Handbook on International Environmental Agreements:
An Indian Perspective

Centre for Environmental Law
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Foreword

I am happy to know that a comprehensive handbook of International Environmental Law has been brought out by the Ministry of Environment and Forests in collaboration with the WWF-India. This document fulfills a long felt need of compiling and analyzing various multilateral environmental treaties with special reference to India and as they stand after 30 Years since the Stockholm Conference on Human Environment.

Strengthening human resource capabilities for addressing the challenges of environment and development is a critical requirement for all countries. An integral component of such capacity building is the application of environmental law as an instrument for effectively controlling pollution, conserving natural resources, and promoting their sustainable use. We also have to strive for integration of environmental concerns into development processes at all levels, consolidating environmental rights and duties, ensuring compliance with, and enforcement of various environmental laws.

Law is an effective means for translating environmental policies that incorporate global, regional and national priorities, concerns and practices, into action. Agenda 21 emphasizes the need to promote the efficacy of international environmental law as well as the integration of environment and development policies through international agreements and institutions.

The development of international law is a dynamic process, which requires continuous examination of not only current, but also future environmental trends and challenges. International environmental law is inspired by a number of innovative ideas, concepts and principles, facilitative and enabling mechanisms, and procedures. Among these are the concepts of sustainable development, the precautionary approach, polluter pays, common concern for humankind, and common but differentiated responsibilities of countries. These concepts and norms have been incorporated in major environmental conventions such as the biodiversity convention, desertification convention, climate change convention etc. These unique and
characteristic features of international environmental law are crucial for consolidating the interaction between environmental law and sustainable development, and have attracted the attention of both professionals and academics.

As the number of international environmental instruments is increasing, the issue of enforcement and compliance by member countries is becoming a matter of great concern, especially for the developing countries. As a follow up to Rio, almost all the countries, especially developing countries, reviewed their national environmental regulations and reinforced these, often with the establishment of national agencies and authorities. While these institutional and regulatory changes have helped the governmental authorities in decision making on environmental issues, there is much that remains to be done. It is important for these institutions to function effectively, and at the same time, promote compliance with, and enforcement of environmental regulations.

Strengthening the capacity of developing countries to protect their environment and natural resources cannot be achieved solely through the development and adoption of environmental legislation. In a country like India, deeply entrenched administrative and management attitudes and approaches conceived in the past often conflict with the demands of the present in many areas of governance. This requires different approaches to be followed for strengthening of compliance at the domestic level.

This compilation and analysis of international conventions vis-à-vis India’s role is an attempt at providing a clear, understandable amount of international environmental law. This two volume handbook deals with various aspects of environment ranging from conservation to atmospheric pollution to hazardous substances. I acknowledge the contribution of CEL, WWF – India in helping the Ministry of Environment and Forests in bringing out this publication. I sincerely hope that this handbook will result in greater dissemination of information to a wider audience.

New Delhi.
Message from SG & CEO, WWF-India

The role of environmental law in fostering sustainable development is significant. It provides the foundation for governmental policies and actions for the conservation of the environment and for ensuring that the use of natural resources is both equitable and sustainable. However, even after over three decades since the introduction of a modern environmental law regime in India, the state of the environment continues to be a matter of great concern. Moreover, environmental legal literacy in India is still low and is often one of the greatest impediments to public participation in environmental decision making.

In the last two decades, a large number of multilateral treaties on environmental subjects as diverse as Biological Diversity, Climate Change, Long-Range Transboundary Air Pollution, the Law of the Sea and Desertification have been concluded, with many more environmental agreements adopted at regional fora or on a bilateral basis. In addition, numerous ‘soft law’ instruments on the environment have been promulgated such as the 1982 World Charter for Nature, the 1992 Rio Declaration on Environment and Development, and the 2002 Johannesburg Declaration.

At the national level, on the basis of growing public support, countries throughout the world are rapidly amending or adding international legislative, regulatory, and administrative measures for the purpose of enhancing environmental management. However, despite this rapid development, many problems remain, especially with regard to the implementation and enforcement of legal measures. In much of the developing world, including India, the application of environmental law is limited, thereby undermining the effectiveness of important environmental initiatives.

The range and complexity of the numerous instruments of international environmental law poses the problem of accessibility to all those dealing with the subject. It is in this context that the Centre for Environmental Law (CEL), WWF-India, has compiled and analysed existing international environmental agreements to which India is a party. This compilation contains international documents dealing with the environment, including ‘hard’ and ‘soft’ law. The main aim of compiling this document is to assist government officials in their planning and policy making efforts directed at improving the application of environmental legal provisions and as an easy reference guide for legal practitioners and civil society organisations. It is hoped that this publication will help in information dissemination on the complex international environmental regime and further build the capacity of our society at large.

Ravi Singh
Secretary-General & CEO
World Wide Fund for Nature-India
Preface

To address environmental issues that India and other countries face, it is imperative and important to initiate action at all levels - global, regional, national, local, and community. It is not enough to have international agreements and instruments on environmental issues; but implementation and enforcement of these policies and agreements to a large extent determine their impact and effectiveness. To bring about change at all levels it is important to understand the global scenario and India’s position in the global arena.

It is in this context that the preparation of the two-Volume *Handbook on International Environmental Agreements*, to which India is a party, was undertaken by the Centre for Environmental Law, WWF-India, supported by the Ministry of Environment and Forests, Government of India. There was a long-felt need to document major international environmental agreements signed and ratified by India in a single publication for easy reference. It is hoped that this publication will help in understanding India’s international obligations, how they are being addressed at national and local levels, and also India’s position at the Conference of Parties (COPs) to the various Multilateral Environmental Agreements (MEAs).

This handbook seeks to provide a comprehensive and cohesive perspective on the major International Environmental Agreements to which India is a party, along with India’s position and role in implementing these conventions at the national level. This handbook is also an attempt to provide grounding to the uninitiated in the arena of Environmental Law by providing a comprehensive documentation and analysis of relevant International Environmental Law Agreements along with the relevant COP and the significant developments therein vis-à-vis India.

The handbook has been categorized sector-wise to make it reader-friendly. The main volume of the Handbook deals with the International Environmental Agreements which have been categorized into ten sectors, viz. Overview of International Environmental Law, Species Conservation, Marine Conservation, Biodiversity Conservation, Habitat Conservation, Land Conservation, Culture and Nature Conservation, Atmosphere and Environment, Hazardous Substances, and Trade and Environment. All the relevant conventions (one or more) are covered under each of the sectors. In each of the conventions the general scope and important principles are discussed in detail. An important aspect covered in this section is the enforcement and compliance component by India wherein the position of India in the COPs and domestic legislation in the context of India’s international obligations is covered. A holistic approach towards the understanding of the International Conventions in the global context and its application to India has been attempted.

The main volume also deals with an introduction and overview of International Environmental Law including their histories and recent developments. The first
section introduces the readers to the historical development of the International conventions with briefs on some significant developments and charters such as the Stockholm Convention. Important customary principles of international environmental law recognized globally, such as the Principle of Sustainable Development, Precautionary Principle, the Polluter Pays Principle, and the Principle of Common but Differentiated Responsibility, which have been recognized as law in India, are also discussed in the section.

The second volume of the Handbook (Appendices) deals with the compilation of texts of the major International Environmental Agreements to which India is a party. Part-I of this volume deals with Declarations and Charters, which are not binding in nature. Part-II is a compilation of the major International Environmental Agreements organized according to six categories: The Atmosphere, Biodiversity Convention, Wildlife and Heritage, Hazardous Chemicals and Wastes, Marine Environment, and Desertification.

It is hoped that this voluminous preparation will be a useful guide to government officers, practitioners, activists, academicians, NGOs, students, and others interested in the global environmental scenario and India’s stand and position therein. Increasing realization that the environment should be perceived as being integrated and interdependent, calls for strategies and action at different levels which will help in achieving equity and justice at the national, local and global contexts and a step towards sustainable development. To bring about change at all levels it is important to understand the global scenario and India’s position in the global arena.

Rajesh Sehgal
Project Coordinator

15 November, 2006
Acknowledgments

A handbook of this nature cannot be produced without the active support and involvement of a large number of people. The Centre for Environmental Law, WWF-India, would like to express gratitude to the Ministry of Environment and Forests (MoEF) for understanding the need for such a publication and providing the opportunity to work on it. We would like to extend special thanks to Shri P.V. Jaykrishnan for taking this initiative. Special thanks are due to Shri S. K. Joshi, Director (IC) and Ms. Bina Bahri (US), MoEF, for their immense support and advice at all stages of this project. Dr. Laxmi Raghupathy (AD) is especially acknowledged for her valuable inputs on the ‘Hazardous Wastes’ chapter. We also benefited from the useful discussions with Shri Sudhir Mittal, Joint Secretary; Shri Aseem Srivastava, DIG, Wildlife; Shri J.B. Sharma, DIG (Forest); Shri J R Bhatt, Director (IC); Smt Sujata Arora, Additional Director; Shri S. K. Rathore, Joint Director; and Shri Ishwar Singh, Senior Law Officer.

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## List of Abbreviations

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<th>Abbreviation</th>
<th>Full Form</th>
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<td>Adhoc Group on the Berlin Mandate</td>
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<td>AIA</td>
<td>Advance Informed Agreement</td>
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<td>ASMA</td>
<td>Antarctic Specially Managed Area</td>
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<td>ASOC</td>
<td>Antarctic and Southern Ocean Coalition</td>
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<td>ASPA</td>
<td>Antarctic Specially Protected Area</td>
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<tr>
<td>ATCM</td>
<td>Antarctic Treaty Consultative Meeting</td>
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<td>ATCPs</td>
<td>Antarctic Treaty Consultative Parties</td>
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<td>ATS</td>
<td>Antarctic Treaty System</td>
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<td>BAS</td>
<td>British Antarctic Survey</td>
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<td>BDA</td>
<td>Biological Diversity Act</td>
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<td>BMC</td>
<td>Biodiversity Management Committees</td>
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<td>CBD</td>
<td>Convention on Biological Diversity</td>
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<td>CCAMLR</td>
<td>Convention on the Conservation of Antarctic Marine Living Resources</td>
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<td>CCAR</td>
<td>Canadian Committee on Antarctic Research</td>
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<td>CCOL</td>
<td>Coordinating Committee on Ozone Layer</td>
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<td>CCS</td>
<td>Convention for the Conservation of Antarctic Seals</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<td>CEE</td>
<td>Comprehensive Environmental Evaluation</td>
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<td>CEL</td>
<td>Centre for Environmental Law</td>
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<td>CEP</td>
<td>Committee for Environmental Protection</td>
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<td>CFCs</td>
<td>Chloro Fluoro Carbons</td>
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<td>CHM</td>
<td>Common Heritage of Mankind</td>
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<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species of Wild Flora and Fauna</td>
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<td>CMS</td>
<td>Convention on the Conservation of Migratory Species of Wild Animals</td>
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<td>CO</td>
<td>Carbon Monoxide</td>
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<tr>
<td>COMNAP</td>
<td>Council of Managers of National Antarctic Programmes</td>
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<td>COP</td>
<td>Conference of Parties</td>
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<td>CPRLS</td>
<td>Common Property Resource Lands</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>CRAMRA</td>
<td>Convention on the Regulation of Antarctic Mineral Resource Activities</td>
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<td>CRIC</td>
<td>Committee for the Review of the Implementation of the Convention</td>
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<td>CRZ</td>
<td>Coastal Regulation Zones</td>
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<td>CSD</td>
<td>Commission on Sustainable Development</td>
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<td>CST</td>
<td>Committee on Science and Technology</td>
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<td>DNA</td>
<td>Designated National Authority</td>
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<td>DOD</td>
<td>Department of Ocean Development</td>
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<td>ECOSOC</td>
<td>Economic and Social Committee of the United Nations</td>
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<td>EEZ</td>
<td>Exclusive Economic Zone</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>ENVIS</td>
<td>Environment Information System</td>
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<td>EPA</td>
<td>Environment Protection Act</td>
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<td>ESM</td>
<td>Environmentally Sound Management</td>
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<td>ESTs</td>
<td>Environmentally Sound Technologies</td>
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<td>EXIM</td>
<td>Export-Import</td>
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<td>FAO</td>
<td>Food and Agricultural Organization</td>
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<td>FCA</td>
<td>Forest Conservation Act</td>
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<td>GAEC</td>
<td>Genetic Engineering Approval Committee</td>
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<td>GATT</td>
<td>General Agreement on Tariffs and Trade</td>
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<td>GEF</td>
<td>Global Environmental Fund</td>
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<td>GMOs</td>
<td>Genetically Modified Organizations</td>
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<td>IAATO</td>
<td>International Association of Antarctica Tour Operators</td>
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<td>ICCROM</td>
<td>International Centre for the Study of the Preservation and Restoration of Cultural Property</td>
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<td>ICFRE</td>
<td>Indian Council of Forestry Research and Education</td>
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<td>ICJ</td>
<td>International Court of Justice</td>
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<td>ICOMOS</td>
<td>International Council on Monuments and Sites</td>
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<td>ICRW</td>
<td>International Convention for the Regulation of Whaling</td>
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<td>ICSU</td>
<td>International Council for Science (formerly International Council of Scientific Unions)</td>
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<td>ICZM</td>
<td>Integrated Coastal Zone Management</td>
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<td>IDA</td>
<td>Island Development Authority</td>
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<td>Acronym</td>
<td>Description</td>
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<td>IEE</td>
<td>Initial Environmental Evaluation</td>
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<td>IFA</td>
<td>Indian Forest Act</td>
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<td>IFF</td>
<td>Intergovernmental Forum on Forests</td>
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<td>IGY</td>
<td>International Geophysical Year</td>
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<td>IHO</td>
<td>International Hydrographic Organization</td>
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<td>ILC</td>
<td>International Law Commission</td>
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<td>IMO</td>
<td>International Maritime Organisation</td>
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<td>INMARSAT</td>
<td>Convention on the International Maritime Satellite Organization</td>
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<td>IOC</td>
<td>Intergovernmental Oceanographic Commission</td>
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<td>IOS</td>
<td>International Observatory System</td>
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<td>IP</td>
<td>Information Paper</td>
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<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>IPF</td>
<td>Intergovernmental Panel on Forests</td>
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<td>ITTA</td>
<td>International Tropical Timber Agreement</td>
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<td>ITTC</td>
<td>International Tropical Timber Council</td>
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<td>ITTF</td>
<td>Interagency Task Force on Forests</td>
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<td>ITTO</td>
<td>International Tropical Timber Organization</td>
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<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
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<td>IWC</td>
<td>International Whaling Commission</td>
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<td>JARJ</td>
<td>Joint Antarctic Resource Jurisdiction</td>
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<td>JFM</td>
<td>Joint Forest Management</td>
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<td>LDC</td>
<td>Less Developed Countries</td>
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<td>LMOs</td>
<td>Living Modified Organisms</td>
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<td>MAB</td>
<td>Man and Biosphere</td>
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<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships</td>
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<td>MOD</td>
<td>Ministry of Defence</td>
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<td>MOEF</td>
<td>Ministry of Environment and Forests</td>
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<td>MOU</td>
<td>Memorandum of Understanding</td>
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<td>MPNG</td>
<td>Ministry of Petroleum and Natural Gas</td>
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<td>NAEB</td>
<td>National Afforestation and Eco-Development Board</td>
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<td>NASA</td>
<td>National Aeronautical and Space Administration</td>
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<td>Acronym</td>
<td>Full Form</td>
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<td>NBA</td>
<td>National Biodiversity Authority</td>
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<td>NBPGGR</td>
<td>National Bureau of Plant Genetic Resources</td>
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<td>NBSAP</td>
<td>National Biodiversity Strategy and Action Plan</td>
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<td>NCAOR</td>
<td>National Centre for Antarctic and Ocean Research, (Goa) India</td>
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<td>NFAP</td>
<td>National Forestry Action Programme</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>NMHC</td>
<td>Non-methane Hydrocarbons</td>
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<td>NOAA</td>
<td>National Oceanographic and Atmospheric Administration</td>
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<td>ODP</td>
<td>Ocean Drilling Programme</td>
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<td>ODS</td>
<td>Ozone Depleting Substances</td>
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<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<td>PA</td>
<td>Protected Areas</td>
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<td>PDD</td>
<td>Project Design Documents</td>
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<td>PIC</td>
<td>Prior Informed Consent</td>
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<td>POPs</td>
<td>Persistent Organic Pollutants</td>
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<td>PPnV</td>
<td>Part Permillion by Volume</td>
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<tr>
<td>PPTV</td>
<td>Parts per Trillion by Volume</td>
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<tr>
<td>QELROs</td>
<td>Quantified Emission Limitation and Reduction Objectives</td>
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<td>RADARSAT</td>
<td>Radar Satellite</td>
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<td>RMP</td>
<td>Revised Management Procedure</td>
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<td>SACEP</td>
<td>South Asian Cooperative Environment Programme</td>
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<td>SBB</td>
<td>State Biodiversity Boards</td>
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<td>SCALOP</td>
<td>Standing Committee on Antarctic Logistics and Operations</td>
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<td>SCAR</td>
<td>Scientific Committee on Antarctic Research</td>
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<td>SCCF</td>
<td>Special Climate Change Fund</td>
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<td>SCOPE</td>
<td>Scientific Committee on Problems of the Environment</td>
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<td>SCOR</td>
<td>Scientific Committee on Oceanic Research</td>
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<td>SES</td>
<td>Satellite Earth Station</td>
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<td>SPA</td>
<td>Specially Protected Area</td>
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<td>SPRI</td>
<td>Scott Polar Research Institute</td>
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<td>SRA</td>
<td>Specially Reserved Area</td>
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<td>SSSI</td>
<td>Site of Special Scientific Interest</td>
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<td>Acronym</td>
<td>Description</td>
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<td>TFAP</td>
<td>Tropical Forestry Action Plan</td>
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<td>TPN</td>
<td>Thematic Programme Network</td>
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<td>UNCCD</td>
<td>United Nations Convention to Combat Desertification</td>
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<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>UNESCO</td>
<td>United Nations Educational Scientific and Cultural Organization</td>
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<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
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<td>UNFF</td>
<td>United Nations Forum on Forests</td>
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<td>UNGA</td>
<td>United Nations General Assembly</td>
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<td>UNIDO</td>
<td>United Nations Industrial Development Organisation</td>
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<td>UV</td>
<td>Ultra-Violet</td>
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<td>UV-B</td>
<td>Ultra-violet B radiation</td>
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<td>WCS</td>
<td>World Conservation Strategy</td>
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<td>WG</td>
<td>Working Group</td>
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<td>WHC</td>
<td>Convention Concerning the Protection of the World Cultural and Natural Heritage</td>
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<td>WMO</td>
<td>World Meteorological Organization</td>
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<td>WP</td>
<td>Working Paper</td>
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<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
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<td>World Trade Organization</td>
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Overview of International Environmental Law

1.1 Introduction

International law as a rule signifies the ‘law of nations’ that states feel themselves bound to observe. It is the structure of law which governs relations among states. It is the body of law, which comprises in greater part the principles and rules of conduct. At one time, states were the only entities enjoying international legal personality and having rights and duties, but today, international organizations, non-state groups and individuals are also seen as being international legal entities in certain situations. The scope of international law is still evolving. Since the Second World War, international law has further evolved under the auspices of the United Nations, to include international co-operation and human rights. In order to address the new environmental challenges which directly concern developmental issues, international environmental law is evolving intensely as a new branch of international law.

In simple understanding, international environmental law comprises those substantive, procedural and institutional rules of international law which have as their primary objective the protection of the environment. Environment is generally defined as ‘the objects or the region surrounding anything’. The definition of environment encompasses the whole gamut of the natural world and that of human civilization. On this definition the environment is broader than, but includes, ‘nature’, which is concerned only with features of the world itself. Generally, the term environment encompasses anything from the whole biosphere to the habitat of the smallest creature or organism.

In the last few decades, there has been an increasing concern and awareness about the need to protect the environment, both nationally and internationally. Part of the way of putting this concern into action is the law, being a means to structure and condition behavior. While international environmental law continues to develop, the existing treaties, declarations, and state practice are beginning to provide a framework. This framework is largely created by states, but it is clear that international organizations, non-governmental organizations and individuals are playing an active role in this area than in almost any other area of international law. Today, we are witnessing an accelerated development of international law and international environmental law in particular. There is increasing evidence that the development of international environmental law is moving in the direction of sustainable development. Moreover, the international conventions are an increasingly important source of international environmental law. Today there are numerous international conventions which exist in the field of environmental law dealing with specific aspects of environment like biodiversity, marine species, climate change, energy, land use, etc. Nevertheless, many of these instruments do not create obligations on states or on other entities which damage the environment, or give rights to anybody to enforce the obligation
created. Still, both of these are needed if international environmental law is to be an effective legal instrument and if it is to begin to fulfill the aspirations of the international community towards the protection of the environment.

1.2 History and Development of International Environmental Law

Concern for the environment first began to appear on the international agenda during the early twentieth century with the conclusion of a number of international conventions. Earlier attempts to develop international environmental law focused on the conservation of wildlife, i.e. fisheries, birds, and seals and to a limited extent, the protection of rivers and seas. Following were the initial treaties aimed at protecting only a few species which were considered valuable resources to humans, or to protect human health:

- Convention for the Protection of Useful Birds to Agriculture, 1902
- Treaty for the Preservation of Fur Seals, Washington, 1911
- Convention Concerning the Use of White Lead in Painting, Geneva, 1921
- Convention for the Regulation of Whaling, 1931

During this first phase, it was only fisheries and wildlife that attracted the attention of international legislators. The 1909 Water Boundaries Treaty between the United States and Canada was the first to commit its parties to preventing pollution, and under the auspices of its International Joint Commission a draft treaty on Pollution Prevention was drawn up in 1920, but not adopted. Also, during this period, two environmental disputes were submitted to international arbitration. In the Pacific Fur Seal Arbitration, the dispute between the United States and Great Britain concerned the latter’s alleged over-exploitation of fur seals in areas beyond national jurisdiction. This award set forth regulations for the ‘proper protection and preservation’ of fur seals outside jurisdictional limits.

The second arbitral award during this period arose out of a dispute between the United States and Canada over the emission of sulphur fumes from a trail smelter situated in Canada which caused damage in the State of Washington. The principle applied in this case was that ‘no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.’

The second phase in the development of international environmental law began with the creation of the United Nations and its specialized agencies in 1945. This period was characterized by two features: international organizations at the regional and global level began to address environmental issues, and the range of environmental concerns addressed by international regulatory activity broadened to include a focus on the causes of pollution resulting from certain ultra-hazardous activities. Another feature was the limited recognition of the relationship between economic development and environmental protection. By the year 1972, a body of international environmental rules at the regional and global levels, and international organizations addressing international environmental issues emerged. During this period, there was

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a lack of co-ordination to develop a coherent international environmental strategy. Moreover, no international organization had overall responsibility for coordinating international environmental policy and law. It was during this time that the United Nations took charge and convened the first global conference on environment at Stockholm known as the United Nations Conference on Human Environment. This conference was the outcome of an Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere convened by UNESCO in 1968. The Convention considered the human impact on the biosphere, including the effects of air and water pollution, overgrazing, deforestation and the drainage of wetlands, and adopted 20 recommendations reflecting themes adopted at the 1972 Stockholm Conference.

The Stockholm Conference set the background for international activities on environmental protection at the regional and global levels. The Stockholm Conference elaborated an Action Plan consisting of 106 recommendations and a Declaration of 26 Principles on the Human Environment. It also proposed a new UN agency, the United Nations Environment Programme (UNEP). UNEP has been responsible for the establishment and implementation of regional as well as global treaties addressing ozone depletion, trade in endangered species, etc. Under the auspices of UNEP, the following four global conventions were elaborated during this time:

- Convention on Migratory Species, Bonn, 1979

In 1981, a Programme for the Development and Periodic Review of Environmental Law (The Montevideo Programme) was drafted in Montevideo by a group of legal experts convened by UNEP. It was adopted by the Governing Council in 1982. The Montevideo Programme activities can be grouped in three categories:

- The conclusion of international agreements
- The development of international principles, guidelines, and standards
- Provision of technical assistance for the further development of national legislation and institutions, including the implementation of international agreements through national legislation

In 1987, the United Nations General Assembly adopted the ‘Environmental Perspective to the Year 2000 and beyond’ as a framework to guide national action and international co-operation in policies and programme aimed at achieving environmentally sound development. During this period, UNEP also developed various guidelines or ‘soft law’ instruments such as:

- Montreal Guidelines for the Protection of the Marine Environment against Pollution from Land-based Activities, 1985
Another milestone in the history of international environmental law is the UN Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, from 3-14 June 1992. The purpose of the conference was to elaborate strategies and measures to halt and reverse the effects of environmental degradation in the context of strengthened national and international efforts to promote sustainable and environmentally sound development. UNCED was concerned with the balance between environmental protection and economic development. The objective of UNCED was to formulate appropriate mechanisms to address the practical crisis facing humanity in protecting the environment while still guaranteeing a minimum level of development. As part of the work leading to UNCED, a review of the Montevideo Programme was concluded in 1991 and the Programme for the Development and Periodic Review of Environmental Law for the 1990s, i.e. Montevideo II was adopted. Montevideo II outlines 18 specific areas of concentration for UNEP in the field of environmental law, and 7 additional subjects for possible consideration during this decade. UNCED adopted three non-binding instruments: the Rio Declaration on Environment and Development; a Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation, and Sustainable Development of All Types of Forest; and Agenda 21. Two important treaties on Biological Diversity and Climate Change were also adopted at this conference.

In order to monitor the implementation of decisions made at UNCED, particularly Agenda 21, the UN General Assembly resolved in December 1992 to establish a Commission on Sustainable Development (CSD). CSD monitors the progress made in implementation of Agenda 21 and provides recommendations to the UN General Assembly for its implementation.

1.3 Recent Developments

Since 1982, there have been three sequential Montevideo Programme for the Development and Periodic Review of Environmental Law. Each sets a ten-year strategy in the field of environmental law. The Montevideo Programme have provided a long-term strategic approach for the development and implementation of UNEP’s international environmental law programme, which is responsive to the environmental challenges of each decade.

UNEP is currently implementing Montevideo Programme III adopted in February, 2001. Montevideo Programme III includes twenty components, organized under three major themes:

- Effectiveness of Environmental Law
- Conservation and Management
- Relationship with other fields such as trade, etc.
Ten years after the Rio Summit (also known as the Earth Summit), the world again met at Johannesburg in 2002 to discuss some concrete steps for the implementation of Agenda 21, a blueprint for sustainable development. The Johannesburg Summit recognized that the world had changed since Rio and that the greatest challenge to sustainable development today was the ever increasing divide between the rich and poor fueled in part by globalization. The Summit, also known as the World Summit on Sustainable Development (WSSD), brought together many people apart from the heads of states to discuss some difficult challenges, including improving people’s lives and conserving our natural resources in a world that is growing in population, with ever increasing demands for food, water, shelter, sanitation, energy, health services, and economic security. Broad participation and inclusiveness are keys to the success of sustainable development. All sectors of society have a role to play in building a future in which global resources are protected. Therefore, in addition to governments, there was active participation at the Summit by representatives from business and industry, children and youth, farmers, indigenous people, local authorities, non-governmental organizations, scientific and technological communities, women, workers and trade unions.

