the Ad Hoc Technical Expert Group on Indicators for Assessing Progress Towards the 2010 Biodiversity Target (UNEP/CBD/SBSTTA/10/INF/7);

2. *Expresses its appreciation* to*:*

(a) The Governments of the Netherlands, the United Kingdom of Great Britain and Northern Ireland, and the United States of America for their financial support of the meeting;

(b) Other Governments and organizations for the participation of their representatives;

(c) The Co-Chairs and all the members of the Group for their contributions;

3. *Confirms* the suitability of those indicators considered by the Conference of the Parties as ready for immediate testing and use;

4. *Considers* the following indicators ready for immediate testing, while recognizing that data availability and/or indicator methodology may require improvement prior to 2010:

(a) Change in status of threatened species;

(b) Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance;

(c) Area of forest, agricultural and aquaculture ecosystems under sustainable management;

(d) Trends in invasive alien species; 1/

(e) Connectivity/fragmentation of ecosystems;

5. In respect to the indicators mentioned in paragraph 4 above, given the broad nature of these indicators, *recommends* that various sources of data could be used, including, but not limited to, the following:

(a) The application of the Red List Index approach, developed by the Red List Consortium (IUCN, BirdLife International, Conservation International and NatureServe), to selected taxonomic and ecological/functional groups for which data exist, as an indicator of *Change in status of threatened species*;

1/ SBSTTA recommends a rewording of the title of this indicator from that contained in decision VII/30 (Numbers and cost of alien invasions).

(b) The use of suitable data on both *in situ* and *ex situ* conservation, including genetic diversity of tree species of socio-economic importance, as an indicator of *Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance*;

(c) The use of a range of parameters, including, where appropriate, but not limited to, the area under certified production systems, biological corridors, and areas under community management, as an indicator of *Area of forest, agricultural and aquaculture ecosystems under sustainable management*;

(d) Recognizing the limited global data on invasive alien species and the lack of a consistent approach towards calculating cost of alien invasions, to draw on the information available at the national level and data available through the Global Invasive Species Information Network (GISIN);

(e) The initial application of the indicator on *Connectivity/fragmentation of ecosystems* to forest and inland water ecosystems;

6. *Further recommends* the urgent development of the indicators identified by the Conference of the Parties and the Subsidiary Body on Scientific, Technical and Technological Advice at its tenth meeting as requiring further work;

7. *Reaffirms* the importance for the relevant open-ended working groups to develop global headline indicators on the *Status of traditional knowledge, innovations and practices* and on the *Status of access and benefit-sharing*;

8. *Invites* the organizations listed in annex I to this recommendation to contribute the data and analysis required for the delivery of the indicators, and the Parties and other Governments to facilitate this task, including by collecting and sharing information relevant to each indicator, *inter alia* by contributing such information to relevant databases;

9. *Invites* Parties, other Governments, and national, regional and international organizations that have data sets relevant to assessing progress towards the 2010 target to contribute pro-actively through the provision of relevant information to the realization of the second edition of the Global Biodiversity Outlook;

10. *Notes* that the indicators can be used to assess progress towards the goals and sub-targets adopted in decision VII/30 as set out in annex II to this recommendation;

11. *Calls for* urgent increased capacity-building efforts and financial support to developing countries, in particular the least developed and small island developing States among them, and countries with economies in transition, to the organizations listed in annex I to the present recommendation to facilitate their contributions to the use, testing and further development of the indicators relevant to the 2010 target.

12. *Requests* the Executive Secretary to:

(a) Develop an overall delivery plan for the indicators, data and analyses, taking into account the timetable for developing the Global Biodiversity Outlook, clarifying the arrangements and responsibilities for development and delivery of the indicators, setting out the roles of the Secretariat, the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC), and other relevant international organizations, taking into account information provided through national reports, voluntary reports, indicators in use by Parties, other Governments and relevant organizations;

(b) Prepare a full characterization of the methods, technical limitations and the availability of data sources for the calculation of the indicators, and the validity of making global estimates;

(c) Report on progress made in the development of the indicators listed in annex I to this recommendation at the eleventh meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, and, if necessary, and subject to the availability of resources, convene another

meeting of an ad hoc technical expert group to facilitate this task and provide additional scientific advice to the Subsidiary Body;

(d) Develop and submit, for consideration by the Conference of the Parties at its eighth meeting, an information strategy to ensure that the indicators, data and analyses are periodically available over the coming years to support policy intervention and communication with respect to the 2010 target;

(e) Explore options for reporting on the impact of climate change on biological diversity, using the framework of indicators relevant to the 2010 target and report thereon to the Subsidiary Body on Scientific, Technical and Technological Advice at its eleventh meeting;

(f) Explore options for the identification of process indicators for the four global goals for the Strategic Plan of the Convention, and report thereon to the Open-ended Working Group on the Review of Implementation of the Convention on Biological Diversity and to the Subsidiary Body on Scientific, Technical and Technological Advice at its eleventh meeting.

13. *Invites* the Open-ended Working Group on the Review of Implementation of the Convention on Biological Diversity to consider the linkages between the process for assessing progress towards the 2010 target, including the use of indicators, and national reporting, with a view to streamlining future national reporting.

Annex I

SUMMARY OF INDICATOR STATUS AND WORK THAT NEEDS TO BE CARRIED OUT

Headline Indicator 2/	**Status** 3/	**Potential Measures**	**Data availabl e now?**	**Method-ology availabl e now?**	**Possible sources of data**	**Organizations to coordinate delivery of indicator**
Trends in extent of selected biomes, ecosystems, and habitats 4/	B	Forests, and forest types (e.g. mangroves)	Yes	Yes	FRA (FAO); EU-JRC, NASA Modland; Corine land cover (see appendix 2 to the AHTEG report)	UNEP-WCMC (with FAO, NASA-NGO Conservation Working Group and other relevant partners)
		Peatlands	Yes	Yes	Various national datasets and remote-sensing (see appendix 2 to the AHTEG report)	
		Coral reefs	Yes	Yes	GCRMN/Reefcheck	
		Croplands	Yes	Yes	National regional datasets and remote-sensing (see appendix 2 to the AHTEG report), MA	
		(Natural) grasslands	Yes	Yes	Remote-sensing (see appendix 2 to the AHTEG report), MA	
		Polar/ice	Yes	Yes	Remote-sensing(see appendix 2 to the AHTEG report), MA	
		Inland wetlands	No	No	Remote-sensing (see appendix 2 to the AHTEG report), MA	
		Tidal flats/estuaries	No	No	Remote-sensing (see appendix 2 to the AHTEG report), MA	
		Seagrasses	No	No	Seagrass Atlas, MA	

2/ **Bold = Indicator considered ready for immediate testing and use (column B in decision VII/30)**; ***Bold italic = Indicator considered ready for immediate testing and use and therefore recommended for upgrading from column C to column B;*** Regular = Indicator confirmed as requiring more work (to remain in column C)

3/ B = Indicator is considered ready for immediate testing and use; C = Indicator requires further work

4/ Based on current and short-term future availability of trend information, the following major ecosystem types are recommended for immediate indicator implementation: (i) forests (including different forest types, notably mangroves), (ii) peatlands (probably for certain geographic areas only by 2010), (iii) coral reefs, (iv) croplands, (v) grasslands/savannahs, (vi) polar/ice. Efforts should also be made to apply the indicator to the following ecosystem types, for which suitable global datasets need to be gathered, to ensure coverage of all thematic areas recognized by the Convention: (i) inland wetlands, (ii) tidal flats/estuaries, (iii) seagrass beds, (iv) dry and sub-humid lands, and (v) urban.

Headline Indicator 2/	Status 3/	Potential Measures	Data available now?	Method-ology available now?	Possible sources of data	Organizations to coordinate delivery of indicator
		Dry and sub-humid lands	No	No	LADA, Remote-sensing (see appendix 2), MA	
		Urban	No	No	Remote-sensing (see appendix 2), MA	
Trends in abundance and distribution of selected species	B	Living Planet Index	Yes	Yes	WWF	UNEP-WCMC (WWF, Birdlife International and others, encouraged to review and refine methodology for calculation of index; These groups and IUCN encouraged to compare and share data with that used for the Red List Index.) Indices could be developed from data disaggregated (e.g.: migratory species, wetland species))
		Various species assemblage-trends indices	Yes	Yes	Birdlife International and partners, others	
Coverage of protected areas	B	Coverage according to World List of Protected areas.	Yes	Yes	WCMC/WCPA	UNEP-WCMC/IUCN-WCPA
		Ecological networks and corridors	Yes	Could be developed	MBC, PEEN etc.	
		Overlays with areas of key importance to biodiversity	Yes	Yes	WCMC, WCPA, BirdLife International	