Though the roadmap for achieving sustainable development was adopted ten years ago at Rio, there is still a long way to go. The Johannesburg Summit has tried to bridge the implementation gap through proposals for concrete actions. The WSSD at Johannesburg is a step ahead, moving from concepts to action. The Summit concluded with a clear and unambiguous statement from world leaders, in the form of a ‘Johannesburg Declaration’ reaffirming their commitment to work towards sustainable development. At the Johannesburg Summit, it became clear that governments will be responsible for implementing the negotiated outcomes of the Summit. But the reality is that governments do not have the resources to do everything that has to be done and implementation of sustainable development requires building partnerships among different sectors of society, such as with business and non-governmental organizations.

1.4 Sources of International Law

The sources of international law consist of ‘hard law’ and ‘soft law’. ‘Hard law’ is basically the treaties (also known as conventions, protocols, and agreements), academic texts, judicial decisions, general principles of law which are legally binding obligations; whereas rules which are not formally binding per se but still play an important role in the field of international environmental law such as declarations, charters, etc. are known as ‘soft law’. Soft law informally establishes the acceptable norms of behaviour. The traditional sources of international law, together with acts of international organizations and taking into account hard law and soft law, have given rise to a large body of international legal obligations which relate, directly or indirectly, to the protection of the environment.

Article 38 (1) of the Statute of the International Court of Justice provides the following sources of international law:

- International conventions (treaties), whether general or particular, establishing rules expressly recognized by the contesting states
- International custom, as evidence of general practice accepted as law
The general principles of law recognized by civilized nations
Judicial decisions and the teachings of the most highly qualified publicists of various nations, as subsidiary means for the determination of law

However, the above list of sources is not exhaustive. There are other various sources of international law which have emerged in international environmental law. A list of sources of international environmental law is more properly reflected in the list proposed by the International Law Commission (ILC) in 1989, which included those identified in Article 38 (1) as well as binding decisions of international organizations, and judgments of international courts or tribunals.2

Treaties

Treaties, also known as conventions, multilateral agreements, and protocols are the primary source of international environmental law. The Vienna Convention on the Law of Treaties (1969 Vienna Convention) defines treaty as an ‘international agreement concluded between states in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation’. Therefore a treaty or convention is an instrument which is intended to create legal rights and obligations between the parties.

Treaties can be bilateral or multilateral. A bilateral treaty is a contract between two states whereas a multilateral treaty is a contract between more than two states. However, multilateral treaties especially in the case of environmental law can also have global application or apply to a certain region. The area of intended application of the treaty has an important impact upon the number of states and which states become parties to the treaty.

Usually a number of steps have to be followed before a treaty comes into force. The procedure varies depending on the type of treaty; whether it is a bilateral or multilateral treaty. Also, especially in environmental law, the subject matter which a particular treaty is addressing is of utmost importance. A treaty-making process can best be described in the following steps:

Negotiation

Depending on the subject matter to be addressed, states identify the forum or institution to serve as a legislative forum. If the subject is already covered by the framework treaty, the new legal obligation could be developed in a protocol or by amendments to an existing protocol. For example, conservation and sustainable use of biodiversity, including the effect of genetically modified organisms on biodiversity, is a subject covered by the Convention on Biological Diversity (CBD), 1992. Therefore, to deal particularly with the issue of trade of genetically modified organisms, parties to the CBD adopted the Biosafety Protocol, 2001. In such cases the appropriate forum for negotiation will be the Conference of the Parties (CoP) or equivalent institution established by the framework agreement.

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2 International Law Commission, Draft Articles on State Responsibility, Part 2, Art. 5 (1).
Once the forum for negotiation is agreed, that body establishes a negotiating process. This could be anything from an informal ad hoc group of governmental experts (such as was established by the UNEP Governing Council for the 1985 Vienna Convention for the protection of Ozone layer), to a formal institutional structure (such as the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC) established by the UN General Assembly Resolution 44/12).  

Negotiations may be open-ended in time or established for a limited period. For example, the negotiation for the 1985 Vienna Convention took five years whereas the 1982 UN Convention on Law of the Seas (UNCLOS) took nearly 20 years. On the other hand, formal negotiations of the 1992 Climate Change Convention and the 1992 Biodiversity Convention were concluded in just 15 months, the negotiators having been asked to prepare a text in time for signature at UNCED.

**Signature and Ratification**

Once the draft text is negotiated, the next step to follow is adoption and signature. A multilateral treaty can be adopted by the consent of all states which participated in its drawing up, though two-thirds vote may sometimes be sufficient. In most of the multilateral treaties it is common to open them for signatures following their conclusion and usually the states which participated in the negotiation of the treaty sign it. It depends on the terms of the treaty as to whether it comes into force upon the receipt of a certain number of signatures or requires the deposit of instrument of ratification from a certain number of states before its coming into force. Ratification is a process whereby the relevant authority, usually the executive government in a state, notifies the convention depository of that state’s formal acceptance of the terms of the convention. In the field of environmental law, global treaties have tended to require a low number of ratifications for coming into force. For example, the Basel Convention on Transboundary Movements of Hazardous Wastes and Their Disposal, 1989, required 20 ratifications before it came into force.

A treaty does not have any legal force during the interim period between negotiation, signature, and ratification. States which have conclusively accepted a treaty which has come into force, by way of ratification or some other act, are referred to as ‘Contracting Parties’. Even if the treaty has come into force, it is still possible for the states to become contracting parties to the particular treaty by depositing the instrument of ratification. In these cases, acts of acceptance, approval, accession, or adhesion will be sufficient. Once the treaty has come into force, it becomes binding upon the contracting parties to perform the obligations of the treaty in good faith; a doctrine of *pacta sunt servanda*.

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4 Ibid.
6 Art. 12 and 14.
7 Art. 16.
**Interpretation of the treaty**

The 1969 Vienna Convention also sets the rules governing the interpretation of treaties. The primary rule is that a treaty is to be interpreted ‘in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.’\(^9\) The context of the treaty includes the whole of its text, the preamble, annexes and, sometimes even the footnotes.\(^10\) The interpretation of a treaty is sometimes made simpler especially in environmental treaties by the definition of various terms which are found throughout the treaty. Most environmental treaties include definitions of some of the key words or phrases used in the treaty, but invariably there will be words for which states could not reach an agreed definition. Different treaties may define the same word or words differently. For the interpretation of the treaty, subsequent agreements or practice between parties regarding interpretation of the treaty, and relevant rules of international law applicable in the relations between the parties can also be taken into account.

**Amendment**

Bilateral treaties are often amended by way of agreement between the parties, which can in some instances result in a completely new treaty. Although the Vienna Convention on Treaties, 1969, contains provisions for the formal amendment of treaties, yet many multilateral treaties contain provisions for their own amendment. Sometimes, the formal procedure results in the negotiation of an instrument such as a Protocol which becomes a legally binding instrument once all parties adopt it.\(^11\) In other instances, the operational scope of treaties can be expanded by the adoption of Annexes dealing with specific topics. Informal amendment may also take place orally or by tacit agreement of the parties, including decisions or acts or organs established under a treaty which may amount to a de facto amendment.

1.5 **International Customary Law**

Customary laws play a secondary role in international environmental law, although they can establish binding obligations for states and other members of the international community and may be relied upon in the codification of obligations in treaties and other binding acts. The significance of custom lies in the fact that it creates legal obligations for all states except those which have persistently objected to a practice and its legal consequences.\(^12\) To be established as customary rules, state practice must fulfill the following two criteria:

- **Constant and uniform usage:** Custom must have been used over a period of time. A single precedent is not enough to establish customary rules.
- **Opinio juris sive necessitates:** The practice should be seen by states as governed by international law.

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\(^9\) Art. 31.


\(^11\) For example, Biosafety Protocol, Montreal Protocol, etc.

In recent years, there has been a tendency to codify customary law into international legal instruments such as treaties and conventions. Such codifications make the rules more precise and more accessible. For example, the adoption of the United Nations Convention on the Law of the Seas in 1982 which codified customary international law on the law of the sea, also developed new concepts of the law of the sea.

1.6 General Principles of International Law

These are the principles recognized by municipal law of all or nearly all states. The principle of good faith is the basic principle which applies to almost all the areas of international law. Among other principles, Pacta sunt servanda, abuse of rights, duty to notify are commonly used in the international arena. Principle of Pacta sunt servanda lays down that every treaty in force is binding upon the parties to it and must be performed by them in good faith.

Also, states must exercise their rights in a manner compatible with their various obligations arising either from treaties or from general law. This is the general expression of the principle prohibiting abuses of rights. Even in the field of international environmental law, this principle has been given importance and is widely used. The United Nations Conference on the Human Environment, Stockholm, 1972, and the Rio Declaration on Environment and Development, 1992, further restates this principle of abuse of rights.¹³

A state is also obliged to notify the other state of the proposed change in its policy affects the other state. This principle has also been further restated in the Rio Declaration, 1992.

Judicial Decisions and Teachings of Highly Qualified Publicists of Various Nations

Judicial decisions of both international and domestic courts, tribunals, and other institutions are considered to be the secondary source of international law. Although the decisions adopted by judicial bodies are only subsidiary source of international law, the judgments and advisory opinions of the International Court of Justice (ICJ) and other tribunals are important since they are often considered as an affirmation or revelation of international customary rules. Even in the case of international environmental law, the decisions of ICJ play an important role. For example, in the Trail Smelter Case relating to transfrontier pollution, the Arbitral Tribunal stated:

No State has the right to use or permit the use of its territory in such manner as to cause injury by fumes in or to the territory of another or the properties or persons therein….

The teachings and writings of the most highly qualified publicists in international law are also considered an additional subsidiary source of international law. Learned writings of scientific and professional associations and of eminent lawyers are significant sources of international environmental law. For example, the Helsinki

¹³ Refer to Section on Principles of International Environmental Law.
Rules on waters of international rivers which have been developed by International Law Association are considered as highly authoritative.\textsuperscript{14}

1.7 Other Emerging Principles of International Environmental Law

In the international arena, there are a large number of principles or rules which have emerged or are emerging that have an impact on international relations. These principles or rules are general in nature and have broad support and are frequently used in practice. They are general in the sense that they are potentially applicable to all members of the international community across the range of activities which they carry out or authorize and in respect of the protection of all aspects of the environment. Some general principles or rules may reflect customary law, others may reflect emerging legal obligations, and yet others might have an even less developed legal status.

**Sovereignty over Natural Resources**

The principle of state sovereignty allows states within limits established by international law to conduct or authorize such activities as they choose within their territories including activities which may have adverse effects on their own environment.\textsuperscript{15} This principle has been reaffirmed in both the Stockholm and Rio Declarations. Principle 21 of the Stockholm Declaration provides that:

> States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

This principle can be divided into two parts. Firstly, it emphasizes that states have the sovereign rights over their natural resources and secondly, they also have the responsibility or obligation not to cause damage to the environment of other states. The evolution of the principle of sovereign right over natural resources dates back to the pre Stockholm period. In 1962, the General Assembly of the United Nations adopted the landmark resolution that the ‘rights of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development of the well being of the people of the state concerned.’ This reflects the right to permanent sovereignty over natural resources as an international legal right. Again in 1972, before the Stockholm Declaration, the UN General Assembly declared that ‘each country has the right to formulate, in accordance with its own particular situation and in full enjoyment of its national sovereignty over natural resources, its own national policies on the human environment.’ The relationship between permanent sovereignty over natural resources and responsibility for the environment was formally recognized by Principle 21 of the Stockholm Declaration.

\textsuperscript{14} UNEP Environmental Law Training Manual.
The Rio Declaration reaffirmed the centrality of the principle of sovereignty in the context of environment and development. Principle 2 of the Rio Declaration recognizes that all states have the ‘right to exploit their own resources pursuant to their own environmental and developmental policies’.

The principle of permanent sovereignty over natural resources has been frequently invoked in various forms in international environmental agreements and their negotiations.

**Principle of Sustainable Development**

The notion of sustainable development as a concept emerged only in the 1980s. The term sustainable development was first coined by the 1987 Brundtland Report which defined it as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’. However, this principle was first formally recognized by the Earth Summit in 1992 held at Rio. This definition of sustainable development contains within it two concepts:

- the concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state, of technology and social organization, on the environment’s ability to meet present and future needs. 

A report by the World Conservation Strategy defines sustainable development as a set of strategies and tools which respond to five broad requirements:

- the integration of conservation and development
- the satisfaction of basic human needs
- the achievement of equity and social justice
- the provision for social self-determination and cultural diversity
- the maintenance of ecological integrity

Each of these is a goal in itself and a condition for achieving the others, thus underlining the interdependence of the different dimensions of sustainability and the need for an integrated, interdisciplinary approach to the achievement of development which is sustainable.

The Rio Summit was a significant milestone that set a new agenda for sustainable development. Ten years after the Rio Summit the world is still struggling to implement the concept of sustainable development. Recently, in the year 2002, the World Summit on Sustainable Development was held in Johannesburg to implement the decisions taken at the UNCED regarding sustainable development. The Johannesburg Declaration also emphasized the world’s commitment to sustainable development.

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Principle of Preventive Action

This principle requires action to be taken at an early stage and, if possible before damage has actually occurred. It requires an activity which does or will cause damage to the environment in violation of the standards established under the rules of international law to be prohibited, and has been described as being of overriding importance in very effective environmental policy, since it allows action to be taken to protect the environment at an early stage. This principle has been endorsed in various international and national laws in different forms, such as setting environmental standards, access to environmental information, and environmental impact assessment.

Precautionary Principle

The precautionary principle provides guidance in the development and application of international environmental law where there is scientific uncertainty. It implies that even where there is no scientific evidence available to support a particular theory, precautions should be taken. The evolution of this principle is striking. Whereas the preventive principle can be traced back to international environmental treaties and other international acts since at least the 1930s, the precautionary approach began to appear in international legal instruments in the mid-1980s. This principle got formal recognition in Principle 15 of the Rio Declaration, which provides that ‘where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation’. This principle has been adopted in several international legal instruments since 1989, although its precise formulation is not identical in each instrument.

Polluter Pays Principle

The polluter-pays principle is the requirement that the costs of pollution should be borne by the person who is responsible for causing pollution and its consequential costs. The intent is to force the polluters to internalize all the environmental costs of their activities so that these are reflected in the costs of goods and services they provide. The ‘polluter-pays principle’ in treaty law can be traced back to some of the first instruments establishing minimum rules on civil liability for damage resulting from hazardous activities. The first international organization to refer expressly to the polluter-pays principle was the Organization for Economic Cooperation and Development (OECD) during the 1970s when great public interest was generated in Europe on environmental issues. Despite the difficulties inherent in defining and applying the principle, the European Community (EC) accepted it as a fundamental part of its policy on environmental matters. According to Principle 16 of the 1992 Rio Declaration ‘National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and environment.’ This passage in effect codifies the polluter-pays principle in an affirmative and original strong form.
Principle of Common but Differentiated Responsibility

The principle of common but differentiated responsibility has developed from the application of equity in general international law, and the recognition that the special needs of developing countries must be taken into account in the development, application, and interpretation of rules of international environmental law. This principle can be traced to Principle 7 of the Rio Declaration which states that ‘States should co-operate in a spirit of global partnership to conserve, protect, and restore the health and integrity of the Earth’s ecosystem. In view of the different contributions to global environmental degradation, states have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.’ This principle has two elements. The first concerns the common responsibility of states for the protection of the environment, or parts of it, at the national, regional, and global levels. The second concerns the need to take account of differing circumstances, particularly in relation to each state’s contribution to the creation of a particular environmental problem and its ability to prevent, reduce, and control the threat. Despite its recent emergence in the current formulation, the principle of common but differentiated responsibility finds its roots prior to UNCED and is supported by state practice at the regional and global levels.

The Ministry of Environment and Forests, Government of India, in the year 2006, has formulated the National Environment Policy (NEP). The NEP in its various sections vividly contains the objective and the perspective of the key international environmental principles and its approach at the national level. The important key environmental principles which are mentioned in the NEP are:

i) Conservation of Critical Environmental Resources
ii) Intra-generational Equity, Livelihood, and Security for the Poor
iii) Inter-generational Equity
iv) Integration of Environmental Concern in Economic and Social Development
v) Efficiency in Environmental Resources use
vi) Environmental Governance
vii) Enhancement of Resources for Environmental Conservation

Further, the NEP also provides legal doctrines in principles to guide activities and pursue the environment policy by the Government of India which includes:

i) Human beings are at the centre of sustainable development concerns
ii) The right to development
iii) Environmental protection is an integral part of the development process
iv) The precautionary approach
v) Economic efficiency – (a) Polluter pays (b) Cost minimization
vi) Entities with “incomparable” values
vii) Equity

1.8 Non-Binding Legal Instruments

Apart from the above mentioned ‘hard law’, there are other non-binding legal instruments, i.e. ‘soft law’, which act as a source of international law. In the case of the protection of the international environment, non-binding international legal instruments have played an important role. This is because the adoption of legal instruments to protect, conserve, and manage the environment will create obligations upon states that inevitably will impact upon their sovereignty. The adoptions of resolutions, recommendations, or declarations concerning the environment which do not have legal effect are more acceptable to many states because they do not have the impact of immediately imposing legal obligations. Rather they tend to set goals and aims towards which the international community may aspire.

The growth of non-binding international instruments has primarily been a consequence of the United Nations system. Many intergovernmental conferences are convened every year to address environmental issues and issues linking environment and development. Many adopt declarations, statements, or other non-binding acts, which may contribute to the development of international environmental law even if they are not binding as treaties. The most important international conferences have been the 1972 Stockholm Conference, the 1992 UNCED, and the 2002 Johannesburg World Summit. Each adopted non-binding acts, of which the Stockholm Declaration, the Rio Declaration, Agenda 21, and the Johannesburg Declaration include important elements which now reflect, or are contributing to the field of international environment.

**Stockholm Declaration on Human Environment**

The Stockholm Declaration is the product of the first major international conference on environment and its relationship with humans held under the auspices of the United Nations in 1972 at Stockholm. The Conference was attended by 114 States and a large number of international institutions and non-governmental observers. The Conference adopted a Declaration containing 26 Principles which are designed to ‘inspire and guide the peoples of the world in the preservation and enhancement of the human environment.’ The 26 Principles reflected a compromise between those states which believed it should stimulate public awareness of, and concern over, environmental issues, and those states who wanted the Declaration to provide specific guidelines for future governmental and intergovernmental action.

Several different groups of principles are contained within the Declaration. Two Principles proclaim rights (Principle 1 and 21), four deal with conservation of resources (Principles 2-5), two deal with pollution (Principles 6 and 7), eight address
development issues (Principles 8-15), nine address specific non-legal topics (Principles 16, 20, 23 and 26, etc.), and one considers state responsibility.\textsuperscript{18}

From a legal perspective, the most relevant provisions are Principles 21, 22, 23, and 24. Principle 21 reaffirms the responsibility of states to ensure that activities conducted within their national boundaries which have transboundary implications are controlled by them. Principle 22 refers to the need for states to develop further international law principles regarding liability and compensation for pollution victims. It requires state to cooperate in developing international environmental law. Principle 23 has a limited role for international regulation and suggests that certain standards would have to be determined nationally on the basis of the value systems applying in each country and their social cause, and in accordance with the need for different environmental standards in different countries. Principle 24 simply calls for international organizations to play a coordinated, efficient, and dynamic role.

The Stockholm Declaration is not a legally binding document but has an important impact on international environmental law. It has acted as a catalyst for the development of further measures in international law protecting the environment.

\textit{The World Conservation Strategy}

The World Conservation Strategy (WCS) was prepared in 1980 by the International Union for Conservation of Nature (IUCN), UNEP, and the World Wide Fund for Nature (WWF), UNESCO, and FAO. The strategy is a plan of action that was presented to Government and Public bodies around the world. It emphasizes three objectives stressing the inter dependence of conservation and development:

- Essential ecological processes and life support systems must be maintained
- Genetic diversity must be preserved
- Any use of species or eco systems must be sustainable

The WCS emphasizes the need for a cross-sectoral approach to environmental protection. After the publication of WCS, many countries produced national conservation strategies based on it. These strategies in turn simulated policies and plans as well as legislative enactment on environmental protection in a wide range of countries.

\textit{World Charter for Nature}

Ten years after the Stockholm conference, the UN General Assembly adopted the World Charter for Nature, which set forth principles of conservation by which all human conduct affecting nature is to be guided and judged. The World Charter for Nature, which was initiated by IUCN, is a further example of a non binding international instrument of broad application. It consists of a preamble and 24 articles divided into three sections: ‘General Principles’, ‘Functions’, and ‘Implementation’. The Charter emphasizes the protection of nature as an end in itself. It adopts the principle that every form of life is unique and should be respected irrespective of its\textsuperscript{18} UNEP Environmental Law Training Manual, Chapter 2, p. 27.
value to humankind. It also calls for an understanding of our dependence on natural resources and the need to control our exploitation of them.

The ‘General Principles’ of the Charter concentrate on areas like respecting nature and its essential processes; not compromising genetic viability and to this end, safeguarding habitats; giving special protection to unique areas; protecting nature against warfare and other hostile activities. These General Principles are further developed and applied to specific areas such as decision making processes, planning, etc. in the ‘Functions’ of the Charter. The Charter also recommends incorporation of these principles in the law and practices of each state, and also into the practices of intergovernmental and non-governmental organizations.

**Caring for the Earth : Strategy for Sustainable Living**

In 1991, IUCN, UNEP, and WWF again came out with a strategy with two main aims:

- Securing a commitment to sustainable living which was basically a follow up of World Conservation Strategy
- Translating its principles into practice

This strategy concentrates on various areas relating to the environment like energy, human settlements, forest lands, fresh waters, farm and range lands, oceans and coastal areas, etc. The strategy includes a commitment to national and international law as essential tools for achieving sustainability by the establishment of standards of social behaviour and the establishment of permanent policies. The strategy seeks the development of international law by strengthening existing international agreements, concluding new international agreements to achieve global sustainability, and preparing and adopting a Universal Declaration and Covenant on Sustainability.

**Rio Declaration**

The Rio Declaration is an outcome of the meeting held in 1992, i.e. the UN Conference on Environment and Development (UNCED). It contains 27 Principles to guide activities in relation to the environment of nations and individuals. The Rio Declaration represents a series of compromises between developed and developing countries and a balance between the objectives of environmental protection and economic development. The Declaration provides a benchmark to measure future developments and provides a basis for defining sustainable development and its application. It is an attempt to achieve an acceptable balance between environment and development. Apart from the concept of sustainable development, the Rio Declaration also took note of the relationship between environmental protection and free trade obligations, the development of national and international law regarding liability and compensation for the victims of pollution and other environmental damage, the need to eradicate poverty and decrease disparities in standards of living, and the reduction and elimination of unsustainable patterns of production and consumption. The Declaration supports the full participation of women, youth, and indigenous people and their communities and recognizes that war is inherently destructive of sustainable development, etc.
Agenda 21

Adopted at the 1992 UNCED, Agenda 21 is another important non-binding instrument and action plan for sustainable development. It provides mechanisms in the form of policies, plans, programme, and guidelines for national governments to implement the principles contained in the Rio Declaration. Agenda 21 comprises 40 chapters focusing on major issues like poverty, sustainable agriculture, desertification, land degradation, hazardous wastes, atmosphere, fresh water, toxic chemicals, biological diversity, etc. These various chapters are categorized under four sections:

- Social and Economic Dimensions
- Conservation and Management of Resources for Development
- Strengthening the Role of Major Groups
- Means of Implementation

Under Agenda 21, provisions were adopted for decision making on natural resources management to be decentralized to the community level, giving rural populations and indigenous peoples land titles or other land rights and expanding services such as credit and agricultural extension for rural communities. The chapter on major groups calls on governments to adopt national strategies for eliminating the obstacles to women’s full participation in sustainable development by the year 2000.

The Forest Principles

Along with other non-binding instruments at the UNCED, the Forest Principles were also adopted. They are described as a non-legally binding authoritative statement of principles for a global consensus on the management, conservation, and sustainable development of all types of forests both natural and planted, in all geographical regions and climatic zones. They are designed to encourage governments to promote and provide for community participation in development, implementation, and planning of national forests policies and urge that all aspects of environmental protection and social and economic development relating to forests should be integrated.

Malmo Declaration

On 1 June 2000, the first meeting of the Global Ministerial Environment Forum adopted an action-oriented Malmo Declaration that helped in setting up the environmental agenda for the 21st century. The Declaration made important references to many topical environmental issues. For example, it recognized the importance of environmental compliance, enforcement, and liability. The preamble of the Declaration reaffirms the Southern assertion of common but differentiated responsibilities of member states. It emphasizes the need for strengthened international co-operation, while noting that commitments are meaningless if countries do not make sincere efforts to meet them. It also acknowledges the private sector’s significant role as a ‘global actor’ and at the same time, calls for increased government ‘institutional and regulatory capacities’ in interactions with the private sector. It also calls upon the private sector to commit to the polluter pays principle and
the precautionary principle and takes note of the role of civil society groups in increasing transparency and raising public awareness.

**Johannesburg Declaration**

On 10 December 2002, the General Assembly of the United Nations endorsed the Johannesburg Declaration on Sustainable Development and the Johannesburg Plan of Implementation, both of which were results of the World Summit on Sustainable Development.