Headline Indicator 2/	**Status 3/**	**Potential Measures**	**Data available now?**	**Method-ology available now?**	**Possible sources of data**	**Organizations to coordinate delivery of indicator**
		Inclusion on community and private protected areas	No	No		
		Management effectiveness	No	No		
Change in status of threatened species	B	Red List Index (IUCN-SSC)	Yes	Yes	Red List Consortium	Red List Consortium (Methodological refinements requested)

Headline Indicator 2/	**Status 3/**	**Potential Measures**	**Data available now?**	**Method-ology available now?**	**Possible sources of data**	**Organizations to coordinate delivery of indicator**
Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance	B	*Ex situ* crop collections	Yes	Could be developed	FAO (SOW, WIEWS); IPGRI (CGIAR-SINGER); Fishbase	FAO with IPGRI on behalf of CGIAR
		Livestock genetic resources	Yes	Could be developed	FAO (DADIS)	
		Fish genetic resources	Yes	Could be developed	FAO; Fishbase	
		Tree genetic resources	Some	Could be developed	REFORGEN database of FAO; OECD	
		Varieties on-farm	Some	Could be developed	FAO, IPGRI, OECD	

Headline Indicator 2/	**Status 3/**	**Potential Measures**	**Data available now?**	**Method-ology available now?**	**Possible sources of data**	**Organizations to coordinate delivery of indicator**
Area of forest, agricultural and aquaculture ecosystems under sustainable management	B	Existing data sets for measuring sustainability of agriculture, aquaculture and forestry, including FAO reports, Certification, and Ecological corridors and community-based management areas, and wildlife sustainable management schemes	Yes	Yes	FAO reports; Certification bodies (e.g., FSC, MSC, ISO, PEFC, CSA, SFI, LEI); MBC; Parties	UNEP-WCMC with FAO
Proportion of products derived from sustainable sources	C		No	No	Equilibrium/WWF/World Bank/TNC intend to propose some indicators	SCBD
Ecological footprint and related concepts	C 5/	Ecological footprint	Yes	Yes,	FAO, IAE, IPCC, UNEP-WCMC	Ecological Footprint network

5/ New indicator recommended by SBSTTA at its tenth meeting.

Headline Indicator 2/	Status 3/	Potential Measures	Data available now?	Method-ology available now?	Possible sources of data	Organizations to coordinate delivery of indicator
		Other measures of the area of land and sea needed to support production of goods and deliver services	Some	Some		SCBD and UNEP-WCMC
Nitrogen deposition	B		Yes	Yes	Available (INI) models for 2010 could be developed with additional effort	INI with UNEP-WCMC
Trends in invasive alien species 6/	B	Numbers and cost of alien invasive species	Yes – some areas	Yes	Various, particularly national data sets	GISP
		Other measures to be identified and developed	Some	No		
Marine Trophic Index	B		Yes	Yes	Available (UBC)	UBC
Water quality of freshwater ecosystems	B	Indicator of biological oxygen demand (BOD), nitrates and sediments/ turbidity	Yes	Yes	UNEP-GEMS/Water Programme	UNEP-GEMS/Water Programme
Trophic integrity of other ecosystems	C		No	No		SCBD to assemble available information

6 / SBSTTA recommends a rewording of the title of this indicator from that contained in decision VII/30 (Numbers and cost of alien invasions).