The Declaration reaffirms support for the principles of sustainable development, including those set out in Agenda 21 and declares that no effort will be spared ‘to promote democracy and strengthen the rule of law’. The Johannesburg Summit did not include the same kind of declarations like in Stockholm or Rio; rather it focused on implementing those steps, especially Agenda 21. The Declaration proposes the need for a new ethics in all our activities to protect and conserve our common environment. The Summit also recognized that broad participation and inclusiveness are keys to the success of sustainable development. All sectors of society have a role to play in building a future in which global resources are protected and prosperity and health are within reach of all of the world’s citizens. Therefore, in addition to governments, there was active participation at the Summit by representatives from business and industry, children and youth, farmers, indigenous people, local authorities, non-governmental organizations, scientific and technological communities, women, workers and trade unions. These represent the Major Groups identified in Agenda 21. The Declaration focused on all aspects of sustainable development like water, energy, governance, capacity building, desertification, agriculture, etc.
Table-1.1

Development of International Environmental Law

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>1972</td>
<td>UN Conference on Human Environment (Stockholm) Establishment of UNEP</td>
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<tr>
<td>1978</td>
<td>UNEP Draft Principles</td>
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<tr>
<td>1980</td>
<td>World Conservation Strategy</td>
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<tr>
<td>1982</td>
<td>World Charter for Nature</td>
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<tr>
<td>1983</td>
<td>World Commission on Environment and Development (Brundtland Commission) set up</td>
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<tr>
<td>1987</td>
<td>Brundtland Report, ‘Our Common Future’</td>
</tr>
<tr>
<td>1991</td>
<td>Caring for the Earth: Strategy for Sustainable Living</td>
</tr>
<tr>
<td>1992</td>
<td>UN Conference on Environment and Development: ‘Earth Summit’ UN Commission on Sustainable Development (CSD) established adoption of Rio Declaration and Agenda 21</td>
</tr>
<tr>
<td>1993</td>
<td>Revised Montevideo Programme–II</td>
</tr>
<tr>
<td>1993-1997</td>
<td>UN CSD First Five-Year Plan</td>
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<tr>
<td>1997</td>
<td>Rio Summit +5 Review, New York/ Nairobi Declaration</td>
</tr>
<tr>
<td>2000</td>
<td>Malmo Declaration</td>
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<tr>
<td>2001</td>
<td>Montevideo Programme–III</td>
</tr>
<tr>
<td>2002</td>
<td>World Summit on Sustainable Development (WSSD) Johannesburg Declaration and Plan of Implementation</td>
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</tbody>
</table>
1.9 Enforcement and Compliance of International Environmental Law by India

Over the years, together with a spreading of environmental consciousness, there has been a change in the traditionally-held perception that there is a trade-off between environmental quality and economic growth as people have come to believe that the two are necessarily complementary. The current focus on environment is not new; environmental considerations have been an integral part of the Indian culture. The need for conservation and sustainable use of natural resources has been expressed in Indian scriptures which are more than 3,000 years old and is reflected in the constitutional, legislative, and policy framework as also in the international commitments of the country.

India has played a major role in the international fora relating to environmental protection. The major challenge for India in implementing the international commitments is to combat poverty and also development on sustainable basis. In June 1972, Mrs. Indira Gandhi, the then Prime Minister of India, emphasized at the first UN-sponsored Conference on Environment that poverty is the worst form of pollution and the most urgent issue facing the international community. Since then, India has been reminding the industrialized world that so long as poverty remains the main stumbling block in its road to development, its efforts to protect the environment and conserve resources would not bear the necessary fruits. For India, as well as for other nations of the South, removal of poverty and environmental protection are two sides of the same coin.

It was only after the UN Conference on the Human Environment at Stockholm in 1972 that a well-developed framework of environmental legislations came into existence. A new authority for environmental protection known as National Council for Environmental Policy and Planning within the Department of Science and Technology was set up in 1972. This Council later evolved into a full-fledged Ministry of Environment and Forests (MoEF) in 1985, which today is the apex body of in the country for regulating and ensuring environmental protection. MoEF is also the nodal agency for almost all of the multinational agreements on environmental protection. It was only after the Stockholm Conference that the Constitution of India was amended to incorporate the provisions relating to environmental protection.\(^\text{19}\) The Constitution of India calls upon the State ‘to protect and improve the environment and to safeguard the forests and wildlife of the country’.\(^\text{20}\) It also imposes a duty on every citizen ‘to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures’\(^\text{21}\). The constitutional commitment was the major step taken by any nation on Earth as India became the first country to change its constitution to protect its environment.

Since the 1970s, an extensive network of environmental legislation has grown in the country. The Environment (Protection) Act (EPA), 1986, is the umbrella legislation dealing with the protection of environment in India. In addition there are specific laws

\(^{19}\) Vide 42nd Amendment.
\(^{20}\) Article 48A; The Constitution of India.
\(^{21}\) Article 51A (g).
on sectoral bases. A policy framework has also been developed to complement the legislative provisions. The Policy Statement for Abatement of Pollution and the National Conservation Strategy and Policy Statement on Environment and Development were brought out by the MoEF in 1992 to develop and promote initiatives for the protection and improvement of the environment. It was only after the Rio Conference in 1992 that the Environmental Action Programme (EAP) was formulated in 1993 with the objective of improving services and integrating environmental considerations with development programme. Agenda 21 which is an outcome of the Rio Conference was implemented in India at a much larger scale. India has been very active in implementing all the objectives of Agenda 21 with the active involvement of all stakeholders like the government, international organizations, business, non-governmental organizations, and citizen groups. Since the Rio Conference, extensive efforts have been made by governments and international organizations to integrate environmental, economic, and social objectives into decision-making through new policies and strategies for sustainable development or by adapting existing policies and plans. As a nation deeply committed to enhancing the quality of life of its people and actively involved with the international coalition towards sustainable development, the Summit provided India an opportunity to recommit itself to the developmental principles that have long guided the nation. These principles are embedded in the planning process of the country and therefore the need for a distinct national strategy for sustainable development was not felt.

Apart from developing policy and legislative framework in consonance to sustainability, India has designed appropriate models for sustainable development in keeping with national priorities. The Indian government has established sustained partnerships with the people by transferring the management of crucial sectors of the economy to village councils and thus empowering them to manage their own resources and achieve sustainable livelihoods. These initiatives include joint forest management committees, watershed development committees, and participatory irrigation management committees. India also played a major role in implementing the Millennium Development Goals adopted at the WSSD in Johannesburg in 2002.

Sustainability concerns have become an intrinsic component of the planning process. The Ninth Five-Year Plan (1997–2002) explicitly recognized the synergy between environment, health, and development and identified as one of its core objectives the need for ensuring environmental sustainability of the development process through social mobilization and participation of people at all levels. Even in the Tenth Five-Year Plan (2002–2007) the reconciliation of population growth and economic growth with environmental conservation is perceived as one of the main objectives.

During the past decade, India has ratified many of the international conventions related to environment protection and has taken a number of initiatives to implement them at the domestic level.

Although India has been very active in all the international forums relating to environmental protection and has signed almost all the multilateral agreements

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22 For detailed discussion, refer to individual chapters.
23 Annual Report 2002–3, MoEF.
24 Discussed in more detail in individual chapters.
relating to the environment except a very few, still a lot needs to be done at the domestic level for their implementation. Moreover the North-South divide on some of the major issues pertaining to the environment plays a very important role in all these environmental negotiations. The real challenge before India is how to preserve its environment, meet the basic needs of its growing population on an overburdened land, fulfill the necessary energy requirements of the people, and yet leave a legacy for future generations so that they may also enjoy the bounty of nature which the present generation is recklessly exploiting.

1.10 Conclusion

Since the United Nations Stockholm Conference on the Human Environment, international environmental law has seen extraordinary changes in the last three decades. In 1972, there were only about three dozen multilateral treaties concerned with environment. Today there are more than 900 legal instruments fully concerned with environmental protection. The agreements have expanded in scope. The rules of international law have become complex and technical as environmental considerations are no longer addressed in isolation. They are considered with relevance to other fields such as economics, science, social science, and other social fields. Recently, after the World Summit on Sustainable Development in 2002, international environmental law has emerged as a tool which addresses the techniques of implementation which are practical, effective, and acceptable to most of the members of the international community. This approach recognizes international environmental law as multi-disciplinary and based on natural science format and a philosophical premise that include considerations of both the effect of our population and consumption patterns, and role of humans in the global ecosystem.

The new model is a network of states, intergovernmental organizations, non-governmental organizations (national and international), transnational corporations, and industry associations that are intricately connected through binding and non-binding or incompletely binding international legal instruments and associated institutions.

<table>
<thead>
<tr>
<th>Table 1.2 Status of India vis-à-vis International Environmental Conventions</th>
</tr>
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<tbody>
<tr>
<td><strong>Convention</strong></td>
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<tr>
<td>Convention Relative to the Preservation of Fauna and Flora in their Natural State (1933)</td>
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<tr>
<td>International Plant Protection Convention (1951)</td>
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<tr>
<td>Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar, 1971)</td>
</tr>
<tr>
<td>Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)</td>
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<tr>
<td>Convention</td>
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<td>---------------------------------------------------------------------------</td>
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<tr>
<td>Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 1980)</td>
</tr>
<tr>
<td>Convention on the Prior Informed Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC or Rotterdam, 1990)</td>
</tr>
</tbody>
</table>

Source: Compiled from UN Treaty Register and websites on multilateral environmental agreements: [http://www.ecolex.org](http://www.ecolex.org) and [http://sedac.ciesin.org/entri](http://sedac.ciesin.org/entri)
II

The Convention on Biological Diversity

2.1 Introduction

The legally binding Convention on Biological Diversity (CBD) is the first major step taken by humankind for the conservation of all biological resources, their sustainable use, and equitable (also fair) sharing of benefits arising from such use. Facilitated by the UNEP, it recognizes for the first time that states have sovereign rights over their biological resources, linked to corresponding responsibility of conserving their biological diversity, and on determining access to them based on prior informed consent and mutually agreed terms. The emphasis on national sovereignty is thus balanced by the duties arising from the fact that conservation is a common concern of humankind.

On the strategic planning side, the Convention places obligations on the Contracting Parties to develop national strategies and plans to integrate the conservation and sustainable use of biodiversity into relevant sectoral and cross-sectoral plans, programme, and policies as well as into national decision-making.

The agreed-upon Text of the CBD was finalized in 1992 after several rounds of intense negotiations and India played a key role in this historic development. Signed by 150 government leaders at the 1992 Rio Earth Summit, the Convention is dedicated to promoting conservation with a human face and sustainable development. Conceived as a practical tool for translating the principles of Agenda 21 into reality, the Convention recognizes that the focus on biological diversity is strongly linked to sustainable development and a healthy environment. The Convention came into force on 29 December 1993 and it has been ratified by 188 Contracting Parties (the USA is not yet a Contracting Party). India signed the CBD on 5 June 1992 and ratified it on 18 February 1994.

2.2 Biological Diversity

Biological diversity, or biodiversity in short, denotes the variety of life on Earth that inhabit the land, marine, and other aquatic ecosystems and also the ecological complexes of which they are part. In a way, it refers to the variety of life on Earth and the natural patterns it forms. The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes and,
more recently, by the influence of humans. It forms the web of life of which we are an integral part and upon which we fully depend.\textsuperscript{31}

This diversity is often understood in terms of the wide variety of plants, animals, and microorganisms. So far, about 1.75 million species have been identified, mostly small creatures such as insects. Scientists reckon that there may be about 12 million species on Earth, though estimates range from 3 to 100 million. Biodiversity also includes genetic differences within each species, for example, between varieties of crops and breeds of livestock. Chromosomes, genes, and DNA—the building blocks of life—determine the uniqueness of each individual and each species. Yet another aspect of biodiversity is the variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes. In each ecosystem, living creatures, including human beings, form a community, all species interacting with one another and with the air, water, and soil around them. It is the combination of life forms and their interactions with each other and with the rest of the environment that has made Earth a unique habitable place for humans.

Species have been disappearing at 50–100 times the natural rate, and this is predicted to rise further. Based on current trends, an estimated 34,000 plant and 5,200 animal species, including one in eight of the world’s bird species, face extinction. For thousands of years we have been developing a vast array of domesticated plants and animals important for food. But this treasure house is shrinking as modern commercial agriculture focuses on relatively few crop varieties. And, about 30 per cent of breeds of the main farm animal species are currently at high risk of extinction. While the loss of individual species catches our attention, it is the fragmentation, degradation, and outright loss of forests, wetlands, coral reefs, and other ecosystems that poses the gravest threat to biological diversity. Forests are home to most of the known terrestrial biodiversity but about 45 per cent of the Earth’s original forests are gone, cleared mostly during the past century. Despite some widespread afforestation campaigns, the world’s total forests are still shrinking rapidly, particularly in the tropics. Up to 10 per cent of coral reefs, among the richest ecosystems, have been destroyed. The recent Tsunami calamity took a heavy toll of corals in the Andaman and Nicobar Islands. Coastal mangroves, a vital nursery habitat for countless species, are also highly vulnerable.

\subsection*{2.3 \textbf{The Convention on Biological Diversity}}

\textit{Main Provisions}

The CBD is legally binding treaty and universal in scope. While its overall goal is the conservation and sustainable use of biodiversity for the benefit of present and future generations, its three objectives (conservation, sustainable use, equitable and fair sharing of benefits) are clearly stated under Article 1 and these are linked inseparably. It is based on the acknowledged principle

\textsuperscript{31} Art. 23.
that the nation states have the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction do not cause damage to the environment of other states (Article 3).

**Decision Making Process**

The Conference of the Parties to this Convention (CBD-COP)\(^\text{32}\) is empowered by consensus to agree upon and adopt rules of procedure for itself and for any subsidiary body that it may establish, as well as financial rules governing the funding of the Secretariat. Developing consensus on all important matters through painstaking negotiations is the key to take forward the CBD process.

<table>
<thead>
<tr>
<th>CBD–COP Meetings</th>
<th>Themes</th>
</tr>
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<tbody>
<tr>
<td>First Meeting &lt;br&gt;Nassau, Bahamas: 28 Nov - 9 December 1994</td>
<td>Rules of procedure, Guidance to the financial mechanism; Medium-term programme of work.</td>
</tr>
<tr>
<td>Second Meeting &lt;br&gt;Jakarta, Indonesia: 6 - 17 November 1995</td>
<td>Marine and coastal biological diversity; Access to genetic resources; Clearing house mechanism; Biosafety.</td>
</tr>
<tr>
<td>Third Meeting &lt;br&gt;Buenos Aires, Argentina: 4 - 15 November 1996</td>
<td>Agricultural biodiversity; Financial resources and mechanism; Identification, monitoring, and assessment; Intellectual property rights.</td>
</tr>
<tr>
<td>Fourth Meeting &lt;br&gt;Bratislava, Slovaki: 4 - 15 May 1998</td>
<td>Inland water ecosystems; Review of the operations of the Convention; Article 8 (j) and related issues (traditional knowledge); Benefit sharing.</td>
</tr>
<tr>
<td>Fifth Meeting &lt;br&gt;Nairobi, Kenya: 15 - 26 May 2000</td>
<td>Dryland, mediterranean, arid, semi-arid, grassland and savannah ecosystems; Sustainable use, including tourism; Access to genetic resources; Forest ecosystems; Alien species;</td>
</tr>
</tbody>
</table>

\(^{32}\) WWF-India, 1998.
Sixth Meeting
The Hague, Netherlands: 7 - 19 April 2002

Seventh Meeting
Kuala Lumpur, Malaysia: 9 - 20 February 2004
Mountain ecosystems; Protected areas; Transfer of technology and technology cooperation.

Eighth Meeting
Curitiba, Brazil: 20 - 31 March 2006
Island biodiversity; Biodiversity of dry and sub-humid lands; Access and benefit sharing; Global taxonomy initiative; Article 8 (j); Review of implementation.

The institutional arrangements to oversee implementation of the Convention comprise the Conference of Parties (COP), which keeps the implementation of the Convention under review, a subsidiary body on scientific, technical, and technological advice (SBSTTA) to provide advice to the Conference of Parties; other subsidiary bodies to be established; and a secretariat. The Convention provides for settlement of disputes concerning the interpretation or application of the Convention according to traditional means, including negotiation, the use of good offices, mediation, and submission to the international Court of Justice or arbitration and conciliation. The CBD-COP has held 8 ordinary meeting so far taking up some themes each time for in-depth consideration in addition to other matters (See Box 2.1).

The Convention Text

The agreed text of CBD, negotiated under the auspices of the United Nations Environment Programme was adopted at Nairobi on 22 May 1992, celebrated every year as the International Day of Biodiversity.

Recognition of the sovereign rights of nation-states over their natural bioresources by CBD is a landmark development. This is in marked contrast to the concept adopted earlier by the International Undertaking on PGR, facilitated by the FAO, that natural genetic resources are the common heritage of humankind. Its provision under Article 8 (j) urges the Parties to respect, preserve, and maintain knowledge, innovations, and practices of indigenous and local communities and to encourage fair and equitable sharing of benefits arising from application of such knowledge, innovations, and practices. Recognizing that patent and other intellectual property rights may have an influence on the implementation of the provisions of this Convention, Article 16 urges the Parties to cooperate in order to ensure that such rights are supportive of and do not run counter to its stated objectives.
WWF-India had the Text of the Convention translated into nine major Indian languages, with financial support from WWF-DANIDA project, in a major effort towards public education and creating awareness on this subject.  

### Major Provisions under CBD

#### Integrating Biodiversity Conservation in National Decision-Making

Article 6 focuses attention on general measures for conservation and sustainable use urging Contracting Parties to develop national strategies, plans, or programme for the conservation and sustainable use of biodiversity. It also calls for integration, as far as possible, the conservation and sustainable use concerns into relevant sectoral and cross-sectoral plans, programme, and policies. Emphasis was also laid on sustainable use of components of biodiversity and identifying and also monitoring those components that are considered important for conservation and sustainable use. This subject served as the main theme for preparing the first national reports, submitted by the Contracting Parties in 1998 on the status of implementation of the Convention.

CBD obliges the parties to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements. Further, the parties are required to support local communities to develop and implement remedial action in degraded areas where biological diversity has been reduced, and encourage cooperation between the governmental authorities and private sector for the purpose of sustainable use. Obligations under Articles 6(b) and 10 of CBD demand integration of concerns for conservation and sustainable use of biodiversity in decision-making at the national level.

#### Knowledge, Innovations, and Practices of Indigenous and Local Communities

CBD urges Contracting Parties to respect, preserve, and maintain knowledge, innovations, and practices of indigenous and local communities and encourage the equitable sharing of the benefits arising from the use of such knowledge, innovations, and practices. Articles 1 and 8 (j) specifically emphasize the need for protection of biodiversity and also biodiversity-linked traditional knowledge.

The principle of reciprocity has been invoked linking the access to genetic resources with the transfer of relevant technology. The objectives of the CBD, thus, delineate two sets of rights in respect of genetic resources. The first set of rights are ones that can be exercised over the genetic resources per se, while the second set of rights relate to the technologies which are based on genetic material. While the former concerns the countries that are the natural repositories of genetic resources, the latter largely concerns the corporate

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33 Art. 10.
34 Art. 8 (j).
35 Art. 16 and 19.
36 Art. 8 and 9.
interests that are engaged in developing newer biotechnology tools, techniques, and products.

**In-Situ and Ex-Situ Conservation**\(^{37}\)

The CBD also includes a number of obligations relating to *in situ* and *ex situ* conservation of biological diversity. *In-situ* conservation, which has a key role in the Convention, is the conservation of ecosystems and natural habitats while enabling viable populations of species in their natural surroundings. It also promotes continued evolutionary development of domesticated livestock and cultivated species in the surroundings where they have developed their distinctive properties. Contracting Parties are required to meet as far as possible and appropriate, agreed upon actions for this purpose including the establishment of a system of protected areas; the development of guidelines for the selection, establishment, and management of protected areas; the regulation and management of biological resources; control or eradication of alien species which threaten ecosystems, habitats, or species; preservation and maintenance of indigenous and local communities’ knowledge, innovations, and practices relevant to conservation; and sustainable use of biodiversity.

The Convention also envisions ex situ conservation as a complement to in situ approaches. Ex-situ conservation is the conservation of components of biological diversity outside their natural habitats. Under Article 9 (a), parties are required to adopt measures for ex situ conservation of components of biodiversity preferably in the country of origin. Article 9 (b) obliges parties to establish and maintain facilities for the ex situ conservation of and research into, plants, animals and micro-organisms, preferably in the country of origin. This requires the adoption of measures for the recovery and rehabilitation of threatened species, and for their reintroduction into their natural habitats under appropriate conditions. Article 9 (d) provides for the regulation and management of the collection of biological resources from natural habitats for ex situ conservation purposes ensuring that such collection does not threaten ecosystems and the in situ population of species.

The phrasing of Article 9 (a) and (b) of the CBD implies that each party should have its own ex situ conservation facilities. Article 9 (a) and (b) also seem to be aimed at ensuring a balance between action in developed countries and action in developing countries, since historically, most ex situ conservation has been in developed countries, with plants and animals being stored away from their country of origin. Ex situ methods may ensure the availability of a number of gene sources, but there are a number of significant risks and problems with ex situ maintenance, including high costs, a lack of funding, manipulation and the threat of regional conflict. Even if ex situ sources were not vulnerable to financial, political, and natural disasters, evolutionary growth is not possible without in situ preservation. It is therefore best to have both in situ and ex situ conservation measures as required by the Convention, and as permitted by the financial capability of each party.\(^{38}\) Over


\(^{38}\) Art. 9.
4 million accessions are believed to be available in nearly 600 gene banks around the world.

Access to Genetic Resources and Transfer of Technology

According to the framework provided by the CBD, the rights over the genetic resources in any given country have to be established through an iterative process. In the first instance, the CBD provides that the nation states would have sovereign rights over their own biological resources. The Preamble that defines the rights of states also emphasizes that states would have to bear the responsibility for the conservation and sustainable use of their biological resources.

In the exercise of these rights, governments can determine physical access to the genetic material that lie in areas within their jurisdiction by enacting suitable legislation. This right to fully determine access to genetic material in its territory provides a government an opportunity to ensure securing of benefits from any commercial exploitation of its genetic material. The Convention also states that access to genetic resources, wherever granted, shall take place on terms that are mutually agreed to by the providers and receivers of the genetic material, subject to the prior informed consent of the parties providing such resources.\textsuperscript{39}

The Convention also provides that every state shall make efforts to develop and carry out scientific research based on genetic resources provided by other contracting parties with the full participation of, and to the extent possible, within the countries supplying the genetic material. Through this provision, the CBD aims at ensuring that the developing countries are able to participate in the process of technology development where the technologies utilize their genetic resources.

Another major issue with which the Convention seeks to deal is the question of access to and transfer of technology including biotechnology\textsuperscript{40}. The parties undertake to provide access to and facilitate the transfer to other parties of technologies that are relevant to the attainment of conservation and sustainable use of biological diversity. Special provisions are made for developing countries, which are to be provided with access to such technology on fair and favourable terms. The term ‘fair and most favourable’ is significant since the major impediment in developing countries’ access to technology has been the unaffordable terms on which the multinational corporations agree to license their technologies. In return for access to genetic resources, the Convention provides that developing countries are to be provided with access to and transfer of technology which makes use of those resources on mutually agreed terms. It also provides that the parties are to take legislative, administrative, and policy measures so that the private sector facilitates access to joint development and transfer of technology is for the benefit of governmental institutions and the private sector of developing countries. There is also a

\textsuperscript{39} Art. 15.

\textsuperscript{40} Art. 16.
provision for the equitable sharing of benefits arising out of the use of biotechnologies between the countries developing the technologies and those that make the genetic resources available for the development of such technologies.

**Technical and Scientific Co-operation**

There are a number of provisions in the CBD that deal with implementation through international cooperation. As such, provisions are made for international cooperation in the field of research and training particularly taking note of the needs of developing countries and public education and awareness. As a means of further enhancing cooperation between states, there are also provisions dealing with the exchange of information relevant to conservation and sustainable use of biological diversity and improved international technical and scientific cooperation.

**Financial Resources and Mechanism**

Each Contracting party undertakes to provide, in accordance with its capabilities, financial support, and incentives in respect of those national activities that are intended to achieve the objectives of the CBD. Need for a permanent funding mechanism to help implementation of the convention was realized to distinguish CBD from other biodiversity related conventions. Articles 20 and 21 largely give the Conference of Parties the control over financial mechanisms. Article 39, which provides for interim financial arrangements, designates GEF to operate the financial mechanism. GEF was created to assist countries in addressing the issues of global warming, pollution of international waters, biodiversity loss, and depletion of ozone layer. It is operated jointly by the World Bank, United Nations Development Programme (UNDP) and United Nations Environment Programme (UNEP).

**Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)**

Article 25 provides for the establishment of a subsidiary body for provision of scientific, technical, and technological advice for the Conference of Parties. A multidisciplinary body, SBSTTA, has accordingly been established with the Secretariat in Montreal. Its advice on selected topics are available in reports of its eleven meetings held so far. In addition, the following Working Groups are also assisting the COP in negotiations on topics assigned to them:

- Working Group on Art. 8 (j).
- Working Groups on Access and Benefit Sharing.

41 Art. 17.
42 Art. 20 and 21.
43 Art. 22.
44 Art. 25.
The eleventh meeting of SBSTTA, held in Montreal in November–December 2005, noted that the Millennium Ecosystem Assessment had indicated that the success of biodiversity-conservation measures depended heavily on the ability to assess, document, and communicate the social and economic value of biodiversity to the public and to government agencies. Synergies were also important at the international, regional, and national levels and the joint meeting of the scientific bodies of the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change assumed particular significance in this context. The discussion agenda included an in-depth review of the progress of implementation, strategic issues for supporting the Strategic Plan, contributions to the achievement of the Millennium Development Goals, and integration of biodiversity in important socio-economic sectors.

2.4 Important Decisions/Issues under Discussion

Relationship with Other International Conventions

The relationship between CBD and other existing international agreements or conventions has been specified in the convention. CBD does not affect the rights and obligations of any contracting party from any other agreement unless such rights and obligations would cause a serious damage to biodiversity.

Since species and their habitats have inter-dependent and inseparable linkages with each other and also with the climate and environment, implementing all international agreements dealing with all of them in a coherent and mutually supportive manner is essential. This task presents a real challenge to the concerned policy makers and implementing agencies. This also demands effective coordination, monitoring, and reviewing mechanism in place and calls for developing a common format to meet the national reporting obligations to all the biodiversity-related Conventions. The CBD Secretariat provides updated information regarding collaboration with other biodiversity-related Conventions under its website.

Implementing the CBD with a human face recognizes that conserving biological diversity is much more than the caring for plants, animals, and micro organisms and their ecosystems. It is also about people and their needs for food security, health care, fresh air and water, shelter, and a clean and healthy environment in which to live. Conservation of biological diversity is also inseparably linked to its sustainable use and equitable benefit-sharing. It is now widely appreciated that these activities help in poverty alleviation and sustainable development and support the principles of Agenda 21. CBD has already launched partnerships with other biodiversity related treaties but reinforcing these partnerships and capturing potential synergies remains an uphill task. The CBD-COP8 meeting asked the Secretary to renew the application for accreditation of the CBD as an observer at the Council on

45 Art. 22.
Trade-related Aspects of Intellectual Property Rights and explore closer working opportunities with the WTO. As a follow up, Heads of the WTO and the Secretariat of CBD met for the first time on 29 May 2006 in Geneva to discuss how the international trade regime and the CBD could be mutually supportive and how the two organizations could work together to fulfill their respective mandates and achieve their common goal of sustainable development. Presently, CBD has an observer status on WTO Committee on Trade and Environment while its applications for an observer status in the Special (negotiating) Session of the WTO Committee as well as the TRIPs Council are still pending.

**Thematic Programme**\(^\text{46}\): The Conference of Parties to CBD (COP) has addressed seven thematic work programmes. Each of them establishes a vision for, and basic principles to guide, future work; sets out key issues for consideration; identifies potential outputs; and suggests a timetable and means for achieving these outputs. Periodic review of the implementation of the work programme by the COP and SBSTTA is provided. It is envisaged that implementation of the work programme will involve contributions from Parties, the Secretariat, relevant intergovernmental organizations, institutions and other agencies. The thematic work programmes are:

- Agricultural Biodiversity
- Dry and Sub-humid Lands Biodiversity
- Forest Biodiversity
- Inland Waters Biodiversity
- Island Biodiversity
- Marine and Coastal Biodiversity
- Mountain Biodiversity

**Cross-Cutting Issues**\(^\text{47}\): Over and above the thematic programme, there are 17 other items on the COP’s agenda addressing key cross-cutting issues of relevance to all thematic areas. They have an important role to play in bringing cohesion to the work of the Convention as they provide the substantive bridges or links between the thematic programmes. The items are:

- Access to Genetic Resources and Benefit-sharing
- Alien Species
- Traditional Knowledge, Innovations and Practices
- Biological Diversity and Tourism
- Climate Change and Biological Diversity
- Economics, Trade and Incentive Measures
- Ecosystem Approach
- Global Strategy for Plant Conservation
- 2010 Biodiversity Target
- Global Taxonomy Initiative
- Impact Assessment

\(^{46}\) Source: www.biodiv.org

• Indicators
• Liability and Redress - Article 14(2)
• Protected Areas
• Public Education and Awareness
• Sustainable Use of Biodiversity
• Technology Transfer and Cooperation

2010 Biodiversity Target

The Conference of the Parties, in decision VII/30, Annex II, decided to establish a provisional framework for goals and targets in order to clarify the 2010 global target adopted by decision VI/26 with a view to assessing the progress made and promote coherence among the programme of work of the Convention. Parties and Governments were invited to develop their own targets with this flexible framework (See Table 2.2).

Table 2.2
2010 Biodiversity Targets

• Conservation of Biological Diversity of Ecosystems, Habitats and Biomes
• Conservation of Species Diversity
• Conservation of Genetic Diversity
• Sustainable Use and Consumption
• Facing Threats from Invasive Alien Species
• Addressing Climate Change and Pollution
• Equitable and Fair Sharing of Benefits

In decision VI/26, the Conference of the Parties to CBD adopted the Strategic Plan for the Convention on Biological Diversity. In its mission statement, Parties committed themselves to a more effective and coherent implementation of the three objectives of the Convention, to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national levels as a contribution to poverty alleviation, and to the benefit of all life on Earth. This target was subsequently endorsed by the World Summit on Sustainable Development.

In decision VII/30 the Conference of the Parties adopted a framework to facilitate the assessment of progress towards 2010 and communication of this assessment, to promote coherence among the programme of work of the Convention and to provide a flexible framework within which national and regional targets may be set, and indicators identified.

The framework includes seven focal areas. The Conference of the Parties identified indicators for assessing progress towards, and communicating the 2010 target at the global level, and goals and sub-targets for each of the focal areas, as well as a general approach for the integration of goals and sub-targets into the programme of work of the Convention. Parties are invited to establish their own targets and identify indicators, within this flexible framework.

Global Strategy for Plant Conservation

The Conference of the Parties, in decision VI/9, annex, adopted the Global Strategy for Plant Conservation urging the Parties and Governments to

develop their own targets with a flexible framework of adopted 16 targets (See Table 2.3).

**The Ecosystem Approach**

‘Ecosystem’ denotes a dynamic complex of plant, animal, and micro-organism communities and their non-living environment interacting as a functional unit (Article 2 of the Convention). At its second meeting, held in Jakarta (November 1995), COP2 adopted the ecosystem approach as the primary framework for action under the Convention, and subsequently referred to it in the elaboration and implementation of the various thematic and cross-cutting issues and work programme under the Convention (Decision II/8). COP5 also endorsed the description of the ecosystem approach as well as the operational guidance. COP7 meeting in 2004 also agreed that the priority was to be given to facilitating the adoption of the ecosystem approach.

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<tr>
<td><strong>Global Strategy for Plant Conservation</strong></td>
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<td>CBD-COP6, in decision VI/9 annex, adopted the Global Strategy for Plant Conservation urging the Parties and Governments to develop their own targets and work plans with a flexible framework of 16 targets.</td>
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<tr>
<td>• A widely accessible working list of known plant species, as a step towards a complete world flora.</td>
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<td>• A preliminary assessment of the conservation status of all known plant species, at national, regional, and international levels.</td>
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<td>• Development of models with protocols for plant conservation and sustainable use, based on research and practical experience.</td>
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<td>• At least 10 per cent of each of the world’s ecological regions effectively conserved.</td>
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<td>• Protection of 50 per cent of the most important areas for plant diversity assured.</td>
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<td>• At least 30 per cent of production lands managed consistent with the conservation of plant diversity.</td>
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<td>• 60 per cent of the world’s threatened species conserved in-situ.</td>
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<td>• 60 per cent of threatened plant species in accessible ex-situ collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programme.</td>
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<td>• 70 percent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained.</td>
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<td>• Management plans in place for at least 100 major alien species that threaten plants, plant communities, and associated habitats and ecosystems.</td>
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<td>• No species of wild flora endangered by international trade.</td>
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<td>• The importance of plant diversity and the need for its conservation incorporated into communication, education, and public-awareness programme.</td>
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<td>• The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this strategy.</td>
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<td>• Networks for plant conservation activities established or strengthened at national, regional and international levels.</td>
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The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of this approach will help to reach a balance of the three objectives of the Convention. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions, and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems.

**Millennium Ecosystem Assessment (MA):** With the decision CBD/COP/8/15, the COP8 took note of the main findings and key messages of the MA’s Biodiversity Synthesis Report. The meeting further emphasized that the MDGs, the 2010 target, and other internationally agreed targets related to biodiversity, environmental sustainability, and development needed to be pursued in an integrated manner. The COP decided to consider at COP9 the need to review and update targets as part of the process of revising the Strategic Plan beyond 2010 and also to consider the MA findings in the implementation and future review of the CBD’s work programme and cross-cutting issues.

### 2.5 Agricultural Biological Diversity

Decision III/11 (xix) of the Conference of Parties to CBD, taken in 1996, recognized that several issues require further work in the context of the FAO Global System for the Conservation and Utilization of Plant Genetic Resources for Food and agriculture. In particular, the matter of ex situ germplasm collections acquired by international gene banks prior to CBD and the realization of farmers’ rights were referred to FAO for appropriate action. Accordingly, revision of the text of International Understanding on Plant Genetic Resources was undertaken by FAO to harmonize its provisions with those of the CBD. The outcome of these negotiations led to the agreed upon text of the International Treaty on Plant Genetic Resources (ITPGR) that was approved by the FAO Conference in November 2001.

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The International Treaty on Plant Genetic Resources

This Treaty came into force on 29 June 2004 and has 102 Contracting Parties. Its centrepiece is a multilateral system of facilitated access and benefit-sharing that directly supports the work of breeders and farmers. India signed and ratified the Treaty on 10 June 2002.

This Treaty, facilitated by the FAO through its Commission on Genetic Resources for Food and Agriculture, is duly recognized by the CBD as the forum to deal with issues related to agricultural biodiversity. All the Contracting Parties form their Governing Body. After years of negotiations, the Contracting Parties have concluded agreements that will now make it possible to implement the Treaty for the benefit of plant genetic resource donors and users alike. The germplasm material transfer agreement, which governs access and benefit-sharing under the multilateral system based on prior informed consent and mutually agreed terms, is a major benchmark in international cooperation. This agreement will provide users with access to the germplasm of 35 major food crops and 29 important forages.

The first session of the Governing Body of the International Treaty on Plant Genetic Resources was convened from 12–16 June 2006, in Madrid, Spain. Serving as a contract between providers and recipients of PGRFA, the standard MTA is the cornerstone of the ITPGR Multilateral System (MS), laying out the conditions for access to genetic materials in the MS and specifying the modalities and levels of payment for benefit-sharing. Thus, the MTA is not only indispensable to operationalizing the Treaty but it also acts as one of the sources of funding for conservation and sustainable use of PGRFA. However, factoring in the time needed for product development, substantial benefit-sharing revenues can only be expected 7 to 15 years after the MTA enters into force.

An interesting feature of the newly adopted MTA is the possibility for the recipient to choose between two types of payments. The first, originally proposed by Europe, is based on a broad definition of products and requires benefit sharing payments of 1.1% of sales of all PGRFA products that incorporate material from the MS and to which access is restricted by intellectual property rights (such as plant variety protection system). Alternatively, recipients can opt for making payments on all commercial products of a certain Annex I crop, regardless of whether access to these is restricted and whether they incorporate material from the MS. Under this option, recipients will enjoy a discounted payment rate of 0.5%, which seems more attractive to those recipients who will require large amounts of material from the system. The second option will be more likely to generate revenues in the near future, since it will also apply to products that are already on the market, while the first option applies only to new products that will not be ready for commercialization for another 7 to 15 years.

The Nodal Implementing Agency for this Treaty in India is the Union Ministry of Agriculture. The next meeting of the Treaty’s governing body will be held in Rome in 2007.

2.6 Living Modified Organisms (LMO)\(^5\)

The Conference of the Parties to the Convention on Biological Diversity adopted a supplementary agreement to the Convention known as Cartagena Protocol on Biosafety on 29 January 2000. The Biosafety protocol is the first international law to regulate trade on Living Modified Organisms (LMOs) and there are 133 Contracting Parties to the protocol. This reflected a global climate of concern about the safety, health, and ecological risks of LMOs and the wider political and socio-economic implications of corporate-driven

\(^5\) Source: www.biodiv.org
science and technology. The protocol has been negotiated under Article 19 (3) of the CBD.

The Protocol establishes the foundations of international law on the transboundary movement of LMOs. The Precautionary principle has been reaffirmed and operationalized in the decision making procedures in the protocol. This means that in the absence of scientific certainty, Parties should err on the side of caution and ban or restrict the import of the LMOs on account of their potential adverse effects. The main objective is to ensure an adequate level of protection in the field of the safe transfer, handling, and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.

Advance Informed Agreement: The Advance Informed Agreement (AIA) procedure forms the backbone of the Protocol. It regulates the transboundary movement of LMOs. It requires the exporting party to obtain the prior informed consent of the importing party before LMOs can cross national boundaries. The exporting party must first notify the importing Party that it intends to export LMOs to the other party. The obligation to notify thus lies with the exporting party. The AIA procedure applies primarily to the first transboundary movement of LMOs that are intended for intentional introduction into the environment of the party of import. AIA procedure does not apply to LMOs intended for direct use as food, feed, or processing. LMOs in transit (i.e. that are passing through the territory of a third party) and LMOs destined for contained use (defined as specific measures that limit the contact and impact of LMOs on the external environment) are excluded from the AIA procedure.

Table 2.5
The Cartagena Protocol on Biosafety

The Conference of the Parties to the Convention on Biological Diversity adopted a supplementary agreement to the Convention known as the Cartagena Protocol on Biosafety on 29 January 2000. This agreement came into force on 11 September 2003 and has 134 Contracting Parties.

The Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology. It establishes an Advance Informed Agreement (AIA) procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory. The Protocol contains reference to a precautionary approach and reaffirms the precaution language in Principle 15 of the Rio Declaration on Environment and Development.

The Biosafety Clearing-House was established by the Protocol to facilitate the exchange of information on living modified organisms and to assist countries in the implementation of the Protocol.

The home page of the Cartagena Protocol on Biosafety is maintained as part of the Convention on Biological Diversity (website: www.biodiv.org). The Protocol pages contain information on ratification of the Protocol, meeting details and documents, capacity building, Biosafety Clearing House, and highlights of the programme of work of the Conference of the Parties to the Protocol.
**Risk Assessment and Risk Management:** Parties will decide whether or not to accept imports of LMOs on the basis of risk assessment and the Precautionary Principle. The risk assessments are to be undertaken in a scientific manner based on recognized techniques. However, in case of insufficient relevant scientific information and knowledge, a country may decide to apply the precautionary approach and refuse the import of the LMO into its territory. Socio-economic considerations can also be taken into account such as the value of biological diversity to its indigenous and local communities in reaching a decision on import of LMOs.

Implementation of the Protocol is now the key issue and there is an enormous amount of work to be done to ensure that the developing countries may properly benefit from the rules that the Cartagena Protocol on Biosafety establishes for transboundary movements of LMOs. Substantive issues currently under negotiations are:

- Notification and the accuracy of information under Advance Informed Agreement Procedure (AIAP)
- Notification requirements for LMOs-FFP, i.e., LMOs intended for food, feed, or processing (FFP)
- Transboundary Movement of LMOs (not meant for FFP)
- Risk assessment and risk management
- Handling, transport, packaging and identification
- Liability and redress
- Socio-economic considerations
- Public awareness and participation

India signed the Cartagena Protocol on Biosafety on 23 January 2001 and ratified it on 17th January 2003. Nodal Agency for dealing with LMOs in India is the Ministry of Environment and Forests and it has set up an inter-ministerial Genetic Engineering Approval Committee (GEAC) for clearance of LMOs on a case-by-case basis. Release of BT Cotton varieties, developed jointly by Monsanto and Mahyco, has aroused some deep concerns about their performance in some parts of India. Entry of seeds developed through application of Genetic Use Restriction Technologies (GURT) — so called ‘Terminator Seeds’— has already been banned by the Union Ministry of Agriculture, the nodal agency for liaising with FAO. CBD-COP8 meeting, held in Curitiba in March 2006, reaffirmed the COP5 ban on GURT, rejecting case-by-case risk assessments and field testing on GURT. Setting up of a National Biotechnology Regulatory Authority (NBRA) for promotion and regulation of application of biotechnology in agriculture is at an advanced stage.  

The First COP-MOP of the Cartagena Protocol on Biosafety was held in February 2004 in Kuala Lumpur, the second meeting in June 2005 in Montreal, while the third meeting (COP/MOP 3) was held in Curitiba, Brazil.

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in March 2006, preceding the CBD-COP8 meetings. Issues discussed included Biosafety Clearing House, capacity-building, financial mechanism and resources, cooperation agreements, information required in notifications under Articles 1, 8, and 10, liability and redress, socio-economic considerations, public awareness and participation, in addition to other scientific and technical matters.

COP-MOP3 urged Parties to the Protocol and invited other Governments to submit to the Executive Secretary, no later than six months prior to the fifth meeting of COP-MOP, information on experience gained with the use of documentation with a view to further harmonization of a documentation format to fulfil the identification requirements. Measures were required to be taken to ensure that documentation accompanying the LMOs is in compliance with the requirements of the country of import, and clearly states:

(a) In cases where the identity of the living modified organisms is known through means such as identity preservation systems, that the shipment contains living modified organisms that are intended for direct use as food, feed, or for processing;
(b) In cases where the identity of the living modified organisms is not known through means such as identity preservation systems, that the shipment may contain one or more LMOs that are intended for direct use as food, feed, or for processing;
(c) That the LMOs are not intended for intentional introduction into the environment; and
(d) The common, scientific and, where available, commercial names of the LMOs.

Parties to the Protocol and other Governments were also invited to make available to the Biosafety Clearing-House the following information:

(a) The transformation events (and their unique identifier codes) that are commercially produced for each planting cycle in the exporting country;
(b) The geographical area within the exporting country where each transformation event was cultivated; and
(c) The common, scientific and, where available, commercial names of the LMOs.

Emphasis was laid on promoting cooperation in exchanging experiences and strengthening capacity building in the use and development of easy to use, rapid, reliable, and cost-effective sampling and detection techniques for LMOs.
2.7 Implementation of CBD in India\textsuperscript{52}

Nodal Implementing Agency in India: The Union Ministry of Environment and Forests (MoEF) is the nodal agency for implementing the CBD. In fact, it serves as the nodal agency in the country for the United Nations Environment Programme (UNEP), including biodiversity-related Global Conventions like the CBD and Ramsar Convention and for the follow-up of the United Nations Conference on Environment and Development (UNCED). The Ministry is also entrusted with the issues relating to multilateral bodies such as the Commission on Sustainable Development (CSD) and the Global Environment Facility (GEF).

The National Reports: India has been regularly submitting its reports to the CBD Secretariat on the progress of implementation of the decisions taken by successive COP Meetings. The first national report focused on Article 6, the general measures for conservation and sustainable use that urged the Contracting Parties to develop national strategies, plans or programme for the conservation and sustainable use of biological diversity and also integrate the conservation and sustainable use into relevant sectoral and cross-sectoral plans, programme and policies. A comprehensive third National Report was submitted in November 2005 (prior to the COP8 Meeting in Curitiba, Brazil) while the fourth report is to be submitted by 30 March 2009 before the COP9 meeting.

An Overview of the Status and Trends of Conserving Biological Diversity in India

India is one of the 17 mega biodiversity countries. With only 2.4% of the land area, India already accounts for 7-8% of the recorded species of the world. India is equally rich in traditional and indigenous knowledge.

Strategies: India’s strategies for conservation and sustainable utilization of biodiversity in the past have comprised of providing special status and protection to biodiversity rich areas by declaring them as National Parks, Wildlife Sanctuaries, Biosphere Reserves, Ecologically Fragile and Sensitive Areas, off-loading pressure from reserve forests by developing alternative measures of fuel wood and fodder need satisfaction by afforestation of degraded areas and wastelands, and creation of ex-situ conservation facilities such as botanical gardens, and gene banks. Efforts have been made towards off-loading the pressure on the reserve forests through alternative measures of meeting fuel wood and fodder needs such as afforestation of degraded forest areas and wastelands. National facilities for ex-situ conservation, like botanical gardens and gene banks, have also been developed and upgraded to provide backup to in situ conservation.

Special efforts are now being devoted to conservation of endangered, endemic, and economically important plants and animals. Efforts have also been

\textsuperscript{52} Source: India’s Third National Report, 2006.
initiated towards documentation of microbial diversity by strengthening the institutional capabilities and setting up of well-equipped repositories for this purpose.

**Survey and Documentation:** Systematic surveys of flora and fauna of the country covering all the ecosystems began with the establishment of the Botanical Survey of India (BSI) in 1890 and the Zoological Survey (ZSI) of India in 1916. Nearly 70% of the country’s land area has been surveyed and over 45,000 species of plants and micro-organisms and about 89,000 species of animals have been described till date. It has been estimated that an additional 400,000 species may still be awaiting documentation (NR3).

**Capacity Building:** An All-India Coordinated Project for Capacity Building in Taxonomy, launched in 1999 and now operating in 82 Units, provides for establishment of Centres for Research in identifying priority gap areas (e.g. virus, bacteria, micro Lepidoptera, etc.) in the field of taxonomy, education, and training and also strengthening the BSI and ZSI for their coordinating and monitoring roles. The project has set up specialized groups drawn from universities, botanical, and zoological surveys of India to take up taxonomic work in gap areas including animal viruses, bacteria and archaea, algae, fungi, lichens, bryophytes, pteridophytes, gymnosperms, palms, grasses, bamboos, orchids, helminthes and nematodes, micro-lepidoptera, and mollusca.

**In Situ Conservation:** India’s strategy for conservation of biological diversity of different habitats, ecosystems, and biomes is based primarily on protecting biodiversity-rich areas and designating them as national parks, wildlife sanctuaries, biosphere reserves, and ecologically fragile and sensitive areas. The National Forest Policy, 1981, lays down that one third of the geographical area of the country should be under forest/tree cover. The 10th Five-Year Plan mandate is to increase the forest and tree cover in the country to 33 per cent of the geographical area by 2012 as against the present area of 23 per cent. Approximately 4.6 per cent area of the total geographical area is already under extensive in situ conservation of habitats and ecosystems.

There are 92 national parks and 500 wildlife sanctuaries in the country covering an area of 15.67 million hectares. This development process is being continued for an additional 278 National Parks and Sanctuaries in 26 states including the north-eastern states. Provisions for declaring important biodiversity areas, as ‘Biodiversity Heritage Sites’ have been made through the recently enacted Biological Diversity Act, 2002. New legal categories of protected areas have been proposed, namely ‘Conservation Reserves’ and ‘Community Reserves’ with a view to including some adjacent habitats and corridors with the designated Protected Areas.

Biosphere reserves and internationally recognized areas of terrestrial and coastal ecosystems have been given special attention by launching schemes to facilitate conservation of representative landscapes and their immense biological diversity and cultural heritage. 14 biosphere reserves have been designated so far in the country, out of which four biosphere reserves namely Sunderbans, Gulf of Mannar, Nilgiri, and Nanda Devi have been included in
the World Network of Biosphere Reserves. Efforts are on for getting the remaining biosphere reserves also included in the global network.

Establishment of important areas with respect to agricultural biodiversity has been undertaken such as the Citrus Gene Sanctuary in Meghalaya and 14 more such sites are under study. A conservation Centre exclusively devoted to agriculturally important microorganisms is being developed. Important crop diversity areas, that are traditionally rich in gene pools of cultivated plants and their wild relatives, are being considered for recognition as national heritage sites.

**Forrests:** Extensive programme for afforestation of degraded forest land, waste lands, etc. are in progress for increase of forest and tree over from the present level of 23 per cent of the country’s land area to 33 per cent in 2012. These programme include integrated forest protection schemes, National Afforestation and Eco-development Board, Joint Forest Management, etc. wherein use of ecofriendly bioinoculants inclusive of mycorrhizal technologies, is being practiced in the country.

On account of the richness and uniqueness of biodiversity elements and wide ranging indigenous knowledge systems on use of bioresources coupled with increasing scale of degradation of bioresources, at lease two (the Himalaya and Western Ghats) mountain areas in the country have emerged as global conservation priorities. In response to this recognition, the Government of India, under its Protected Area (PA) programme, has made significant contribution. As such, the coverage under designated PAs is approximately 9.6 per cent of geographical area in the Himalayas and 10.1 per cent in the Western Ghats. This is higher than the national average (4.7 per cent) and corresponds well with the acceptable global realistic target of 10 per cent coverage under PAs. An international cooperative programme supported by GEF is operative on Belowground Biodiversity which is coordinated by the Jawaharlal Nehru University, New Delhi.

**Coastal Areas:** The Coastal Regulation Zone includes coastal stretches of seas, bays, estuaries, cricks, rivers, and back waters which are influenced by tidal action (on the landward side), upto 500m from the high tide line including the inter-tidal zone. Restrictions have been imposed on the setting up and expansion of industries and operations or process, etc. in the coastal regulation zone via a government notification. A National and 13 State Level Coastal Zone Management Authorities have been constituted and Coastal Zone Management Plans have been prepared demarcating ecologically sensitive areas. Integrated Coastal Zone Management Plans have also been prepared for Andaman and Nicobar and Lakshadeep Islands though scientific institutions. Microbial consortia are also used for revegetation of degraded sites.

India is home to some of the best mangroves in the world. The mangrove conservation programme was launched in 1987 and so far 35 mangrove areas have been identified for intensive conservation and management. New and additional mangrove conservation areas are being identified continuously in
consultation with state governments. The National Committee on Mangroves and Coral Reefs has recommended intensive conservation and management of corals in four areas, namely, Andaman and Nicobar Islands, Lakshadweep Island, Gulf of Kachh, and Gulf of Mannar. This will also help in conserving their microbial symbionts gene pools.

**Rivers and Wetlands:** The National River Conservation Directorate of the MoEF is engaged in implementing the river action plan under the National River Conservation Plan (NRCP). At present, it covers a total of 31 rivers in the country spread over 18 states. Under the National Lake Conservation Plan (NLCP), a programme for conservation and management of lakes and other similar water bodies, 28 lakes have been taken up so far. National Wetland Conservation Programme (NWCP) has been initiated for 66 wetlands across 21 states.

**Policy Support:** Targets for conservation of different ecosystems have been defined in various ways directly or indirectly in relevant national plans, programme, and strategies, some of which are listed below:

- National Environment Policy, 2006
- National Policy and Macro-level Action Strategy on Biodiversity, 1999
- National Biodiversity Strategy and Action Plan (NBSAP) (under finalization)
- National Forest Policy amended in 1988
- National Conservation Strategy and Policy Statement for Environment and Sustainable Development
- National Agricultural Policy
- National Land Use Policy
- National Fisheries Policy
- National Wildlife Action Plan
- Environmental Action Plan
- National Forestry Action Programme
- National Seeds Policy
- National Biotechnology Development Strategy (under finalization)
- 10th Five Year Plan
- National Programme on Cattle and Buffalo breeding (NPCBB)
- Conservation Programme for Livestock Breeds

Technical Report of the UNDP-funded National Biodiversity Strategy and Action Plan Project on various components of biodiversity has been prepared, based on a wide participation of stakeholders, and its inputs are being used in developing the National Biodiversity Action Plan. In addition to these planned programmes, participatory processes are being developed with local communities for the ecosystem conservation and management. Rural communities in India have ancient traditions of conservation of natural ecosystems and species and many of these practices still survive with outstanding success. This includes sacred groves (sites) providing protection...
to patches of forests (sacred groves), water bodies (sacred ponds, lakes, etc.) and entire landscapes for cultural and religious practices. Several diverse areas are also under community protection, commonly referred to as the community conserved areas.

Article 37 of the Biodiversity Act, 2002, indicates that areas of biodiversity importance would be notified as biodiversity heritage sites. Ecologically sensitive zones have been identified under the Environment (Protection) Act, 1986, to impose restriction on the industries, operations, processes, and other developmental activities in the region that have detrimental effect on the environment, to provide for restoration of denuded areas, management of catchment areas, watershed management, etc., for a planned development. India Eco-development Project, a World Bank assisted project has been undertaken to improve the capacity of protected area management to conserve biodiversity and obtain active involvement of the local people. Forest Conservation Act (1980) provides regulations prohibiting diversion of forest areas for other uses.

**Promoting Conservation of Species Diversity**

Species-oriented special programme, such as Project Tiger and Project Elephant were launched in 1973 and 1992 respectively. Their effectiveness is being monitored and reviewed regularly. The Botanical Survey of India has come out with the following publications on threatened plant species:

2. *Conservation Status of Endemic Plants in Peninsular India - An Evaluation*

The Zoological Survey of India has also come out with publications on threatened animal species including *The Red Data Book on Indian Animals* (Part-I) and *Status Survey of Endangered Species*.

A planned breeding programme has been initiated for the Red Panda at the Padmaja Naidu Himalaya Geological Park, Darjeeling. The Centre for Cellular and Molecular Biology (CCMB), Department of Biotechnology, Government of India, Council for Scientific and Industrial Research, and the State Government of Andhra Pradesh are establishing a facility called Laboratory for Conservation of Endangered Species. Efforts to identify suitable alternative homes for single isolated populations of species such as Jerdon’s Courser, Asiatic Lion, Manipur Deer, Wroughton’s Free Tailed Bat and the like, and manage the same as Protected Areas effectively have been in progress since 2002. A large number of zoological parks, botanical gardens, and captive breeding programme supplement the on-going conservation activities.