Headline Indicator 2/	**Status 3/**	**Potential Measures**	**Data available now?**	**Method-ology available now?**	**Possible sources of data**	**Organizations to coordinate delivery of indicator**
Connectivity / fragmentation of ecosystems	B	Patch size distribution of terrestrial habitats (forests and possibly other habitat types)	Yes	Yes	NASA Consortium; CI; WWF-US based on remote sensing data	UNEP-WCMC (with FAO, CI, NASA-NGO Conservation Working Group and USDA-FS)
		Fragmentation of river systems	Yes	Yes	WRI	
Incidence of human-induced ecosystem failure	C	(see notes)	Some	No	SCBD to assemble available information for later consideration	SCBD/UNEP-WCMC
Health and well-being of communities who depend directly on local ecosystem goods and services 7/	C		No	No	To be identified	SCBD
Biodiversity for food and medicine	C		Some	No	FAO, IPGRI, WHO and others	SCBD
Status and trends of linguistic diversity and numbers of speakers of indigenous languages	B		Yes	Under review	UNESCO World Atlas of Endangered Languages; Ethnologue: Languages of the World - Fifteenth Edition	UNESCO with UNEP-WCMC (Smithsonian Institution requested to explore possible application of Red List methodology)

7/ The indicator from decision VII/30 (Health and well-being of people living in biodiversity-based-resource dependent communities) was reworded to clarify the focus on local dependency.

Headline Indicator 2/	**Status 3/**	**Potential Measures**	**Data available now?**	**Method-ology available now?**	**Possible sources of data**	**Organizations to coordinate delivery of indicator**
Other indicator of the status of indigenous and traditional knowledge	C		No	No	To be considered by the Working Group on Article 8(j) (possibly including land-tenure of indigenous and local communities)	SCBD
Indicator of access and benefit-sharing	C		No	No	To be considered by the Working Group on Access and Benefit-sharing	SCBD
Official development assistance provided in support of the Convention	B	Official development assistance as marked	Some	Yes	Donor countries encouraged to mark data	OECD (OECD is working on this for a trial period)
Indicator of technology transfer	C		No	No	Countries invited to submit information. The Expert Group on Technology Transfer may wish to consider this matter.	SCBD

Annex II

INDICATORS RELEVANT TO THE 2010 GOALS AND SUB-TARGETS

Goals and targets	***Relevant headline indicators***
Protect the components of biodiversity	
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes	
Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.	Most relevant indicator: • Coverage of protected areas Other relevant indicators: • Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species
Target 1.2: Areas of particular importance to biodiversity protected	Relevant indicators: • Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species • Coverage of protected areas
Goal 2. Promote the conservation of species diversity	

Goals and targets	*Relevant headline indicators*
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups.	Most relevant indicator: • Trends in abundance and distribution of selected species Other relevant indicator: • Change in status of threatened species
Target 2.2: Status of threatened species improved.	Most relevant indicator: • Change in status of threatened species Other relevant indicators: • Trends in abundance and distribution of selected species • Coverage of protected areas
Goal 3. Promote the conservation of genetic diversity	
Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.	Most relevant indicator: • Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance Other relevant indicators: • *Biodiversity used in food and medicine (indicator under development)* • Trends in abundance and distribution of selected species

Goals and targets	*Relevant headline indicators*
Promote sustainable use	
Goal 4. Promote sustainable use and consumption.	
Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and Production areas managed consistent with the conservation of biodiversity.	Most relevant indicators: • Area of forest, agricultural and aquaculture ecosystems under sustainable management • *Proportion of products derived from sustainable sources (indicator under development)* Other relevant indicators: • Trends in abundance and distribution of selected species • Marine trophic index • Nitrogen deposition • Water quality in aquatic ecosystems
Target 4.2 Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced.	Relevant indicator: • *Ecological footprint and related concepts (indicator under development)*
Target 4.3: No species of wild flora or fauna endangered by international trade.	Most relevant indicator: • Change in status of threatened species

Goals and targets	*Relevant headline indicators*
Address threats to biodiversity	
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.	
Target 5.1: Rate of loss and degradation of natural habitats decreased.	Most relevant indicator: • Trends in extent of selected biomes, ecosystems and habitats Other relevant indicators: • Trends in abundance and distribution of selected species • Marine trophic index
Goal 6. Control threats from invasive alien species	
Target 6.1: Pathways for major potential alien invasive species controlled.	Relevant indicator: • Trends in invasive alien species
Target 6. 2: Management plans in place for major alien species that threaten ecosystems, habitats or species.	Relevant indicator: • Trends in invasive alien species
Goal 7. Address challenges to biodiversity from climate change, and pollution	
Target 7.1: Maintain and enhance resilience of the components of biodiversity to adapt to climate change.	Relevant indicator: • Connectivity/fragmentation of ecosystems