**Promoting Conservation of Genetic Diversity:** In the context of domesticated biodiversity for important animal breeds, conservation programme have been undertaken such as on the Spiti horse, Nilli-Ravi
buffaloes, Pandharpuri buffaloes, Bhadawari and Toda buffaloes, Krishna Valley cattle, Sahiwal cattle, Tharparkar cattle, Kodi adu goats, Jamnapuri goats, Beetle goats, Barbari goat and Double-humped camels.

National Bureau of Plant Genetic Resources (NBPGR) has been continuously engaged since 1976 in documenting the large number of varieties grown traditionally by farmers under diverse agricultural systems in addition to about 2,300 varieties developed by breeders and released at the central and state levels for general cultivation.

The National Gene Bank, developed by the NBPGR at New Delhi with more than 40 Active Germplasm Sites located in different agro-ecosystem conditions across the country, currently holds over 300,000 seed samples and propagules under the long term conservation strategy. Another gene bank, established at the National Bureau of Animal Genetic Resources, Karnal, promotes ex situ conservation of livestock germplasm in the form of semen, embryo, somatic cells, and DNA. Livestock farms are also being developed for various native breeds of cattle, buffalo, sheep, goats, poultry, camel, horses, yak, mithun, and pig. A comprehensive National Livestock Database is also underway. The National Bureau of Fish Genetic Resources is engaged in documentation, characterization, and conservation of fish genetic diversity. The National Bureau of Agriculturally Important Microorganisms has been established at Mau to conserve the microbial gene pool relevant to dairying and agriculture.

Facing Threats from Invasive Alien Species: At the central level, there are two relevant departments in the Ministry of Agriculture—the Department of Agriculture and Cooperation (DAC) and Department of Agricultural Research and Education (DARE)—which are concerned with plant protection outreach and research, respectively. Through Indian Council for Agricultural Research, nearly 90 Institutes and more than 100 universities in the country have programme on various invasive alien species. Guidelines on Quarantine and Strategic Plan for exotic introduction has been published. In addition, the threat of invasive pest species gaining entry into India through imported plant/planting material is taken care of under the Plant Quarantine (Regulation of Import into India) Order, 2003. In addition, CITES regulations are implemented and IMO guidelines for Ballast Water introduction are in place.

The taxa causing the most damage in India include insects, mites, molluscs, weeds, and pathogens. Union Ministry of Agriculture organizes discussions with all concerned departments at regular intervals to advance strategies and programme to address serious pest problems, including invasive alien species. Priorities for management of pest species are decided on the basis of criteria including the crop, pest species, areas affected, economic importance, available technology, and feasibility of management approaches. A national committee has also been set up to take decisions on introduction of exotic fish species where desirable. This is to safeguard against illegal introduction of banned exotic fish species from neighbour countries.
Reducing Pollution and its Impacts on Biodiversity: A National River Conservation Directorate has been set up to reduce pollution in rivers under the National River Conservation Plan. The Ganga Action Plan and Yamuna Action Plan are being implemented. Several other rivers are under active consideration of the NRCP for this purpose. National Lake Conservation Programme has also taken up lakes such as Powai, Ooty, and Kodaikanal for conservation. Six Ecologically Sensitive Areas (ESAs) have been established in the country for not allowing any pollution from industrial sources and also for conserving the biological diversity in these areas from the sustainability point of view.

Livelihoods, Local Food Security and Health Care: Local level governance has been strengthened through the ‘Panchayat’ (village council) system and building supportive bodies such as Biodiversity Management Committees and Watershed Committees duly supported through national and state level legislations. Special attention has been paid to tribal areas by declaring Scheduled Areas by providing special facilities for livelihoods, local food security, and health care. Joint Forest Management Committees have created opportunities for sustainable livelihoods based on natural resources. This initiative has been a successful approach and it has been incorporated in programme of the State Forest Departments. Network of Medicinal Plant Conservation Areas (MPCAs) has been established in various parts of the country for in situ as well as ex situ conservation of medicinal plants.

Protecting Traditional Knowledge, Innovations, and Practices: An institutional mechanism has been created by establishing the National Biodiversity Authority (NBA) to build a national database, create an information and documentation system for biological resources and associated traditional knowledge, and regulate access to genetic resources with a view to implement the three objectives of CBD. Through the Biological Diversity Act, 2002, a provision of preparing People’s Biodiversity Register at the village/panchayat (village council) level has been made. This document will contain information on local species diversity and also the associated traditional knowledge along with details of holders of traditional knowledge like vaids (local healers). A Traditional Knowledge Digital Library (TKDL) is being prepared for the protection of traditional knowledge of medicine in India such as Ayurveda, etc. TKDL will help by controlling the misappropriation of traditional knowledge of medicine from patenting. National Innovation Foundation has been also been established to record the traditional knowledge, innovations, and practices at the grass roots level for the purpose of product development and appropriation.

Section 41 of the Biological Diversity Act, 2002, makes the provision of Biodiversity Management Committees (BMCs) at the panchayat level in the country. The main function of these BMCs is to document People’s Biodiversity Register (PBR), a document of local species diversity and the associated traditional knowledge along with the details of holders of traditional knowledge like vaids. This will be used to create a Biodiversity Information System and thus recognizing the ownership and rights over traditional knowledge, innovations, and practices. This effort will be
overviewed by the NBA and the State Biodiversity Boards linked to NBA. NBA will be responsible for protecting the rights and ownership of not only the local people but all citizens of the country over traditional knowledge, innovations, and practices. It is also responsible for developing a benefit sharing mechanism if the traditional knowledge is utilized for developing commercial products.

Programme for the sustainable utilization of biological diversity by involving local communities across India have been undertaken under the National Afforestation and Eco-development Board. Joint Forest Management has spread all over India covering more than 17 million hectares of forests in which local communities are engaged in sustainable utilization of biological diversity for meeting daily needs. Local norms of starting dates for the harvesting of non-timber forest produce have been formulated keeping in view the sustainability of prioritized tree species.

Through community initiatives, Kitchen Herbal Gardens have been established in several states in India. A mission-mode project on Household Food and Nutritional Security was initiated in 2000, and completed in 2005. The project focused on tribal areas and local communities in 10 states of India. All-India Coordinated Research Project on Under-Utilized and Under Exploited Plants of Local Importance was initiated in 1982, with the primary objective of generating improved technology and developing high yielding varieties in selected crops of local importance.

**Ensuring Fair and Equitable Sharing of Benefits:** Biological Diversity Act, 2002, has provided various checks and balances while considering access to genetic resources. Through this Act, National Biodiversity Authority (NBA) at the national level, State Biodiversity Boards at the state level and Community Biodiversity Committees at the grass root level have been set up.

NBA will decide upon requests for access to genetic resources based on material transfer agreement subject to prior informed consent and mutually agreed terms. The NBA is also empowered to impose conditions for sharing of benefits while granting access to genetic resources. Prior approval of NBA will also be essential before seeking any form of IRRs for any product developed from biological resources obtained from India. Protection of Plant Varieties and Farmers’ Rights Act, 2000, is also fully supportive of this objective.

**Enhancing Financial Capacity to Implement the Convention:** MoEF is the operational nodal point for GEF in India. 16 projects are under implementation, out of which three have been completed. Eleven projects have been improved in principle under GEF and are in the preparatory phase. UNDP/GEF small grant programme has supported 90 projects in India since 1992 to support activities that demonstrate community based approaches. Additional financial resources have been accessed from India Canada Environment Facility (ICEF) through the Institutional Strengthening Project.
THEMATIC AREAS UNDER CBD

Wetlands Biodiversity
Several wide ranging policies, strategies, and action plans have been formulated by Government of India for promoting wetland conservation. The National Conservation Strategy and Policy Statements on Environment and Development (1992) and National Water Policy (2002) highlight conservation and sustainable development of wetlands. Effective linkages have been developed among the government agencies concerned with water resources management, fisheries, agriculture, and rural development for conservation and sustainable livelihoods of the communities living around the wetlands.

For conservation and management of wetlands, a comprehensive programme has been operating since 1987 comprising assessment of wetland resources, identification of wetlands of national importance, and formulation and implementation of management action plans of the identified wetlands. Sixty six wetlands have been identified across 21 states. The main thrust is on watershed management and activities aimed at involving participation of stakeholders in decision-making processes.

Guidelines for sustainable development and management of brackish water aquaculture have been drawn up. Some State Governments have also developed their own aquaculture guidelines and regulatory measures in the coastal zone areas. A National Lakes Conservation Plan for the restoration and conservation of polluted and degraded land and other similar bodies has been initiated. So far work on 28 lakes has been taken up under this project. The National River Conservation Action Plan has also covered 31 rivers.

India has designated 21 Ramsar Sites including Keoladeo National Park, Chilka lake, Loktak lake, Wular lake, Sambhar lake, and Harike lake. Action has been initiated to designate 25 more wetlands as Ramsar sites. A directory on Wetlands of India has been prepared that lists 2,167 natural and 65,253 manmade wetlands occupying an area of 4.1 million hectares. According to the latest survey carried out in 1995, the total mangrove area in the country is 4,533 sq. kms. India is also implementing a GEF project on conservation and sustainable use of globally significant threatened wetlands of India.

There is a close coordination between implementing unit of Ramsar with that of CBD at the national level. India took a lead role in the formulation of Ramsar guidelines on integration of wetlands into river basin management. As a follow up to this, CBD-Ramsar River Basin Initiative was undertaken and a joint programme was developed for integrated management of wetlands, biological diversity, and river basins. The models developed for Loktak and Chilka have been extensively used at the regional level to demonstrate that successful stakeholders led wetland conservation and management. Restoration of Chilka lake through effective water management, community participation, and providing sustainable economic benefits to the community is cited as a model for rehabilitation of biodiversity and livelihood support to the community dependent upon the lake. Ramsar Award was conferred to Chilka Development Authority for this exemplary wetland restoration model.
The Government of India along with the UNDP, under its country cooperation framework (CCF-1), executed a project, ‘Inland Wetlands of India’ through the Salim Ali Centre for Ornithology and Natural History (SACON) to identify and generate baseline information on inland wetlands and broad-basing wetland conservation by evolving a ‘National Network of Inland Wetland Conservation Areas’. Asian Waterfowl bird census periodically monitors changes in species and population of birds. The Bombay Natural History Society (BNHS) has identified 65 Important Bird Areas and has carried out bird migration studies for Chilka, Harike, and Keoladeo National Park.

**Marine and Coastal Areas Biodiversity**

India has taken adequate measures to conserve its coastal and marine biodiversity. The Coastal Regulation Zone Notification prohibits developmental activities and disposal of wastes in the mangrove and coral reef areas. The protected areas under Islands and Coastal Bio-Geographic Zones are proposed to be increased from 18.5 per cent to 36.14 per cent and 6.16 per cent to 7.12 per cent of the geographical area respectively. Effective management of protected areas including marine and coastal protected areas is one of the key strategies under the National Wildlife Action Plan, 2002. MoEF is operating an All-India coordinated project on coastal and marine biodiversity which is promoting research in three major areas, viz. survey and inventorization, capacity building, and database development on coastal and marine biodiversity. Integrated marine and coastal area management has been undertaken. Chilka lake, the largest brackish water lagoon in India, is being managed by the Chilka Development Authority in an integrated way. The National Environment Policy, 2006, calls for sustainable management of mangroves and other marine/coastal habitats. State-wise Coastal Management Plans have also been prepared under the Coastal Regulation Zone Notification.

On-going administrative measures include integrated management of marine and coastal ecosystems. Supportive legislative measures include the Wildlife Protection Act, Coastal Regulation Zone Notification, Notified Marine Protected Areas and Marine Biosphere Reserves. India is also implementing the integrated coastal area management through the Coastal Regulation Zone Notification, 1991, which provides ample protection to the critical marine and coastal ecosystems, including mangroves and coral reefs. India is a part of the Global Coral Reef Monitoring Network. Considering the importance of coral species in the coastal system, their conservation has been given high priority.

There are 31 Marine Protected Areas in the country. In addition, three Marine Biosphere Reserves have also been established. Mariculture activities are regulated through the Aquaculture Authority of India which promotes sustainable aquaculture. Coastal mariculture is regulated under the Coastal Regulation Zone Notification.
Agricultural Biodiversity

Conservation and sustainable use of agricultural biodiversity has received major attention. With the Ministry of Agriculture as the nodal agency, the Inter-Ministerial Consultation Group overviews the developments and responds to emerging issues. A National Action Plan of Agro-biodiversity in India has been developed and published jointly by the National Academy of Agricultural Sciences, Indian Council of Agricultural Research, and Indian Society of Plant Genetic Resources in 1999. It covers the status of Agro-biodiversity in India, (plants, livestocks, poultry, fishes, insects, and agriculturally import microbes), agro-biodiversity management and thrust areas, priorities and a National Action Plan. The new legislation on ‘Protection of Plant Varieties and Farmers Rights Act’ of India, 2001, is expected to operationalize the much-awaited farmers’ rights.

National Bureaus of Plant, Animal, Fish and Microbial Genetic Resources are operating effectively under the Indian Council of Agricultural Research. In addition, there is the National Bureau of Soil Survey and Land Use Planning. These bureaus have played a vital role in their mandated specific areas while working in partnership with national research institutes/centres, All India Coordinated Crop Improvement Projects, state agricultural universities, lead institutions, and NGOs. The Indian National Gene Bank is keeping over 300,000 seed samples and propagules under long term storage for present and future use. A mission mode project on collection, documentation, and validation of Indigenous Technical Knowledge (ITK) was initiated in 2000 to collect, classify, and document ITK with respect to agricultural production and farming systems in different agro-climatic regions of the country including agro-biodiversity. Over 2000 ITKs have already been documented.

Landraces, farmers’ traditional varieties, and livestock breeds are being documented and conserved. Supportive national legislation has been enacted (PPVFR, 2001; Biodiversity Act, 2002). Rules for their implementation have also been framed based on wide consultations. Integrated pest management practices are being promoted with a view to reducing excessive use of pesticides and diversified farming systems are getting more emphasis.

Sustainable agricultural practices are now receiving greater attention with a renewed focus on integrated crop farming and livestock production systems and also on generating additional income to farm families. On-farm in situ conservation approach with ex situ conservation providing safety backup is being explored under different ecosystems with a view to developing workable models. Value addition to agri-products (like minor millet’s fortification in biscuit-making) and horti-products is getting more popular. Support is being provided for conservation and improvement of landraces, traditionally grown farmers’ varieties, native livestock breeds, best practices, and associated traditional knowledge. Agricultural biodiversity has received major attention in the draft NBSAP.
**Forest Biodiversity**

The Ministry of Environment and Forests has formulated the National Forestry Action Programme (NFAP), a comprehensive strategic long term plan for the next 20 years to address issues underlying major problems of the forestry sectors in line with the National Forest Policy, 1988. The objective of the NFAP is to bring one third of the area of the country under tree/forest cover and to arrest de-forestation for achieving sustainable development of forests. The main components of the programme are:

- Protecting the existing forest resources
- Improving forest productivity
- Reducing total demand
- Strengthening policy and institutional frameworks
- Expanding forest area

The National Afforestation and Eco-development Board (NAEB) was constituted in the Ministry of Environment and Forests in 1992 with the mandate of promoting afforestation, tree planting, ecological restoration, and eco-development activities in the country with special attention to degraded forest areas and lands adjoining forest areas, national parks, sanctuaries and other protected areas, as well as ecologically fragile areas like the Western Himalayas, Aravallis, and Western Ghats.

Ecosystem approach to evaluate and conserve biodiversity in various regions has helped in documenting the species association patterns and their dominance, leading to preparation of region-specific action plans. Ecological restoration of waste lands is based on ecosystem approach in which all the components of the ecosystem are restored including floral and faunal biodiversity.

**Biological Diversity of Dry and Sub-humid Lands**

Afforestation and improvement in regeneration of dry and sub-humid lands is being undertaken through resource management programme involving different institutions. There is also a good network of protected areas for in situ conservation. For example, arid and semi-arid regions of Gujarat have the largest land area under its 25 protected areas (17,000 sq. kms) while Rajasthan has 28 protected areas covering about 9,500 sq kms.

Several institutions and organizations (Central Government and State Governments) are focusing their activities on issues related to arid and semi-arid regions as listed below:

- CAZRI, AFRI (Jodhpur); ZSI, BSI, Jodhpur
- National Research Centre on Camels, Bikaner
- Indian Grassland and Fodder Research Institute, Jhansi
- National Research Centre for Agroforestry, Jhansi
- Central Soil Salinity Research Institutes (CSSRI), Karnal and Anand
Some other initiatives include participatory land regeneration and water conservation programme such as Border Area Development Programme (BADP), Desert Development Programme (DPP), and Drought Proof Area Program (DPAP) in Gujarat and Rajasthan; afforestation and rehabilitation of Aravalli Region; and setting up of Aravalli biodiversity park with the help of IUCN to support around 40 plant communities consisting of 3,000–4,000 species typical of the Aravallis mountains. The ICFRE has ‘observer status’ with the UNFCCC and is involved with the climate change policy issues in land use, land use change and forestry sector. Arid Forest Research Institute (AFRI), Jodhpur, has been associated with the activities under programme of UNCCD conducted by MoEF and has worked on various aspects for combating desertification, viz; sand dune stabilization, water conservation and management studies, agro forestry in dry areas, and salt land reclamation.

Several site-specific assessments of the status of biodiversity have also been undertaken by various national and state level institutions and university departments as listed below:

- CAZRI recently made elaborated faunal assessment of the Thar region of Rajasthan
- GEC made extensive status survey of rare and threatened biodiversity of Gujarat
- GEER Foundation has made extensive biodiversity assessment of almost all the protected areas of Gujarat and also the status of medicinal plants of Gujarat.
- AFRI, Jodhpur, is engaged in the assessment and enhancement of bio productivity, increase of vegetative cover and conservation of biodiversity in hot arid and semi-arid regions of Rajasthan, Gujarat, and Dadra and Nagar Haveli using agro forestry research models for sustainable production; development of silvipasture model for Maru Gaucher project suitable for arid and semi-arid region of Rajasthan; raising of arboretum cum botanical garden for native flora of Rajasthan; survey and silvicultural management practices for commercially exploited medicinal plants and assessment of the pest problems in forest nurseries and their management in arid and semi arid regions, etc.

**Mountain Biodiversity**

A strong network of protected areas (covering 9.6 per cent of the total geographical area in the Indian Himalayas, and 10.1 per cent of Western Ghats) has been established in mountainous areas. This coverage is considerably higher than the National Average of 4.7 per cent. Further, a target of 33 per cent forest cover has been established in the country to be achieved by 2020. The Himalayan region represents nearly 34 per cent forest area. Intensive studies on the structure and function of forest vegetation along
disturbance intensities are regularly conducted in the mountain region for developing appropriate strategies and to assess the impact of anthropogenic disturbances. There is a ban on cutting green trees above 1000 m. altitude. Measures are being undertaken to mitigate the impact of shifting cultivation. A stringent view is taken for providing environmental clearance to developmental projects in mountain areas.

The Indian Himalayan Region (Trans, Northwest, West, Central, and East Himalayan provinces) has 15 national Parks and 59 wildlife sanctuaries. In addition, 6 biosphere reserves have also been designated (i.e. Nanda Devi in Uttarakhand, Kangchendzonga in Sikkim, Dehang Debang in Arunachal Pradesh, Nokrek in Meghalaya, and Manas and Dibru Saikhowa in Assam). Of these, the Nandadevi Biosphere Reserve has been included in the Global Network of Biosphere Reserves. The oldest protected area of the region is Corbett National Park, which was established in 1936. The random distribution of protected areas covering more than 5.5 per cent area in each biogeographic province [Trans: 7 PAs (9.2 per cent of the area); Northwest: 29 (5.88 per cent); West: 18 (13.06 per cent); Central: 8 (7.82 per cent); and East: 12 (11.44 per cent)] takes care of representative habitats and biota along longitudinal east to west gradient. The system of protected areas in the Western Ghats includes the Nilgiri Biosphere Reserve, the first and largest Biosphere Reserve in India, 13 National Parks and 45 wildlife sanctuaries. The largest national park is in Bandipur and the largest wildlife sanctuary in the Anamalai hills. The Bandipur, Periyar, and Kalakad-Mundanthurai are Project Tiger Reserves. Some other protected areas of the region fall under Project Elephant Reserves.

Adopting the ecosystem approach, two Biosphere Reserves have been proposed: (i) Cold Desert Biosphere Reserve in the Trans-Himalayan areas; and (ii) World Peace Park Biosphere Reserve in Arunachal Pradesh. Restoration of degraded mountain slopes has been undertaken using native plants to enhance ecosystem sustainability.

Schemes have been undertaken recently in different mountain areas to initiate specific activities to facilitate maintenance, protection, and conservation of existing levels of endemic species. An atlas of endemics of Western Ghats has been prepared. The G.B. Pant Institute of Himalayan Environment has initiated a programme to document and map the Himalayan endemics. Under this initiative, the conservation implications of plant endemism in high altitude Himalaya was reviewed and an action plan was developed. Similarly efforts are being carried out in Environmental conservation strategies for land use in the lower western Himalayas with butterflies as an indicator in monitoring environmental changes.

The Himalayan Forest Research Institute (HFRI), Simla, is actively engaged in assessment of conservation status of Hill Bamboos, collection of germplasm from various eco-climatic zones in Sutlej catchment area, and establishment of germplasm bank and standardization of nursery techniques for mass propagation of selected medicinal plants of temperate Himalayas.
Other specific programme, policies, and legal frameworks focusing on biodiversity protection in the country have covered mountain biodiversity as well. Some of the examples are:

- Of the total 583 threatened plants (Red Data Book species) in India 121 (20.8 per cent) species are from the Himalayan region. Various organizations are implementing programme for improving the status of these species. Nearly 29 mammalian species listed under Schedule 1 of the Indian Wildlife Protection Act are Himalayan.
- Both the areas, the Himalayas and Western Ghats are considered among the mega hotspots of endemic diversity. The Himalayan region is known to represent over 3,471 endemic species of flowering plants. Likewise, in the Western Ghats, of the total 4,000 flowering plant species, 1,500 are endemic which include 49 monotypic endemic genera. With regard to fauna, of the total 120 mammalian species, 14 are endemic to the Western Ghats.
- A number of mountain species have been included in different appendices of the CITES for banning their international trade so as to protect their status.
- India is involved in the development of Transboundary Cooperative Agreement on Kanchendzonga Landscape Area, which involves Nepal, Bhutan, and India. The initiative specially focuses on finding possibilities to establish biological corridors between protected areas within the Kanchendzonga Landscape in East Himalayas.
- Several notable NGOs like the Foundation for Revitalization of Local Health Traditions (FRLHT), M. S. Swaminathan Foundation, Bombay Natural History Society, Ashoka Trust for Research in Ecology and Environment, Kalpavriksha, Zoo Outreach Organization, etc. are also implementing programme/projects pertaining to biodiversity conservation.

### 2.8 Negotiations on Access to Genetic Resources and Benefit-sharing

One of the three objectives of the Convention on Biological Diversity, as set out in Article 1, is the ‘fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding’. A framework for the implementation of this objective is provided in Article 15 of the Convention. In addition, Article 8 (j) contains provision to encourage the equitable sharing of the benefits arising from the utilization of knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles relevant for conservation and sustainable use of biological diversity.

These provisions are also linked to the provisions on access to, and transfer of technology (Article 16), exchange of information (Article 17), technical and scientific cooperation (Article 18), the handling of biotechnology and
distribution of its benefits (Article 19, paragraphs 1 and 2), and financial resources and financial mechanisms (Articles 20 and 21).

CBD-COP4, by its decision IV/8, decided to establish a regionally balanced panel of experts to explore all options for access and benefit-sharing on mutually agreed terms. During their first meeting held in San Jose, Costa Rica, in October 1999, experts addressed options for access and benefit-sharing on mutually agreed terms and reached broad conclusions on prior informed consent, mutually agreed terms, information needs, and capacity-building.

COP5 decided in May 2000 to reconvene the Panel of Experts on Access and Benefit-sharing to conduct further work on outstanding issues from its first meeting. The COP5 also decided to establish an Ad Hoc Open-ended Working Group with the mandate to develop guidelines and other approaches for submission to the Conference of the Parties at its sixth meeting and to assist Parties and stakeholders in addressing the following issues:

- terms for prior informed consent and mutually agreed terms
- roles, responsibilities, and participation of stakeholders
- relevant aspects relating to in situ and ex situ conservation and sustainable use
- mechanisms for benefit-sharing, for example through technology transfer and joint research and development
- means to ensure the respect, preservation, and maintenance of knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity, taking into account work by the World Intellectual Property Organization on intellectual property rights issues.

The next meeting held in Bonn, Germany, from 22–26 October 2001, contributed to the development of draft guidelines on access and benefit-sharing. COP6, held in the Hague in April 2002, adopted the Bonn guidelines on ABS. The COP also decided to reconvene the Ad Hoc Open-ended Working Group on Access and Benefit-sharing to examine outstanding issues. The second meeting of the Working Group on ABS was held in December 2003, in Montreal. Its report contains recommendations of the Working Group to COP7 on the mandated issues.

Following the World Summit on Sustainable Development related to access to genetic resources and benefit-sharing and a call for action was issued to negotiate within the framework of the Convention on Biological Diversity and an international regime to promote the fair and equitable sharing of benefits arising out of their utilization. Accordingly, the inter-sessional meeting on the Multi-Year Programme of Work of the Convention up to 2010, held in March 2003, recommended that the Ad Hoc Open-ended Working Group on access and benefit-sharing considered the process, nature, scope, elements, and modalities of such an international regime on access and benefit-sharing at its second meeting in December 2003. This Working Group prepared recommendations on the terms of reference for the negotiation of an
international regime which were submitted to the Conference of the Parties at its seventh meeting in February 2004.

COP7 Decision VII/19D mandated the Ad Hoc Open-ended Working Group on ABS to negotiate the international regime on access and benefit-sharing and agreed on the terms of reference for such negotiation, including the process, nature, scope, and elements for consideration in the elaboration of the regime. The Working Group held its third meeting in Bangkok in February 2005 and the fourth meeting in Granada, Spain, from 30 January to 3 February 2006. At these meetings, the Working Group began negotiations for an international regime on access to genetic resources and also addressed other approaches as set out in decision VI/24B, including consideration of an international certificate of origin/source/legal provenance and, measures to support compliance with prior informed consent of the Contracting Party providing such resources on mutually agreed terms.