Goals and targets	*Relevant headline indicators*
Target 7.2: Reduce pollution and its impacts on biodiversity.	Nitrogen deposition Water quality in aquatic ecosystems
Maintain goods and services from biodiversity to support human well-being	
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods	
Target 8.1: Capacity of ecosystems to deliver goods and services maintained.	Relevant indicators: • *Biodiversity used in food and medicine (indicator under development)* • Water quality in aquatic ecosystems • Marine trophic index
Target 8.2: biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.	Most relevant indicator: • Health and well-being of communities who depend directly on local ecosystem goods and services Other relevant indicator: • *Biodiversity used in food and medicine*
Protect traditional knowledge, innovations and practices	
Goal 9 Maintain socio-cultural diversity of indigenous and local communities	

Goals and targets	*Relevant headline indicators*
Target 9.1 Protect traditional knowledge, innovations and practices.	Most relevant indicator: • Status and trends of linguistic diversity and numbers of speakers of indigenous languages Other relevant indicator: • *Additional indicators to be developed*
Target 9.2: Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit-sharing.	*Indicator to be developed*
Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources	
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources	
Target 10.1: All transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable agreements.	*Indicator to be developed*
Target 10.2: Benefits arising from the commercial and other utilization of genetic resources shared with the countries providing such resources.	*Indicator to be developed*

Goals and targets	*Relevant headline indicators*
Ensure provision of adequate resources	
Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention	
Target 11.1: New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.	Most relevant indicator: • Official development assistance provided in support of the Convention
Target 11.2: Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph.	*Indicator to be developed*

Annex III

LIST OF ACRONYMS AND ABBREVIATIONS

AHTEG	Ad Hoc Technical Expert Group
BOD	Biochemical oxygen demand
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CI	Conservation International
COP	Conference of the Parties
CSA	Canadian Standards Association
DADIS	Domestic Animal Diversity Information System of FAO
EGTT	Expert Group on Technology Transfer
EU-JRC	Joint Research Centre of the European Union
FAO	Food and Agriculture Organization of the United Nations
FRA	Forest Resources Assessment of FAO
FSC	Forest Stewardship Council
GBO	Global Biodiversity Outlook
GCRMN	Global Coral Reef Monitoring Network
GEMS	Global Environment Monitoring System of UNEP
GISIN	Global Invasive Species Information Network
GISP	Global Invasive Species Programme
ICSU	International Council for Science
IGBP	International Geosphere-Biosphere Programme
INI	International Nitrogen Initiative: a Joint Programme of SCOPE and IGBP

IPGRI	International Plant Genetic Resources Institute
ISO	International Organization for Standardization
IUCN	The World Conservation Union
LADA	Land Degradation Assessment in Drylands, a project of FAO
LEI	Lembaga Ekolabeling Institute
LPI	Living Planet Index
MA	Millennium Ecosystem Assessment
MBC	Meso-American Biological Corridor
MSC	Marine Stewardship Council
NASA	National Aeronautics and Space Administration
NGO	non-governmental organization
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
PEEN	Pan-European Ecological Network
PEFC	Programme for the Endorsement of Forest Certification Schemes
PGRFA	plant genetic resources for food and agriculture
REFORGEN	The FAO Global Information System on Forest Genetic Resources
RLI	Red List Index
SBSTTA	Subsidiary Body on Scientific Technical and Technological Advice
SCBD	Secretariat of the Convention on Biological Diversity
SCOPE	ICSU Scientific Committee on Problems of the Environment
SFI	Sustainable Forestry Initiative
SINGER	System-wide Information Network for Genetic Resources (for CGIAR)
SOW1	first report on the State of the World's Plant Genetic Resources for Food and Agriculture. FAO, Rome 1997.

SSC	Species Survival Commission of IUCN
TNC	The Nature Conservancy
UBC	University of British Columbia
UNEP	United Nations Environment Programme
UNEP-WCMC	World Conservation Monitoring Centre of UNEP
UNESCO	United Nations Educational, Scientific and Cultural Organization
USDA	United States Department of Agriculture
WCPA	World Commission on Protected Areas of IUCN
WHO	World Health Organization
WIEWS	World Information and Early Warning System on PGRFA
WRI	World Resources Institute
WWF	World Wide Fund for Nature
WWF-US	World Wildlife Fund United States