COP8, held in Curitiba, Brazil, in March 2006, requested the Ad Hoc Open-ended Working Group to continue the elaboration and negotiation of the international regime and was instructed to complete its work at the earliest possible time before the tenth meeting of the Conference of the Parties (2010). COP8 also decided to establish a group of technical experts to explore and elaborate the possible options for the form, intent, and functioning of an internationally recognized certificate of origin/source/legal provenance and analyse its practicality, feasibility, costs, and benefits, with a view to achieving the objectives of Articles 15 and 8 (j) of the Convention. It also requested the Working Group at its fifth and sixth meetings to further consider measures to support compliance with prior informed consent and mutually agreed terms.

An analysis of COP8 meeting shows the positive sign of reaching consensus in negotiating an ABS regime. There is now near-agreement on the following issues:

- Structure of the 5th and 6th meetings of the ABS-WG to be held before COP9
- Involvement of experts and a number of stakeholders
- Completion of the gap analysis before the first working group meeting
- Establishment of a technical committee to study the merits of a certificate of origin/source/legal provenance
- Outcome of the Granada (WG4) meeting to serve as the basis for further negotiations

The ABS negotiations highlighted once more the basic differences between those wishing to complete negotiations on an international instrument as soon as possible, those keen on negotiations but still undecided as to their key components, and those more interested in exchanging national experiences than developing an international regime. In the end, however, the proposal by

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the EU to continue the ABS Working Group with the addition of two permanent Co-Chairs was able to ensure consensus.

The G-77/China, speaking with a single voice for the first time in the ABS process, came to Curitiba determined to speed up negotiations. This resulted in retaining the document annexed to the COP decision and also agreeing to 2010-timeline replacing the open-ended target on ABS set by the World Summit on Sustainable Development. India, as Chair of the LMMC group (See Table 2.6), played a lead role in developing consensus on this most contentious issue.

Table 2.6
Like Minded Megadiverse Countries (LMMC) Group

This Group of 17 biodiversity-rich countries, formed in February 2002 with the Cancun Declaration, includes Bolivia, Brazil, China, Colombia, Congo, Costa Rica, Ecuador, India, Indonesia, Kenya, Madagascar, Malaysia, Mexico, Peru, Philippines, South Africa, and Venezuela. They together are home to over 70 per cent of the global biological diversity and occupy top ranking positions among the world’s ten most species-diverse countries with high endemic biodiversity. While occupying 23.1 per cent of the total land area of the world, LMMCs support 48.6 per cent of the human population. Two more members, namely, Congo and Madagascar have been recently included. This Group is now recognized as an important negotiating block in the UN and other international fora. The process of consultation among the LMMCs that began in Cancun and was carried through the Cusco Declaration and Johannesburg Plan of Action has come a long way with the New Delhi Declaration in converting visions into reality with conviction and commitment.

India was called upon to chair the Group of LMMCs for a period of two years (2004–6) following the completion of Mexico’s term. Several important initiatives have been taken by India towards consolidating the consultation and cooperation among member countries. These efforts include the development of a website for LMMCs (www.lmmc.nic.in) and bringing out a referral publication entitled ‘Perspectives on Biodiversity: A Vision for Megadiverse Countries’ that was formally released in the LMMC Ministerial Meeting organized during the CBD-COP8 meetings held in Curitiba, Brazil from 20–31 March 2006.

In preparation for the negotiations under the ABS Working Group for developing an International Regime on ABS, India hosted a series of meetings of LMMCs in New Delhi in 2005 including the Experts and Ministerial meeting of LMMCs on ABS. The New Delhi Ministerial Declaration was adopted in this meeting. Kenya is the current Chair of the LMMC Group charged with the responsibility of taking the process of consultation and cooperation further.

Source: LMMC Secretariat, MoEF, GOI.

Furthermore, a request to governments to support compliance with prior informed consent, in accordance not only with CBD Article 15 but also with national legislation, and a related request to the ABS Working Group to further consider such compliance measures, were welcomed by developing countries. This indeed pushed forward discussions on disclosure of origin in the CBD framework, in spite of some developed countries’ attempts to confine such discussions in trade-related bodies, such as WIPO and the TRIPS Council. The establishment of an expert group on the certificate of origin/source/legal provenance completes the ‘travel package’ finalized in
Curitiba towards a future international regime on ABS. It is now in the hands of the permanent Co-Chairs—Fernando Casas (Colombia) and Timothy Hodges (Canada)—to bring this journey to completion before COP10. To sum up, the COP8 procedural decisions served to set priorities for the next biennium\textsuperscript{26}. The highest priority appears to be clearly assigned to ABS.

India has just completed its term as Chair of the Like Minded Megadiverse Countries (LMMCs) and has been working proactively on the International Regime on Access and Benefit Sharing\textsuperscript{54}. This process would make sure that the benefits arising from commercial and other utilization of genetic resources are shared with the countries providing such resources. In the emerging scenario, India’s position and proactive role, with the support of other LMMCs\textsuperscript{55} will be watched with keen interest by both the developing countries (for inspiration and lead initiatives) and also the developed countries (for bridging the gap in the prevailing rigid positions).

\subsection*{2.9 The Way Ahead}

The rate of extinction of species has now reached levels not known to occur since the extinction of dinosaurs around 65 million years ago. Human interference is considered to be the major cause of the current high rate of disappearance of species and degradation of habitats and ecosystems. Alarmed by this realization, Contracting Parties to CBD have resolved to reverse this trend and significantly reduce biodiversity loss by the year 2010 which is being designated as the International Year of Biological Diversity.

The need to stop the increasing loss of biodiversity is well recognized and this subject is expected to be comprehensively addressed by the next meeting of the Conference of Parties to CBD (COP9), scheduled to be held in Germany in 2008. There is a growing apprehension and increasing concern whether we are really going to achieve what we collectively intend, namely, to reverse the current trends in loss of biodiversity and implement the Convention to achieve its three objectives. Many encouraging success stories notwithstanding, there is not much evidence to show that the trend of degradation and destruction of habitats is really being reversed. There are challenges and also opportunities for making real progress in meeting the 2010 Biodiversity Target. One possibility is to work towards implementing the package of COP decisions urging to fulfill commitments to complete the agreed upon critical work programme such as those concerning forests, protected areas, wetlands and agricultural biodiversity in the context of NBSAPs and finalization of an international regime on ABS. But this may not be enough because even the collective will of a COP may still be too weak to bring about a reversal of present trends in biodiversity depletion. We need a strategy to give biodiversity as much attention and priority as trade, climate change, and poverty alleviation programme.


\textsuperscript{55} MoEF, 2006.
In order to make real headway in this direction, the pace of implementation of the NBSAPs will have to be increased by developing partnerships between different right-holders and stake-holders and also fully involving all the relevant institutions and organizations. To begin with, a more effective communication strategy needs to be adopted to raise the level of public education and awareness about the outcome of recent scientific assessments of current trends in biodiversity loss and their impact on food security, livelihoods, environment, and sustainable development. There is also an urgency to fully integrate biodiversity concerns into national policies and programme, giving top priority attention to the challenges of implementing the 2010 Biodiversity Target.

It is noteworthy that the CBD was opened for signatures during the Earth Summit at Rio in June 1992 and Brazil again hosted the CBD-COP8 meetings at Curitiba in March 2006 after 14 years. Both biodiversity and the people (who depend on it) still await some concrete steps to help them to survive. Some well-meaning initiatives and advances notwithstanding, progress in negotiations has been painfully slow and uneven. The COP8 meeting has strongly urged the Contracting Parties to accelerate the process of implementing the Convention and there are positive developments and promising leads to carry the CBD process much further. India is expected to continue to play a more proactive role, in linkage with the LMMC Group, towards accelerating the implementation of CBD provisions in general, and in negotiations at hand to conclude the agreement on an international regime on access and benefit sharing in particular.
References for Further Reading:


MSSRF. Community based agrobiodiversity conservation and management: Sub programme area 201. Available at: www.mssrf.org


III

Species Conservation

3.1 Introduction

Species extinction is a natural part of the evolutionary process. Every species loss diminishes the diversity of life on Earth with untold consequences for the web of life. Yet, at the present rates of extinction, as much as 20 per cent of the world’s species could be gone in the next 30 years. Conservation of species includes the preservation of all species of wildlife, the enhancement of wildlife habitat and the control of wildlife problems. The rapid extinction of many species of animals is an increasing concern.

The evils of human activities particularly in the last two centuries and especially during the last several decades have caused deliberate damage to the environment and the biosphere. Wildlife with their habitats is at stake. Human activities have annihilated many of the habitats so that many of the species are on the verge of extinction and some are already lost. It is estimated that about 1,000 species of animals and over 2,500 species of plants are becoming rare and endangered every year and it is feared that about half a million species of living forms are going to be extinct by the turn of the century, if the current state of affairs continues.

Viewing the importance of the role of every species in the biosphere there is an urgent need to prevent such loss. Protection, preservation, and conservation are the remedies. Protection is aimed to stop slaughter of the wildlife, preservation is to protect and preserve the remaining ones in an area so that they can renew on their own into a healthy population, and conservation is aimed at instituting knowledge and its application to protect and preserve the species as a whole.

The two major factors in the decline of numbers of species of wildlife are the loss of habitat and increased exploitation through trade. The international trade in endangered species is a highly lucrative business estimated to be second in number after illegal traffic in narcotics. It involves a wide variety of species, both as live specimens and as products. As the commercial trade in pets, clothing, medicine and other uses was leading to the over-exploitation of many species, threatening their survival, a legal instrument was necessary. Numerous international agreements adopted at the global and regional level concern wildlife or have some potential impact on it. As far as species conservation is concerned, there are three major international agreements which have global application, i.e. Convention on International Trade in Endangered Species of Wild Flora and Fauna, 1973, Convention on Migratory Species, 1979, and International Convention for the Regulation of Whaling, 1946.

56 UNEP Environmental Law Training Manual, pg. 79.
3.2 Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)

One of the most significant agreements, Convention on International Trade in Endangered Species of Wild Flora and Fauna popularly known as CITES, was adopted at Washington in 1973. It came into force on 1 July 1975. The Convention protects endangered species by restricting and regulating their international trade through export permit systems.\(^{57}\) It establishes the international legal framework and procedural mechanism for the prevention of trade in endangered species and for an effective regulation of trade in certain other species. A system of strict regulation provided under CITES has a salutary effect on wild animal and plant populations worldwide, particularly of the endangered species which were threatened due to the earlier unrestricted exploitation and trade. CITES was originally signed by 21 states. Since then the Convention has expanded and as of March 2004, 165 countries are party to it. CITES is premised on the view that the control or elimination of international markets will contribute towards the prevention of extinction of endangered species.

**Basic Principles**

The Convention is a protectionist treaty in the sense that it prohibits, with a few exceptions, international commercial trade in species threatened with extinction\(^{58}\) (Appendix I). Secondly, it is a trading treaty because it allows a controlled international trade in species whose survival is not yet threatened, but may become so\(^{59}\) (Appendix II). CITES thus limits exports of Appendix II species to a level which will not be detrimental to their survival. Appendix III provides a mechanism whereby a party which has domestic legislations regarding the export of species not in Appendix I or II can seek the support of other parties in enforcing its own legislations.\(^{60}\)

**Working of CITES**

The Convention applies to ‘specimen of species’ which is listed in the Appendices to the Convention.\(^{61}\) Under CITES, definition of species includes any species, subspecies, or a geographically separate population.\(^{62}\) This allows different populations of the same species to be considered independently for listing purposes. This also enables the parties to list a particular species or subspecies either in Appendix I or Appendix II irrespective of the fact that the particular subspecies is endangered in other parts of the world.

The ‘specimen’ as defined under the CITES may be living or dead and includes any ‘readily recognizable’ part or derivative thereof.\(^{63}\) This implies that international trade in products such as ivory, skin, horns, etc. which form the bulk of wildlife trade is covered by the Convention.

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\(^{57}\) Legal Trends in Wildlife Management, FAO Legislative Study.

\(^{58}\) Art. II (1), CITES.

\(^{59}\) Art. II (2).

\(^{60}\) Art. II (3).

\(^{61}\) Rashmi Bajaj, CITES and the Wildlife Trade in India.

\(^{62}\) Art. I (a).

\(^{63}\) Art. I (b).
CITES Appendices

Species of plants and animals are listed in three Appendices under CITES in decreasing order of threat. Inclusion in these Appendices obligates parties to institute specific controls on listed species. The Appendices have steadily grown from the original listing in 1973, which was based on the best available knowledge at that time, to the current coverage of almost 600 animal species and some 300 plant species in Appendix I. In Appendix II, there are more than 1,400 animal species and more than 22,000 plant species. Appendix III has some 270 animal species and about 30 plant species. A guideline for listing species in various Appendices was provided by the Berne criteria which were adopted at the first meeting of the Conference of Parties in 1976 at Berne. The criteria provide that a genus should be listed if most of the species in the genus are threatened with extinction and if identification of individual species within the genus is difficult. However, over the years, the shortcomings of the Berne criteria were noticed and finally, in 1994, the Conference of Parties adopted new criteria for categorizing and listing species according to their risk of extinction. There are four different assessment methods in the new criteria and a species can qualify for Appendix-I listing by meeting any one of them.

Appendix I contain species that are threatened with extinction and are or may be affected by trade. To qualify for Appendix I, a species must be currently threatened with extinction. A species is to be included in Appendix I if it is seriously declining, even if there is only a probability of trade. Also the whole genus is to be listed if most of its species are threatened with extinction and if identification of individual species within the genus is difficult.

Appendix II lists thousands of species which, although not currently threatened with extinction, may become threatened without strict regulation of their trade. Furthermore, to prevent threatened species from being traded under the guise of non-threatened species similar in appearance, some of the latter are also included in this Appendix.

Appendix III lists species which any Party may identify as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation and needing the cooperation of other Parties in the control of trade.

Regulation of Trade in Species listed in Appendices

All commercial trade in Appendix I species is banned and non-commercial trade in them is allowed only in exceptional circumstances provided it will not damage their chances of survival. For all transactions in the Appendix I species, an export permit from the country where the wildlife originates or a re-export certificate from the re-exporting country and an import permit from the recipient country are required. The import permit must be issued before any transaction involving the Appendix I species can occur.

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64 CITES World, Official Newsletter of the Parties, 3 March 2003.
65 Art. III.
66 Art. III (2).
Table 3.1

<table>
<thead>
<tr>
<th>Conditions under which import permit can be issued</th>
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<tbody>
<tr>
<td>(a) The importation will not be for purposes detrimental to the species survival,</td>
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<tr>
<td>(b) The importation will not be primarily commercial, and</td>
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<tr>
<td>(c) If live wildlife is involved, the specimen be assured of a suitable home.</td>
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<thead>
<tr>
<th>Conditions under which export permit can be issued</th>
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<tbody>
<tr>
<td>(a) The wildlife was obtained legally,</td>
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<tr>
<td>(b) The wildlife will not be harmed during shipping, and</td>
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<tr>
<td>(c) An import permit has already been granted.</td>
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For the Appendix II species, regulation is not as strict as for species listed in Appendix I. Regarding the export of specimens, the Convention requires export permits for trade in Appendix II species, or any derivative thereof. Nevertheless, no import permit is required. Like international trade in Appendix I species, the export permit may be issued once a Scientific Authority of the state of export has advised that such export will not be detrimental to the survival of that species and a management authority of the state of export is satisfied that the specimen was not obtained in contravention of the laws of that state for the protection of fauna and flora and is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health, or cruel treatment.\(^{67}\) Thus only the state of export is responsible for controlling international trade in Appendix II species. Further, commercial trade in Appendix II species is allowed.

Trade in Appendix III species is least regulated and export permits are only required from the party which included the species in Appendix III.\(^{68}\) International trade in these species is the same except that it is not necessary for a scientific authority of the state of export to advise that such export will not be detrimental to the survival of the species.

Appropriate levels of international trade regulations through a system of permits and certificates are prescribed in the Convention.\(^{69}\)

**Control of Trade with Non-Parties**

CITES allows trade between non-parties provided that the non-party has comparable documentation as required under the Convention.\(^{70}\) The Convention provides that parties must comply with the permit requirements of CITES when trading with non-parties. CITES applies to all parts of the party’s territory including non-customs zone. This was urged because some parties were allowing specimen of species in Appendices to be exported from non-custom zones with CITES permit.

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\(^{67}\) Art. IV.
\(^{68}\) Art. V.
\(^{69}\) Art. VI.
\(^{70}\) Art. X.
Exceptions

There are a number of circumstances where international trade in specimen of species in the Appendices does not require a CITES permit.\textsuperscript{71}

Table 3.2

Following are the conditions under which permit is not required

- Transit or trans-shipment of species through or in the territories of a party while the specimen remain in custom control;
- Pre-Convention specimen;
- Captive breeding and artificial propagation;
- Personal or household effects;
- Specimen required for science and exhibition;
- Ranching; and
- Reservation by a party

Enforcement Measures by the Parties

Enforcement of CITES is the responsibility of the Parties. Each Party to CITES shall take appropriate measures to enforce the provisions of CITES and prohibits trade in specimens in violation thereof.\textsuperscript{72}

Table 3.3

Enforcement Measures by the Parties under CITES

- penalize trade in or possession of such specimens, or both;
- provide for the confiscation or return to the state of export of such specimens;
- maintain records of trade in specimens of Appendices I, II, and III species; and
- transmit to the Secretariat an annual report on trade records and a biennial report on legislative, regulatory, and administrative measures to enforce the Convention.

Table 3.4

Parties should also take the following management and institutional steps

- designate one or more Management Authorities competent to grant permits or certificates on behalf of that Party, as well as one or more Scientific Authorities;
- inform the Depository, when depositing its instruments of ratification, acceptance, approval or accession, of the details of the Management Authority authorized to communicate with other parties or the Secretariat; and
- inform the Secretariat of any change regarding any Management Authorities and Scientific Authorities and upon request provide the Secretariat with the impression of stamps, seals, or other devices used to authenticate permits or certificates.

\textsuperscript{71} Art. VII.
\textsuperscript{72} Art. VIII.
Conference of Parties

The Parties (member states) to CITES are collectively referred to as the Conference of the Parties (COP). COP, the plenary non-standing body of CITES, meets every two to three years in order to review the progress made towards the restoration and conservation of Appendices I, II, and III species, consider any reports presented by the Secretariat or any Party, and make recommendations for improving the effectiveness of the Convention.\(^{73}\) The COP also considers and adopts amendments to Appendices I and II.\(^{74}\)

Table 3.5

<table>
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<th>Four Committees established by COP</th>
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<tr>
<td>• the Standing Committee</td>
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<td>• the Animals Committee</td>
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<td>• the Plants Committee</td>
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<td>• the Nomenclature Committee</td>
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Secretariat

The CITES Secretariat, administered by UNEP, is located in Geneva, Switzerland. It has a pivotal role, fundamental to the Convention and has several functions to perform, which include:\(^{75}\)

- playing a coordinating, advisory, and servicing role in the working of the Convention;
- acting as a repository for the reports, sample permits, and other information submitted by the Parties;
- distributing information relevant to several or all Parties, etc.

Reservations

Any Party can enter a specific reservation with regard to any species included in CITES Appendices or any parts or derivatives specified in relation to species included in Appendix I.\(^ {76}\)

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\(^{73}\) Art. XI.
\(^{74}\) Art. XV.
\(^{75}\) Art. XII.
\(^{76}\) Art. XXIII.
Recent Developments

Till date, there have been 12 COP meetings of CITES. The most recent was the 12th COP at Santiago, Chile, in November 2002. Among the high profile decisions taken there was the listing of mahogany, whale shark, and basking shark in Appendix II of CITES. Mahogany produces extremely valuable timber. Whale shark is the largest fish in the world which is endangered due to trade in its fins, meat, and liver oil. The basking fish is highly migratory and is hunted for its meat and fins. The Conference also added 32 species of seahorse and 26 species of Asian turtles to Appendix II. These turtles from South, Southeast, and East Asia are traded in significant quantities for regional food markets, Asian traditional medicines, and international pet markets. Three rare birds from Central and South America: the yellow naped parrot, the yellow-headed parrot, and the blue-headed macaw have been transferred from Appendix II to Appendix I.

COP-12 also agreed to set a zero quota for commercial trade in Black Sea population of bottlenose dolphins, which was already listed in Appendix II. COP-12 also conditionally accepted proposals from Botswana, Namibia, and South Africa to make a one time sale of 20, 10, and 30 tonnes respectively, of ivory. The agreement requires any future one-off sales to be supervised through a strict control system. The sales cannot take place before May 2004 to provide time for baseline data to be gathered on population and poaching levels.
3.3 CITES - Compliance by India

India signed the CITES on 9 July 1974 and ratified it on 20 July 1976. India has played a major role in the working of CITES. The CITES logo was in fact designed by India for the third meeting of the Conference of Parties held in the country. India took keen interest and was at the forefront of CITES in these formative years, when far-reaching resolutions were passed for improving the effectiveness of the Convention. India has played a proactive role in mobilizing international opinion for inclusion of many critically endangered species in Appendix I and other threatened species in Appendix II of CITES. India has also played an important role in the implementation of CITES at the national level. The Ministry of Environment and Forests (MoEF) is the nodal agency for CITES. The Director General of Forest (Wild Life) and Director, Wildlife Preservation, are the Management Authority for CITES in India.

Table 3.7

<table>
<thead>
<tr>
<th>Management of CITES in India</th>
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<tbody>
<tr>
<td>• Management Authorities</td>
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<tr>
<td>• Assistant Management Authorities</td>
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<td>• Scientific Authorities</td>
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<tr>
<td>• Wildlife Inspectors</td>
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<tr>
<td>• Sub-regional Wildlife Preservation Offices</td>
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Table 3.8

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<thead>
<tr>
<th>Designated Scientific Authorities for CITES in India</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Director, Botanical Survey of India</td>
</tr>
<tr>
<td>• Director, Zoological Survey of India</td>
</tr>
<tr>
<td>• Director, Central Marine Fisheries Research Institute</td>
</tr>
<tr>
<td>• Director, Wildlife Institute of India</td>
</tr>
</tbody>
</table>

Enforcement of CITES in India

India has an extensive system of protected areas (PA) encompassing at present 96 national parks and 509 wildlife sanctuaries covering an area of 1.56 lakh sq. kms.\(^7\) Lot of in situ and ex situ conservation measures have been taken by the Government of India to conserve wildlife. International trade in all wild flora and fauna in general and the species covered under CITES in particular is regulated jointly through the provisions of various laws and policies which are directly or indirectly related to species conservation.

\(^7\) Annual Report, 2002–3, MoEF.
Table 3.9

Major Policies and Legislations

- The Export/Import Policy of the Government of India
- The Customs Act, 1962
- The National Zoo Policy, 1998
- The Wildlife (Protection) Amendment Act, 2002

Export-Import (EXIM) Policy is announced periodically by the Union Ministry of Commerce under Section 5 of the Foreign Trade (Development and Regulation) Act, 1992. It contains policy regarding flora and fauna, their parts and derivatives, which are permitted, regulated, or prohibited for export or import. It also contains the conditions (which include compliance with CITES) governing import and export of permissible species. The Policy is decided in consultation with the Management Authority for CITES in India as far as matters related to wild fauna and floral are concerned and is enforced through the Customs Act, 1962.

Import of animals and their parts and derivatives for zoos and circuses or for research purposes may be permitted subject to the provision of CITES and on the recommendation of the Chief Wildlife Warden under license from the Director General of Foreign Trade. Import of plants is also subject to the provisions of CITES. Import of wild animals as pets in personal baggage is also subject to the provisions of CITES.

The EXIM policy permits re-export of commodities except to the extent that such exports are regulated by the Negative list of Exports or any other provision of this policy or any other law for the time being in force. Items prohibited in the Negative list are not permitted to be carried in the personal baggage.

**Special Conditions of Import and Export**

All import and export can be done only through custom points in Mumbai, Kolkata, Delhi, Chennai, and Cochin. In general, export of derivatives of wild flora in raw form is not permitted. Only value added items are allowed for export. The essential conditions governing the import and export of wildlife and derivatives are:

a. compliance with the provisions of CITES
b. inspection of consignment by the Regional Deputy Director of Wildlife preservation at custom points in case of items covered under CITES.

India has recognized 4 ports for the purpose of import and export. They are Delhi, Mumbai, Kolkata, and Chennai. They also facilitate pre-shipment/release and examination, and quarantine facilities have been made as per the requirements of CITES. When CITES is being violated, the role of the Customs Department comes into play mainly at the exit points of the country.
The recent Wildlife Conservation Strategy, 2002, also aims at ensuring that law enforcement agencies provide quick and deterrent punishment to those engaged in poaching, illicit trade in wildlife and wildlife products, destruction of their habitats and such other illegal activities.

The first National Wildlife Action Plan of 1983 has been revised and the new Wildlife Action Plan (2002-2016) has been adopted. The plan outlines the strategies, action points and the priority projects for the conservation of wild fauna and flora in the country.

The most significant legislation on wildlife protection which is based on the ecosystem approach and a regulatory regime of command and control is The Wildlife (Protection) Act (WLPA), 1972, as amended in 1991. It provides for the protection of wild animals, birds and plants. The said Act provides the legal framework for the protection of various species of wild animals, management of their habitats, and regulation and control of trade in parts and products derived from various species of wild animals. It also protects species in the order of threat of their extinction. WLPA has six Schedules in which endangered species are placed. Hunting of virtually all wild animals is banned. In particular, the Act prohibits hunting of all wildlife specified in the Schedules I, II, III, and IV of the Act which includes all the Indian animals species in CITES Appendix I and most of the species in Appendix II and III. The Act prohibits collection or trade of Specified Plants (whether dead or alive or parts or derivatives) listed in Schedule VI from any forest land and any other area specified by notification by Central Government. The Schedule VI lists all six plant taxa of Indian origin at present included in CITES Appendix I.

The Act provides for verification and marking with identification stamps of the stocks of licensed wildlife dealers. Transportation of wildlife or wildlife products requires a permit from the authorized officer which could only be granted after ascertaining that the product had been legally acquired.

The Wildlife (Protection) Act, 1972, is being amended to incorporate the CITES legislations. This would control the illegal trade in wildlife and its products to a great extent.

The Foreign Trade (Development and Regulation) Act, 1992, largely meets the requirement of CITES including baggage rules and sale of articles in duty free shops.

The Customs Act, 1962, takes care of violation of EXIM Policy in general and provisions of CITES in particular. Sec. 3 (2) of the Import and Export Control Act, 1947, provides that all items (including wild fauna and flora) covered in the import and export policy will be deemed to be covered under Section 11 of the Customs Act. Consequently, all cases of violation of Export/Import Policy in general and CITES in particular, constitute an offence under Customs Act and are dealt with by the customs officials. Provisions under the Customs Act empower customs officers to deal with attempts at smuggling wildlife into the country.
Prevention of Cruelty to Animals Act, 1960, extends protection against misuse of animals in captivity or under human use, including those being used for performances or for experimentation.

Apart from these Acts and policies, the Government of India has also launched special species-driven projects which aim to conserve or protect the particular endangered species from extinction. One such programme is ‘Project Tiger’ which was launched in 1972 to save the tiger from the brink of extinction. The main objective of the scheme is to ensure a viable population of tiger in India for scientific, economic, aesthetic, cultural, and ecological values and to preserve areas of biological importance as natural heritage for the benefit, education, and enjoyment of the people. The main objectives under the scheme include wildlife management and protection measures. At present there are 27 tiger reserves covering an area of 37,761 sq. kms with a population of 1,498 tigers. Another project is ‘Project Elephant’ which was launched in 1991-92 with the objective of saving the Asiatic Elephant.

Enforcement of laws against wildlife crime in India is complicated by the fact that a large number of agencies are directly or indirectly involved in trying to stop it. Given the complex system that exists, it is extremely important that agencies coordinate with each other and work in a cooperative fashion to tackle wildlife crime.

### Table 3.10

<table>
<thead>
<tr>
<th>Other Relevant Policies and Legislations</th>
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</thead>
<tbody>
<tr>
<td>• Rules regarding post parcels and packets from foreign post in/out of India</td>
</tr>
<tr>
<td>• Prevention of Cruelty to Animals Act, 1960</td>
</tr>
<tr>
<td>• Marine Products Export Development Authority Act, 1972</td>
</tr>
<tr>
<td>• Plants/Animals Quarantine Act</td>
</tr>
</tbody>
</table>

### Table 3.11

**Anti-poaching Agencies**

- State Wildlife Departments
- State Forest Departments
- Ministry of Environment and Forests
- Army (wherever applicable)
- Police
- Indo-Tibetan Border Police
- Border Security Force
- Coastguard

### Table 3.12

**Anti-Smuggling Agencies**

- Customs
- Wildlife Protection Department
- Railway Protection Force
- Directorate of Revenue Intelligence
- Foreign Post Office
- Central Bureau of Investigation
- Interpol Unit of CBI
- Police
- Border Security Force
- Indo-Tibetan Border Police


78 Annual Report 2002-3, MoEF.
Despite the fact that India has been one of the prime targets of international gangs who take advantage of poverty related conflicts in India and instigate people to commit wildlife crime, there is no separate law for implementation of CITES in India. The Wildlife (Protection) Act, 1972, is being amended to incorporate the CITES legislations. This would control the illegal trade in wildlife and its products to a great extent. Recently, the Government of India has constituted a Wildlife Crime Control Bureau by a notification dated 4 September 2006.

3.4 Convention on the Conservation of Migratory Species of Wild Animals (CMS)

Apart from CITES, there is also another international instrument which aims to protect migratory wild animals known as the Convention on the Conservation of Migratory Species of Wild Animals (CMS) which was adopted on 23 June 1979 at Bonn. CMS came into force on 1 November 1983 and presently has 88 member states (as of 1 December 2004). The objective of CMS is to protect those species of wild animals that migrate across or outside national boundaries. CMS is based on the premise that migratory species represent a common natural heritage, even more so than indigenous ones. Countries share a common responsibility to undertake cooperative action for their conservation throughout their lifecycle. The need for countries to cooperate in the conservation of animals that migrate across national boundaries or between areas of national jurisdiction and the sea was recognized in Recommendation 32 of the 1972 United Nations Conference on the Human Environment.  

Basic Principles

CMS is aimed at conserving those species of wild animals that migrate across or outside national boundaries by developing and implementing co-operative agreements, prohibiting taking of endangered species, conserving habitat, and controlling other adverse factors. The Parties should promote, co-operate in and support, research relating to migratory species. Special attention should be paid to those migratory species whose conservation status is unfavourable, i.e. endangered migratory species. The Convention seeks to protect migratory species by dividing them into two parts. One part, i.e. Appendix I will have all those species whose taking in any form is banned and the other part, i.e. Appendix II will list those species which are less endangered but which are the subject of agreements.

Appendix I

Appendix I lists migratory species which according to the best scientific evidence available, are endangered. There is a provision for the removal of particular species from Appendix I provided the species is no longer endangered according to scientific evidence and if it is proved that the species is not likely to become endangered again. Parties that are range states are obliged to prohibit the taking, i.e. hunting.

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80 See Preamble to CMS.
81 Art. II.
82 Art. III (2).
83 Art. III (3).
84 Art. III (3).
fishing, capturing, and deliberate killing of animals listed in Appendix I and also
deavour to conserve and restore important habitats of Appendix I species, to
counteract factors impeding their migration and to control other factors that might
endanger them. However, there are a few exceptions to this prohibition. Migratory
species belonging to Appendix I may be allowed to be taken if it is for scientific
purposes or for the purpose of enhancing the propagation or survival of the affected
species or to accommodate the needs of traditional subsistence users of such species
or any other extraordinary circumstances.

Appendix II

Appendix-II lists those migratory species whose conservation status is unfavourable
and which require international agreements for their conservation and management.
CMS is a framework Convention since it provides for separate internationally and
legally binding instruments between range states of certain migratory species.
Parties to such Agreements do not have to be Parties to the parent Convention, i.e.
CMS. Migratory species could be listed in both Appendix I and Appendix II if the
circumstances warrant.

International Agreements

Agreements can range from legally binding multilateral treaties to less formal
memoranda of understanding. The object of such Agreements is to restore the
migratory species to a favourable conservation status or to maintain it at that status.
These Agreements, within the framework of the umbrella Convention, can stipulate
precise conservation measures and implementation mechanisms. The Agreement
should as far as possible deal with more than one species and cover the whole range
of species concerned. Agreement should provide for co-ordinated species
conservation and management plans; conservation and restoration of habitats; control
of factors impeding migration; co-operative research and monitoring; and exchange of
information and public education.

The Convention also provides for ‘Agreements’ for the conservation of any
population or geographically separate part of the population of any species of wild
animals which periodically cross jurisdictional boundaries. This flexibility provides
for the development and conclusion of targeted treaties which can be the most
effective instrument for the conservation and management of certain species or groups
of species. Under this category of Agreement, the geographic coverage does not have
to extend to the whole of the migration range of the species concerned, nor does the

84 Range States are those states that exercise jurisdiction over any part of the range of that migratory
species, Art. I (h).
85 Art. III (4).
86 Art. III (5).
87 Conservation Status refers to all the influences upon a migratory species affecting its long-term
distribution, Art. I (b).
88 UNEP Environmental Law Training Manual.
89 Art. V (2).
90 Art. V (1).
91 Art. V (5).
92 Art. V (4).
species have to be listed in Appendix II of the Convention; the species does not even have to fall within the narrow definition of ‘migratory’.

CMS also provides for alternative, legally binding international instruments to achieve objectives similar to those of Agreements like a Memorandum of Understanding (MOU). The aim of the MOU is to co-ordinate short-term measures to be taken by the range states at the administrative and scientific levels, in some cases on the basis of already existing commitments. An MOU describes the actions to be taken collectively and more specific measures to be implemented in each country. MOUs are specifically directed towards immediate protection measures for endangered species.

**Bodies Established under CMS**

The Conference of Parties (COP) is the decision making organ and can amend the instruments under the Convention and adopt resolutions to improve its implementation. It meets every three years. At each meeting, COP reviews the implementation of the Convention and decides the priorities for the future.

The Standing Committee provides policy and administrative guidance between regular meetings of the Parties.

A Scientific/Technical Council is established to provide advice on scientific matters to the COP, to the Secretariat and, when instructed, to any party.

A Secretariat under the UNEP provides administrative support to the Convention. Its functions include developing and promoting Agreements, processing information, liaising with governments and organizations, servicing meetings and carrying out essential administrative tasks assigned to it by the Convention and the COP.

**Recent Developments**

Till date, there have been 7 meetings of the Conference of Parties. The most recent one, i.e. COP7 was held at Bonn, Germany, in September 2002. It is considered to be the most successful COP ever, attended by 300 participants. Forty-one proposals concerning 31 species were accepted for listing. Out of these, 21 species are listed in Appendix I and 20 species are listed in Appendix II. The highlights of this COP include: the identification of species for concerted and coordinated action of the Range States; a new programme to implement Agreements concluded and to develop new Agreements and MOU; the initiation of a process to update the Strategic Plan for the Convention’s future implementation; the decision on a well-structured CMS information Management Plan and the inclusion of the Global Register for Migratory Species and decisions on regional priority species such as dugong and small cetaceans.

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93 Art. VII.
94 Art. VIII.
95 Art. IX.
Table 3.15

List of Agreements concluded regarding species listed in Appendix II

- Agreement on the Conservation of Seals in the Wadden Sea, 1990
- Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas, 1991 (ASCOBANS)
- Agreement on the Conservation of Bats in Europe, 1991 (EUROBATS)
- Memorandum of Understanding concerning Conservation measures for the Siberian Crane, 1993
- Memorandum of Understanding concerning Conservation Measures for the Slender-billed Curlew, 1994
- Agreement on the Conservation of African Eurasian Migratory Waterbirds, 1995 (AEWA)
- Agreement on the Conservation of Cetaceans of the Mediterranean and Black Seas (ACCOBAMS), 1996
- Memoranda of Understanding concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa, 1999
- Memorandum of Understanding concerning Conservation Measures for Great Bustard of Central Europe, 2000
- Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA), 2001
- Agreement on the Conservation of Southern Hemisphere Albatrosses and Petrel, 2001
- Memorandum of Understanding Concerning Conservation and Restoration of Bukhara Deer, 2002
- Memorandum of Understanding Concerning Conservation Measures for the Aquatic Warbler, 2003

International co-operation under-way for the conservation of other migratory species

- Hobura Bustard, Asian Population
- Great Cormorant, Western European Population
- Small Cetaceans, African Atlantic States
- Small Cetaceans, South East Asia
- Cetaceans, Indian Ocean
- Sahelo-Saharan Antelopes
- Saiga Antelopes
- Mongolian Gazelle
- African Elephant
- Sand Grouse
- Sturgeon
- Marine Turtles, Pacific Ocean
3.5 Enforcement and Compliance by India of CMS

India signed the Convention on 23 June 1979 and ratified it on 4 May 1985. As a Party to CMS, India has certain obligations to be fulfilled regarding the Appendix I and II species. As for Appendix I, India should take immediate measures for the protection of migratory species including restoration of their habitats, control of factors that are endangering these species, etc. For Appendix II species, India is obligated to enter into agreements which would benefit these species.

Despite India being a party to CMS, nothing concrete has been done by the Government to protect certain migratory species. However, India has signed an MOU for the protection of Siberian Cranes in 1993. Originally concentrating on the highly endangered Western and Central Populations of Siberian Cranes which migrate between breeding grounds in Western Siberia and wintering sites in Iran and India, respectively, the scope of the Memorandum was extended to cover the larger Eastern population also. The Siberian Crane MOU has nine Signatory States: Azerbaijan, China, India, Islamic Republic of Iran, Kazakhstan, Pakistan, Russian Federation, Turkmenistan, and Uzbekistan. There are two remaining Range States, i.e. Afghanistan and Mongolia which have not signed the MOU.

In India, Keoladeo National Park, Bharatpur, is home to a small flock of Siberian Cranes that has dwindled from about 200 birds in the 1960s to just a few birds today. The birds spend the winter in the park after a journey of several thousand kilometers which takes them from the Kunovat Basin in Russia through Uzbekistan, Turkmenistan, Afghanistan, and Pakistan. After not coming at all in 1994 and 1995, their reappearance in February 1996 gave new hope for the survival of the most endangered flock. As a party to the MOU, India is obligated to take certain measures to protect these endangered cranes. In January 1997, an unsuccessful attempt was made to capture one of the wild cranes at Keoladeo, in order to attach a satellite transmitter.

India was host to the second meeting of Range States for the conservation of Siberian Cranes in 1996. This meeting took place at Bharatpur. Detailed plans were drawn up for each of the Range States with inputs from all of the participants, and were presented in the form of a Conservation Plan. A detailed Conservation Plan for the years 1997–1999, was one of the useful outputs of the Indian meeting. At the recent COP7, India has introduced the draft recommendation of ‘Central Asian-Indian Waterbird Flyway Initiative’ which was not finalized due to political and substantive problems with Pakistan.

Recently, India has taken some practical steps to protect these endangered species. In this regard, a three day conference on Conservation of the Central Asian Flyway for migratory water birds and their habitat was held at New Delhi in June 2005. During the conference, a central Asian Flyway Action Plan and Action Plan for conservation of Siberian Crane flyway habitats were discussed to take some urgent measure to protect these endangered species.

96 Art. III (4).
Apart from the Siberian Crane, there are 5 species of Marine Turtles which are listed in Appendix I of the CMS and also listed in Schedule I of the Wildlife (Protection) Act, 1972. This Act provides for a complete ban on the killing of Schedule I species. Despite the fact that they are endangered species, India is not a Party to the MOU concerning Conservation of Marine Turtles of the Indian Ocean and South-East Asia. In the recent COP7, India showed its intention to sign the MOU as soon as possible. In the same meeting, India also raised concern for the situation of the Tibetan Antelope, whose wool was being traded all over the world. The most important step taken by India for the conservation of migratory species was the proposal for inclusion of the Gangetic Dolphin in Appendix I of the CMS. This proposal was supported by Nepal and Bangladesh and was adopted by COP7.

3.6 International Convention for the Regulation of Whaling (ICRW), 1946

CMS is the only global Convention which deals exclusively with the conservation and management of migratory species. Although marine migratory species are included in the Convention, the conservation of marine mammals including whales, dolphins, and seals, is an issue which has received widespread public attention. In 1972, a proposal was put forward at the Stockholm Conference to establish a total moratorium on commercial whaling. Since then the whale has emerged as a symbol of the world environment movement and has come to represent, perhaps better than any other single issue, the difficulty of reconciling the need to conserve biological diversity, protect cultural and indigenous values, and give effect to economic needs. Whale species have been hunted on a large scale since the 18th and 19th centuries for lamp oil, perfume ingredients, and whalebones used in corset stays. Apart from CMS, CITES is also one of the international instruments which provide protection to this particular species along with other endangered species. One international Convention which specifically addressed the whaling issue is the International Convention for the Regulation of Whaling (ICRW), 1946. The ICRW began as a whaling club, established ‘to provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry’, whilst taking into account the need to safeguard whale resources from overfishing and achieve optimum level of whale stocks without causing widespread economic and nutritional distress in the context of an international system of regulation. The Convention was adopted on 2 December 1946 and came into force on 10 November 1948. It was amended on 19 November 1956.

Objectives

The main objective of the Convention is to protect all species of whales from overfishing and safeguard for future generations the great natural resources represented by whale stocks. It also aims to establish a system of international regulation for whale fisheries to ensure proper conservation and development of whale stocks. It will also serve as an agency for the collection, analysis, and publication of scientific information related to whales and whaling.

97 Sands, Phillipe, Principles of International Environmental Law.
98 Ibid., and also Preamble of ICW.
Basic Provisions

The Convention has a Schedule which is adopted annually and forms an integral part of the Convention. Its purpose is to set the specific conservation regulations applicable. It applies to factory ships, land stations, and whale catchers and to all waters in which whaling is carried on.

International Whaling Commission

The Convention also seeks to establish an International Whaling Commission (IWC), which is the principal organ of the ICRW. Decisions of the IWC are taken by the simple majority of those members voting, except that a three-fourths majority of those voting is required for action under Article V.

Functions of the IWC

The functions of the IWC include studies and investigations, collecting and analysing statistical information, and methods of maintaining and increasing populations of whale stocks. IWC also publishes a report of its activities.

Apart from these functions, IWC has certain powers under the Convention. The main duty of the Commission is to keep under review and revise as necessary the measures laid down in the Schedule to the Convention governing the conduct of whaling. IWC can amend the provisions of the Schedule by adopting regulations for the conservation and utilization of whale resources. These include measures:

- to provide for the complete protection of certain species of whales;
- to designate specified ocean areas as whale sanctuaries;
- to set the maximum catches of whales which may be taken in one season;
- to prescribe open and closed seasons and areas for whaling;
- to fix limits above and below which certain species of whales may not be killed;
- to prohibit the capture of suckling calves and female whales accompanied by calves; and
- to require the compilation of catch reports and other statistical and biological data.

The Convention requires that amendments to the provisions of the Schedule should be with respect to the conservation and optimum utilization of whale resources, should be based on scientific findings, and take into consideration the interests of the consumers.

99 Art. 1 (1).
100 Art. 1 (2).
101 Art. III (1).
102 Art. III (2).
103 Art. IV (1).
104 Art. IV (2).
105 Art. V (1).
106 Art. V (2).
The Convention also establishes certain criteria for amendments to the Schedule and provides for a system of notification which allows Parties up to 90 days after notification of amendments to register an objection. In this case, the amendment is applicable to all the Parties except those which objected to it.\textsuperscript{107}

Under the Convention, the IWC also has power to make recommendations although not binding on any matter relating to whales or whaling.\textsuperscript{108}

\textit{Exceptions to the General Obligations}

There is an exception to the general rule of not killing whales by the Parties. Any Party can allow its nationals to permit killing or taking the whales for the purpose of scientific research. This is subject to the provision of restricting the number of their killing and other conditions as the Party thinks fit.\textsuperscript{109} The authorizing Party must report such authorization to the Commission, as well as scientific information relating to whaling, including the results of such scientific research.

\textit{Enforcement Measures to be taken by the Parties}

Parties are obliged to take certain enforcement measures under the Convention. Each Party must ensure the application of the Convention and the prosecution and punishment of infractions.\textsuperscript{110} Since 1949 at least two inspectors must be maintained on factory ships, and adequate inspection maintained at land stations. In 1971, the IWC established an international observer scheme which grants the IWC limited powers of observation intended to provide some international oversight.\textsuperscript{111}

\textit{Protocol to the Convention}

In the year 1956, the Convention was amended to extend its application to helicopters and other aircraft also apart from ships. It also included in it provisions, methods of inspection among those Schedule provisions which may be amended by the Commission. This amendment is known as Protocol to the International Convention for the Regulation of Whaling, 1956.

\textit{Meetings of the IWC}

The Schedule is subject of amendment at the annual sessions of the Commission. Originally intended to be an instrument for orderly development of the whaling industry, it has become an international instrument completely prohibiting commercial whaling. Until 1972, the Commission regulated the total amount of whales that could be taken in any year by setting ‘blue whale units’ but did not set individual species limits. As of 1973, the USSR and Japan were hunting around 80 per cent of the world’s whales. From 1972 to 1976, the IWC operated a quota on a species-by-species basis. In 1976, a ‘New Management Procedure’ was put in place

\textsuperscript{107} Art. V (3).
\textsuperscript{108} Art. VI.
\textsuperscript{109} Art. VIII (1).
\textsuperscript{110} Art. IX.
\textsuperscript{111} Sands, Phillipe, \textit{Principles of International Environmental Law}. 

81
which divided each species into stocks and established a quota for each stock (initial management stocks, sustained management stocks, and protection stocks).

By 1978, the outlook of the IWC had undergone a sea change. It had acquired new members; many of whom were anti-whaling nations. In 1979, a moratorium on all deep sea whaling using factory ships for whales other than minkes was passed. Japan and the USSR were the only nations to vote against it. In the same year, the IWC declared the entire Indian Ocean from the coast of Africa West to Australia, and from the Red and Arabian Seas and the Gulf of Oman South to 55 S latitude, as a whale sanctuary. In 1989, the Indian Ocean Sanctuary was extended for a further 3 years, and then in 1992, the IWC agreed by consensus that it should remain a sanctuary for an indefinite period.

At the IWC annual meeting in 1982, an indefinite moratorium was passed on commercial whaling. Within 90 days, Japan, Norway, and Peru lodged official objections to the moratorium, thus ensuring their right to continue whaling after 1986. Some of the whaling countries, which opposed the 1982 moratorium were convinced of the need to halt commercial whaling before the 1986 deadline. Japan withdrew its objection to the whaling ban, but continued whaling under the garb of scientific whaling. Again this is a matter of great controversy, as the meaning of scientific research is not defined either in the Convention or in the Schedule. The IWC has also adopted other exceptions including catch limits for aboriginal subsistence whaling to satisfy aboriginal subsistence needs.

**Recent Developments**

In 2000, IWC accepted and adopted a new ‘Revised Management Procedure’ (RMP), which would establish a new system for sustainable commercial whaling based upon a new catch limit algorithm formulated by the Scientific Committee in 1992. The RMP is a set of rules for setting catch limits on whales. Under the RMP, catch limits are initially zero until they are calculated and approved for individual species in designated areas of the sea. A special meeting was held in October 2002 at which Iceland was readmitted to the IWC and a catch limit was set for the aboriginal subsistence hunting on the Beirg-Chuchi-Beaufort seas stock of bowhead whales.

### 3.7 Enforcement and Compliance by India of ICRW

Since India is neither a whale producer nor a consumer nation, we do not have any major role to play in this convention. India basically has a conservationist approach when it comes to the extinction of any species. In the International Convention on Regulation of Whaling, India has a voting right which it exercises only in the favour of conservation of whales.

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112 In Pursuance of Art. V.
113 Art. VIII.
3.8 Conclusion

In the 1950s and 60s, wildlife trade appeared to be reaching epidemic proportions, with rural people in developing countries being forced to harvest their resources for sale abroad, even at the expense of driving species to extinction. The so-called charismatic mega-fauna like tigers, rhino, whales, elephants, spotted cats, as well as crocodiles and sea turtles were prominent subjects of this concern and demonstrated the species-based conservation approach of the times. Governments in those days were anxious to set up a framework for international cooperation with which to battle this growing threat to the species that the public cared most about. It was during this era that the CITES dealing with trade in species and CMS dealing with extinction of migratory species came into being.

Since then, a lot of change has taken place in the international arena relating to conservation of species. The world now has a mature set of conservation agreements, with different sets of law affecting different issues or even different groups of species. Over 40 international agreements, for example, address the problem of invasive alien species. As far as the CITES and CMS are concerned, a lot of changes have taken place in the number of countries ratifying the conventions and the listing of species in the Appendices has increased. In its 30 years of existence, CITES has been addressing the most immediate conservation issues of the day, periodically adjusting its procedures and building its internal structure of committees and established processes. CITES provides a double edged sword to combat illegal or destructive wildlife trade. Some of the CITES ideas that were revolutionary in the early days have now received greater legitimacy, or at least appreciated more. With its clear role and focus, CITES has become one of the main pillars of international conservation efforts to save the endangered species.

As interest in conservation has grown, so has attention on the CMS (Bonn Convention) as a tool for improving the status of certain animals at risk. Numerous regional agreements and memoranda have been signed under the auspices of CMS for protecting particular migratory species since it has come into force. Yet, CMS is not ranked very high in the political arena.

For all the above three conventions to be more effective, it is essential to have synergies among them and with other biodiversity related conventions such as Ramsar, CBD, etc. The work undertaken by these conventions should be complementary and mutually reinforcing. Cooperation and coordination among species management conventions and agreements is important.
IV
Habitat Conservation*

4.1 Introduction

Apart from the various Conventions with a focus on protection of species, there have been attempts internationally emphasizing the protection of habitats within which the various species exists. This assumes significance as the destruction of habitat has been identified as the single most important reason for extinction of species. Therefore, for the protection and conservation of endangered species, it is also important to save their habitats which include forests, wetlands, mountains, and deserts. The most important habitat in which most species survive is forests. Apart from being the habitat for species, forests also have various other ecological functions. They act as carbon sinks and contribute in maintaining and enhancing the quality of soil. Forest conservation is also important because it contributes to climate stability and achieving biodiversity goals. Despite being such an important factor in the environmental stability, there has been large scale deforestation across the globe, mainly for timber. Historically, most recorded deforestation occurred in the North, where the awareness-building process also first took place, not as a 20th century reaction to pollution, but in the 18th and 19th centuries with the adoption of stringent forest laws and practices. With the gradual development of the South, that situation has reversed. Over the past two decades, forest cover in the North has tended to increase while that in the South has decreased as virgin forests have come under heavy pressure.

Initially, concern over forests in developed countries was mainly related to pollution control. Such worries in fact drove initiatives to convene the first global conference on the environment in 1972. The Stockholm Conference Action Plan, 1972, has some recommendations on forests which clearly reflect the then-prevailing emphasis on economic development of forests on the one side and on classic conservation through setting aside protected forest areas on the other. Principle 21 of the Stockholm Declaration seeks to balance national sovereignty over natural resources with the obligation of states not to cause harm to the environment beyond national jurisdictions or control.

Since Stockholm, the focus of international attention has shifted from temperate to tropical forests and from a regional to a global perspective. This shift was prompted by scientific and political recognition of the importance of tropical forests to the preservation of biological diversity and the prevention of global warming. The recommendation of the 1972 Stockholm Conference led to an intensification of activities related to forestry, first at the regional level with intensive negotiation on the issue of pollution control. At the global level, two separate but connected initiatives sought to tackle problems related to tropical forests: the International Tropical Timber

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* The Author is thankful to Shri J.B. Sharma, DIG (Forest), MoEF, for his valuable guidance in writing this chapter.

115 Schally, M.Hugo, *Forests: Towards an International Legal Regime*. 
Agreement, 1983 (ITTA), and the Tropical Forest Action Plan (TFAP). Both initiatives reflected a mixture of the commodity agreement that contains an environment protection element. ITTA was adopted on 18 November 1983. The ITTA, 1983, is based on the premise that there is a need for proper and effective conservation and development of tropical timber forests as well as its optimum utilization.\textsuperscript{116}

**Objectives**

The basic objectives of ITTA, 1983, are to provide an effective framework for cooperation and consultation between countries producing and consuming tropical timber, promote the expansion and diversification of international trade in tropical timber, improve structural conditions in the tropical timber market, promote and support research and development with a view to improving forest management and wood utilization, encourage the development of national policies aimed at sustainable utilization, conserve tropical forests and their genetic resources, and maintain the ecological balance in the regions concerned.\textsuperscript{117}

### 4.2 International Tropical Timber Organization

The International Tropical Timber Organization (ITTO) was first established by the International Tropical Timber Agreement (ITTA), 1983, to administer the provisions of ITTA and also to supervise the operation of the agreement.\textsuperscript{118} The ITTO is a commodity organization which brings together countries which produce and consume tropical timber to discuss and exchange information and develop policies on all aspects of the world tropical timber economy. The ITTO is headquartered in Yokohama, Japan, and as at July 2003 had 58 members. The ITTO facilitates discussion, consultation, and international cooperation on issues relating to the international trade and utilization of tropical timber and the sustainable management of its resource base. The ITTO functions through the International Tropical Timber Council established under Article 6 of the Agreement. The Council also makes arrangements for consultation or cooperation with the United Nations and its organs such as UNCTAD, UNDP, UNEP, UNIDO, FAO, other United Nations specialized agencies, and intergovernmental, non-governmental and governmental organizations.\textsuperscript{119}

**Permanent Committees**

The ITTA also establishes permanent committees for better management of tropical forests.\textsuperscript{120} These include:

- Committee on Economic Information and Market Intelligence to analyse statistical data and specific indicators for the monitoring of international trade and development.

\textsuperscript{116} Preamble, ITTA, 1983.
\textsuperscript{117} Art. 1.
\textsuperscript{118} Art. 3.
\textsuperscript{119} Art. 14.
\textsuperscript{120} Art. 24.
tropical timber trade, make recommendations to the Council on the need and nature of appropriate study on tropical timber market, etc.\textsuperscript{121}

- Committee on Reforestation and Forest Management to keep under regular review the support and assistance being provided at national and international levels for afforestation and forest management for the production of industrial tropical timber, etc.\textsuperscript{122}

- Committee on Forest Industry to promote cooperation between production and consuming members as partners in the development of processing activities in producing member countries in the areas of transfer of technology, training, standardization of nomenclature of tropical timber, etc.\textsuperscript{123}

The tenth session of the ITTO held in 1991 established a small working group to develop Guidelines for the Conservation of Biological Diversity in Production Forests, adopted in December 1990, which are intended to complement the Guidelines for the Sustainable Management of Natural Tropical Forests adopted in December 1990.\textsuperscript{124}

The new International Tropical Timber Agreement, 1994, successor agreement to ITTA, 1983, was negotiated in 1994 and came into force on 1 January 1997.\textsuperscript{125} The new agreement continues to focus on the world tropical timber economy. In addition, it contains broader provisions for information sharing, including non-tropical timber trade data and allows for consideration of non-tropical trade data and issues as they relate to tropical timber. The International Timber Organization (ITO) established by the 1983 agreement continues in being for the purpose of administering the provisions and supervising the operation of the Agreement. This organization functions through the International Tropical Timber Council (ITTC).\textsuperscript{126} The ITTA, 1994, gives a new emphasis to the policy work of the ITTO. It enshrines the Year 2000 Objective and establishes the Bali Partnership Fund to assist producing member countries to sustainably manage their tropical timber producing forests. The Year 2000 Objective states that by the year 2000, all tropical timber products traded internationally by Member States shall originate from sustainably managed forests. The Bali Partnership Fund has been established to assist producing members to make the investments necessary to enhance their capacity to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources by the year 2000.

\textsuperscript{121} Art. 25 (1).
\textsuperscript{122} Art. 25 (2).
\textsuperscript{123} Art. 25 (3).
\textsuperscript{124} Sands, Phillipe, Principles of International Environmental Law.
\textsuperscript{125} Art. 48 (1), ITTO, 1994.
\textsuperscript{126} Art. 4.
Apart from the ITTA, 1994, there is the non-binding Tropical Forestry Action Plan (TFAP), 1985, developed by the Food and Agricultural Organization (FAO) with the World Bank, UNDP, UNEP, and the World Resources Institute. TFAP provides a framework for concerted national and international action to manage, protect, and restore forest resources in the tropical region. The TFAP was criticized for not addressing the root cause of deforestation.

During the preparations for the UN Conference on Environment and Development, the forests issue was among the most controversial and resulted in polarization along North–South lines. The G-7 countries stressed for an international convention on forests, while on the other hand, the developing countries opposed any legally binding convention on forests. The developing countries viewed this initiative as an intrusion into their sovereign rights to utilize their resources to meet their policy objectives. The developed countries stressed on the ecological role of forests that extend beyond the frontiers of nations and the need to formulate multilateral approaches to maintain long-term multiple benefits from forests. As a compromise, a non-legally binding statement of Forest Principles was negotiated at Rio, which recognized the need to conserve, manage, and sustainably develop all types of forests as well as the sovereign rights of nations to utilize their forests. The most important step taken globally by the countries for the protection of forest is the ‘Non-legally binding authoritative statement of principles for a global consensus on the management, conservation, and sustainable development of all types of forests’, which was adopted in 1992. The objectives of forest principles is to contribute to the management, conservation, and sustainable development of forests and to provide for their multiple and complementary functions and uses. These principles are a first global consensus on forests which applies to all types of forests, both natural and planted.

The principles laid down that all the countries have the sovereign right to utilize, manage, and develop their forests in accordance with their development needs but at

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Table 4.1

<table>
<thead>
<tr>
<th>Guidelines Adopted by the ITTO for the Conservation of Forests</th>
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<tbody>
<tr>
<td>• ITTO Guidelines for Sustainable Management of Natural Tropical Forests, 1990</td>
</tr>
<tr>
<td>• Guidelines for the Establishment and Sustainable Management of Planted Tropical Production Forests, 1993</td>
</tr>
<tr>
<td>• Guidelines for the Conservation of Biological Diversity in Tropical Production Forests, 1993</td>
</tr>
<tr>
<td>• Guidelines on Fire Management in Tropical Forests, 1997</td>
</tr>
<tr>
<td>• Criteria and Indicators for Sustainable Management of Natural Tropical Forests, 1998</td>
</tr>
</tbody>
</table>

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129 Ibid.
130 Local communities, indigenous people, industries, labour, non-governmental organizations, forest dwellers, and women should all be involved in the development and planning of national policies for the conservation of forests. The forest principles make only limited reference to institutional arrangements and their development, endorse public participation, scientific research, forest inventories and assessments, education and training, international exchange of information and the utilization of indigenous knowledge. The Principles also stress on the need to have environmental impact assessments where actions are likely to have significant adverse impacts on important forest resources. The Principles also endorse incentives to encourage conservation and sustainable development.

Apart from adopting these principles, there is a full chapter on deforestation in Agenda 21 which further reinforces recognition of the multiple role and complexity of forest-related issues. Since the Earth Summit, the forests issue has continued to occupy the attention of the international community and many positive developments have taken place. Significant progress has been made to conserve the forests since UNCED. Throughout this last decade, the main focus within the United Nations is to develop coherent policies to promote management, conservation, and sustainable development of all types of forests. A forest policy dialogue was initiated by the United Nations Commission on Sustainable Development which was facilitated by the Intergovernmental Panel on Forests (IPF) from 1995-1997 and the Intergovernmental Forum on Forests (IFF) from 1997-2000. An informal, high level Interagency Task Force on Forests (ITT F) was set up in July 1995 to accord inputs of international organizations to the forest policy issues. From 1995-2000, the IPF/IFF processes dealt with such issues as the underlying causes of deforestation, traditional forest-related knowledge, international cooperation in financial assistance and technology transfer, the development criteria and indicators for sustainable forest management and trade and environment. The IPF and IFF processes produced a body of more than 270 proposals for action towards sustainable forest management, known collectively as the IPF/IFF Proposals for action. These Proposals address a broad range of issues, and are characterized by numerous thematic interlinkages. Although these proposals are not legally binding, participants of these processes are under a political obligation to implement the agreed proposals.

### Table 4.2

<table>
<thead>
<tr>
<th>Major deliberations of the IPF</th>
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</thead>
<tbody>
<tr>
<td>Implementing the forest related decisions of the UNCED at the national and international levels</td>
</tr>
<tr>
<td>International cooperation in financial assistance and technology transfer</td>
</tr>
<tr>
<td>Scientific research, forest assessment, and the development of criteria and indicators for sustainable forest management</td>
</tr>
<tr>
<td>Trade and environment in relation to forest products and services</td>
</tr>
<tr>
<td>International organizations and multilateral institutions and instruments, including appropriate legal mechanisms.</td>
</tr>
</tbody>
</table>

130 Principles 1 (a) and 2 (a).
International dialogue on forests needed a permanent home. Governments were looking for a forum that would address all issues related to forests in a coherent and comprehensive manner that would facilitate the exchange of experiences in the implementation of sustainable forest management practices by government and stakeholders. On the basis of these proposals for action, the forest principles and Agenda 21, the Economic and Social Committee of the United Nations (ECOSOC) established a United Nations Forum on Forests (UNFF) in October 2000. The UNFF succeeded a five-year period (1995-2000) of forest policy dialogue by IPF and IFF. Within UNFF, three broad constituencies are central to the forums work: the member states of UNFF, major intergovernmental agencies working in forest issues, and the major groups as defined in Agenda 21.

Table 4.3

<table>
<thead>
<tr>
<th>Major deliberations of the IFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitating the implementation of the proposals for action of the IPF and reviewing, monitoring, and reporting on progress in the management, conservation and sustainable development of all types of forests</td>
</tr>
<tr>
<td>Considering matters left pending and other issues such as financial resources, transfer of environmentally sound technologies, etc. arising from the programme elements of the IPF process</td>
</tr>
<tr>
<td>International arrangements and mechanisms to promote the management, conservation, and sustainable development of all types of forests</td>
</tr>
</tbody>
</table>

International dialogue on forests needed a permanent home. Governments were looking for a forum that would address all issues related to forests in a coherent and comprehensive manner that would facilitate the exchange of experiences in the implementation of sustainable forest management practices by government and stakeholders. On the basis of these proposals for action, the forest principles and Agenda 21, the Economic and Social Committee of the United Nations (ECOSOC) established a United Nations Forum on Forests (UNFF) in October 2000. The UNFF succeeded a five-year period (1995-2000) of forest policy dialogue by IPF and IFF. Within UNFF, three broad constituencies are central to the forums work: the member states of UNFF, major intergovernmental agencies working in forest issues, and the major groups as defined in Agenda 21.

Table 4.4

<table>
<thead>
<tr>
<th>Principal functions of UNFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>To facilitate implementation of forest-related agreements and foster a common understanding on sustainable forest</td>
</tr>
<tr>
<td>To provide for continued policy development and dialogue among Governments, international organizations, including major groups, as identified in Agenda 21 as well as to address forest issues and emerging areas of concern in a holistic, comprehensive and integrated manner</td>
</tr>
<tr>
<td>To enhance cooperation as well as policy and programme coordination on forest-related issues</td>
</tr>
<tr>
<td>To foster international cooperation</td>
</tr>
<tr>
<td>To monitor, assess, and report on progress of the above functions and objectives and</td>
</tr>
<tr>
<td>To strengthen political commitment to the management, conservation, and sustainable development of all types of forests.</td>
</tr>
</tbody>
</table>

131 Principles 2 (d), 3, 5 and 6.
Following the recommendation of the ECOSOC, the Collaborative Partnership on Forests (CPF) was established in April 2001. The CPF is an interagency partnership with two broad objectives:

- To support the work of the UNFF and its member countries
- To enhance cooperation and coordination on forest issues.

CPF supports the work of UNFF by supporting implementation of the IPF/IFF Proposals for Action and also by providing expertise and advisory services to UNFF. The UNFF Multi-Year Programme of Work (MYPOW) was adopted at the first session of UNFF and suggests a structure for subsequent sessions of the UNFF. Several important issues were grouped under ‘Means of Implementation’ and ‘Common Items’ that are to be treated across all UNFF elements.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Adoption of the multi-year programme of work</td>
<td>Combating deforestation and forest degradation</td>
<td>Economic aspects of forests</td>
<td>Traditional forest-related knowledge</td>
<td>Review of progress and consideration on future actions</td>
</tr>
<tr>
<td>Development and adoption of a plan of action</td>
<td>Forest conservation and protection of unique types of forests and fragile ecosystems</td>
<td>Forest health and productivity</td>
<td>Forest-related scientific knowledge</td>
<td>Consider, with a view to recommending to the Council and through it to the General Assembly, the parameters of a mandate for developing a legal framework on all types of forests</td>
</tr>
<tr>
<td>Initiation of the work of the Forum with the Collaborative Partnership on Forests</td>
<td>Rehabilitation and conservation strategies for countries with low forest cover</td>
<td>Maintaining forest cover to meet present and future needs</td>
<td>Social and cultural aspects of forests</td>
<td>Review the effectiveness of the international arrangement on forests</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation and restoration of degraded lands and promotion of natural and planted forests</td>
<td>Monitoring assessment and reporting, concepts and terminology and definitions</td>
<td>Criteria and indicators of sustainable forest management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concepts, terminology and definitions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

132 Secretariat to the United Nations Forum on Forests.
4.3 Recent Developments

Till June 2004, there had been four meetings of UNFF. At its first session in 2001, UNFF adopted decisions on its multi-year programme of work up to 2005 and plan of action to implement the IPF/IFF’s 270 proposals. Establishment of an ad hoc expert group to multi legal framework on forests was also recommended.

In 2002, UNFF’s second session adopted the Ministerial Declaration. The decision on terms of reference for the expert group was deferred to UNFF-3. The UNFF-3 took a step towards the creation of a legally binding instrument. An adhoc expert group was established to consider the parameters of a mandate for developing the legal framework on all types of forests. The issue of putting in place such an arrangement has been plaguing global forest negotiations since the 1992 Earth Summit. Developing countries have opposed proposals pushed by the developed world, fearing that they are aimed at serving the trade interests of wood producers in the North at the cost of the environment. UNFF-3 also adopted the three resolutions on the need for preventive measures to reduce the negative impacts on forest health and productivity, the integration of the economic aspects of forests and sustainable forest management, and maintaining forest cover for present and future needs.

UNFF-4 was the penultimate session in a five-year process launched by the Economic and Social Council of the United Nations in October 2000. But the meet was a stark reminder of how complex forest issues are at the international level and a classic example of how little current arrangements can achieve. On UNFF-4’s agenda were five themes: social and cultural aspects of forests (SCAF), traditional forest-related knowledge (TFRK), forest-related monitoring, assessment, and reporting (MAR), and criteria and indicators for sustainable forest management (C & R). Other issues tackled at the meet included enhanced cooperation, the outcomes of ad-hoc expert groups meetings on monitoring and reporting, finance, and transfer of environmentally sound technologies. Effectiveness of international arrangements on forests was also reviewed. At UNFF-4, there was no unanimity on most issues. TRFK was a contentious area almost in its entirety. The G-77 and China insisted that the progress on access and benefit sharing achieved at the recent CBD meet would be diluted by opening discussion at another forum. Also, the resolution on TRFK had no reference to most issues of concern for developing countries, such as disclosure of origin of the genetic resource and the knowledge associated with it, and prior informed consent of owners of that resource or knowledge. Moreover, specific issues in other resolutions were also blighted by discord. Among them was a resolution on enhanced cooperation that contained a paragraph linking sustainable forest management to a recent decision of the Convention on Biological Diversity. The decision placed emphasis on the ecosystem approach. On the issue of setting a criterion for sustainable forest management, most developing countries including India were against it. They feared that it would be linked to certification and labeling schemes which act as barriers to fair trade and could even be incompatible with WTO rules. Countries were divided on whether the forum’s Ad-hoc Expert Group on Considering With a view to Recommending for All Types of Forests should take into account recommendations of a similar expert group on finance and the transfer of environmentally sound technologies.
The biggest problem of the international community on reaching a consensus in implementing IPF/IFF proposals is their lack of understanding the import of these proposals. Many developing countries do not really have the institutional capacity to implement them. They have to be trained into internalizing these proposals into their national programme.

4.4 India’s Role in Forest Conservation

India supports approximately 16 per cent of the world’s human and 18 per cent of the livestock population on 2.5 per cent of its geographical area, which also includes 1.8 per cent of forest area according to the Forest Survey of India (2000 Report). The main threats to the forests of India are deforestation, over-cutting beyond silviculturally permissible limits, unsustainable fuel and fodder extraction, practice of shifting cultivation, forest fires, over-grazing and diversion of forest land for non-forestry uses.

Forestry is a concurrent subject in the Indian Constitution, being under the purview of both the central and state governments. In India, systematic management of forests began in the mid-nineteenth century. The first forest policy of India was enunciated in 1894 which focused on commercial exploitation of timber and gave importance to permanent cultivation. This was revised in 1952 and a new forest policy recognized the protective role of forests and proposed that one-third of the land area of the country be retained under forest and tree cover. But, it was only in 1988 that a shift in policy occurred when the Government of India adopted the National Forest Policy, 1988, recognizing the rights of the people over forests. The Policy was formulated four years before the Earth Summit and it embodies the direction emphasized in the Rio Principles. This policy gives higher priority to environmental stability than to earning revenue. The focus shifted from commerce and investment to ecology and satisfying the minimum needs of people and strengthening the tribal-forest linkages. This policy represents a significant departure from previous policies because it mandates that the local people must be actively involved in programme of protection, conservation, and management of forests. The focus of forest management shifted from commercialization to conservation of soil, the environment, and rights of the local populace. The National Forest Policy, 1988, covers most of the thematic elements of IPF/IFF proposals for action to achieve sustainability of all types of forests.

The evolving priorities of the National Forestry Policy have also found reflection in the Five-Year Plans of the Government of India as outlined below.

First and Second Five-Year Plans: Rehabilitation of degraded forests, introduction of economic species, survey, and demarcation.

Third and Fourth Five-Year Plans: Enhancing productivity of forests through plantation of fast-growing species, scientific assessments, and modern logging.

Fifth Five-Year Plan: Large-scale plantation, social forestry, and forest conservation.

Sixth Five-Year Plan: Social forestry and fuelwood reserves to save natural forests.

Seventh Five-Year Plan: Forest conservation, massive afforestation, and wasteland development.

Eighth and Ninth Five-Year Plans: Preservation of biological and genetic diversity (both flora and fauna), protection of forest against biotic interference, utilization of wastelands, and promotion of people’s participation through Joint Forest Management (JFM).

**Table 4.6**

**National Forest Policy, 1988**

<table>
<thead>
<tr>
<th>The main objectives of the NFP are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Maintenance of environmental stability through preservation and, where necessary, restoration of the ecological balance that has been disturbed by the serious depletion of forests of the country.</td>
</tr>
<tr>
<td>➢ Conserving the natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna, which represents the remarkable biological diversity and genetic resources of the country.</td>
</tr>
<tr>
<td>➢ Checking soil erosion and denudation in the catchment areas of rivers, lakes, and reservoirs in the interest of soil and water conservation, for mitigating floods and droughts and for the retardation of siltation of reservoirs. Also, checking the extension of sand-dunes.</td>
</tr>
<tr>
<td>➢ Increasing substantially the forest/tree cover in the country through massive afforestation and social forestry programme, especially on all denuded, degraded, and unproductive lands.</td>
</tr>
<tr>
<td>➢ Meeting the requirements of fuelwood, fodder, minor forest produce, and small timber of the rural and tribal population.</td>
</tr>
<tr>
<td>➢ Increasing the productivity of forests to meet essential national needs.</td>
</tr>
<tr>
<td>➢ Encouraging efficient utilization of forest produce and maximizing substitution of wood.</td>
</tr>
<tr>
<td>➢ Creating a massive people’s movement involving women for achieving these objectives and to minimize pressure on existing forests.</td>
</tr>
</tbody>
</table>

The Government of India in 1992 with support from the United Nations Development Programme (UNDP) and the Food and Agricultural Organization (FAO), prepared the National Forestry Action Programme (NFAP). It is a comprehensive work plan for sustainable development of forests in India for the next 20 years that has been evolved in consultation with the state governments. The objective of the NFAP is to evolve issue based programme in line with the provisions of the National Forest Policy, 1988, by integrating the forestry development programme in India within the framework of National Five-Year Plans.

The policies and programme in forestry, particularly over the last 15 years, have been largely in consonance with the Forest Principles adopted during the United Nations Conference on Environment and Development (UNCED).
The National Forestry Action Programme (NFAP) identified five interrelated basic issues confronting forestry development in India which form the basis of the following programme structures:

- **Protect Existing Forests Resources**
  It has three main sub-programme of (i) forest protection, (ii) soil and water conservation, and (iii) protected areas and biodiversity conservation. These include the works of forest survey, demarcation and mapping, inventory, biodiversity conservation, protected area management, protection against poaching, encroachment and fire, and other related issues.

- **Improve Forest Productivity**
  It has four main sub-programme of (i) rehabilitation of degraded forests, (ii) research and technology development, (iii) development of NWFPs, and (iv) assisting private initiatives with community participation. These mainly involve research, improvement in technology, enrichment planting, soil and water conservation, regeneration, rehabilitation, and afforestation, mainly in existing forests.

- **Reduce Total Demand**
  It has three main sub-programme for the efficient uses of (i) fuelwood and fodder, (ii) timber, and (iii) NWFPs. This includes programme for reduction of demand placed on forests through the technology of preservation, seasoning, substitutions, and other measures for the efficient utilization of forest products and also through biomass plantations.

- **Strengthen Policy and Institutional Framework**
  It has three main sub-programme of strengthening of (i) central forestry administration, (ii) central forestry institutions, and (iii) state forestry administration and institutions. These include the development of infrastructures such as buildings, communications, etc. and strengthening of staff including HRD. This issue also covers all aspects of capacity-building, forest policy and legislation, public forest administration and organizational structure, research, planning and budgeting.

- **Expand Forest Area**
  It has two main sub-programme of (i) tree plantation on forest and non-forest lands, and (ii) people’s participation in plantations and its protection. This issue includes the extension of forestry programme in all kinds of wastelands and marginal farmlands. It also includes the programme of certain of plantation forests through wasteland reclamation, afforestation, and promotion of agroforestry.

Apart from these policies and programme, there are legislations dealing with the conservation of forests. To provide teeth to the provisions of the 1894 policy, the Indian Forest Act (IFA), 1927, was enacted. The IFA is the basic forest law of the country and together with the Wildlife (Protection) Act, 1972, provides the principal legal framework. This version of the IFA, as last amended in 1948 is operative even today. The objective of this Act was to consolidate the law relating to forests, the transit of forest produce and the duty leviable on timber and other forest produce. It was enacted by the British to facilitate acquisition of forest areas by the state without paying any compensation. With a revenue-oriented policy, its main object was to regulate dealings in forest produce. In the present context, the law has not been able to achieve its objectives due to a lot of lacunae in the Act itself. Therefore, it is of utmost importance that the Indian Forest Act, 1927, be replaced by a law that does not suffer from lacunae and ensures the conservation and regeneration of what remains of our bio-diverse forests.

However, in 1980, the Government of India enacted the Forest (Conservation) Act (FCA) which initiated a process in which India’s forests were treated as an environmental and social resource rather than as a revenue or commercial resource. The Forest Conservation Act, 1980, was further amended in 1988 and strict controls were placed on the diversion of forestland to other uses. In the rare cases in which this
is permitted for developmental purposes, compensatory afforestation is a prior requirement. This is reflected in the sharp fall in the area diverted to non-forestry purposes after the promulgation of the FCA in 1980.

The Biological Diversity Act, 2002, aims to protect the biological resources of the country, and thus, addresses forest ecology in its totality. The 73rd Amendment to the Indian Constitution, 1992, makes it mandatory for all states to decentralize governance through a three-tier structure, viz. the state, district, and local bodies (called Panchayat Raj institutions). Among the 29 functions recommended for decentralization, three relate to forestry, i.e. Social forestry, Fuel Wood Plantations, and Non-Timber Forest Products (NTFP). Thus, the legal basis for effective people’s participation in forest protection and forest management is now available.

India has a strong institutional set-up for the conservation and management of forests. The Ministry of Environment and Forests is the nodal agency for planning, promotion, coordination, and overseeing of the implementation of forestry programme. Apart from handling environmental issues at the domestic level, it also coordinates participation in international agreements relating to the environment and handles bilateral cooperation. Various programme have been launched by the MoEF for the afforestation and regeneration of degraded areas such as environmental impact assessments, eco-regeneration, assistance to organizations implementing environmental and forestry programme, promotion of environmental and forestry research, education, and training, dissemination of information, international cooperation, and creation of environmental awareness in the country.

In order to strengthen the system of forestry research in India, the Indian Council of Forestry Research and Education (ICFRE), an autonomous umbrella organization, was established in 1986. Its functions include aid to and promoting forestry research and its application, acting as a clearing house for research results and information, dissemination of technology, etc.

**Table 4.8**

**Research Institutions apart from ICFRE**

<table>
<thead>
<tr>
<th>Research Institutions</th>
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<tbody>
<tr>
<td>Kerala Forest Research Institute, Peechi</td>
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<tr>
<td>Madhya Pradesh Forest Research Institute, Jabalpur</td>
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<tr>
<td>Indian Plywood Industries Research and Training Institute, Bangalore</td>
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</tbody>
</table>

Following are the institutions dealing with Forest Conservation in India

<table>
<thead>
<tr>
<th>Institutions</th>
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<tbody>
<tr>
<td>Indian Institute of Forest Management, Bhopal</td>
</tr>
<tr>
<td>Indira Gandhi National Forest Academy, Dehradun</td>
</tr>
<tr>
<td>Indian Council of Forestry Research and Education, Dehradun</td>
</tr>
<tr>
<td>Wildlife Institute of India, Dehradun</td>
</tr>
<tr>
<td>State Forest Service Colleges, Dehradun, Burnihat, and Coimbatore</td>
</tr>
<tr>
<td>Botanical Survey of India, Kolkatta</td>
</tr>
<tr>
<td>Zoological Survey of India, Dehradun</td>
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<tr>
<td>Forest Survey of India, Dehradun</td>
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<tr>
<td>National Museum of Natural History, New Delhi</td>
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<tr>
<td>GB Pant Institute of Himalayan Environment and Development, Almora</td>
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<tr>
<td>Salim Ali Centre for Ornithology and Natural History, Coimbatore</td>
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<tr>
<td>Central Zoo Authority, New Delhi</td>
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<td>Centre for Ecological Research and Training, Bangalore</td>
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</table>
A National Afforestation and Eco-development Board (NAEB) was created for promoting afforestation, tree planting, ecological restoration, and ecodevelopment. The NAEB pays special attention to the regeneration of degraded forests and serves as a vital interface between external agencies and the state governments. Tree planting is the main focus, particularly through the Area–Orientated Fuelwood and Fodder Scheme, and the Integrated Afforestation and Ecodevelopment Programme.

In 2003, a National Forest Commission was set up in the Ministry of Environment and Forests to look into restructuring, reform, and strengthening of the entire forest set up and affiliated institutions in the country.

### Table 4.9

**Terms of Reference of the Forest Commission**

1. Review and assess the existing policy and legal framework and their impact in a holistic manner from the ecological, economic, social, and cultural viewpoint.
2. Examine the current status of forest administration and the forestry institutions both at the All-India and state levels to meet the emerging needs of the civil society.
3. Make recommendations indicating specific policy options for achieving sustainable forest and wildlife management and ecological security.
4. Suggest ways and means to make forest administration more effective with a view to help achieve the above policy options.
5. Establish meaningful partnerships and interface between forestry management and local communities, including tribals.

**Source:** Agenda 21: An Assessment, MoEF.

In addition to state-supported programme, there is an array of management practices outside the formally declared forest areas that are followed in different parts of the country with different models involving agricultural crops, shrubs, or non-wood vegetation. These include agro-forestry, community forestry, farm forestry, interface forestry, village woodlots, block plantations, strip plantations, improved fallow, etc. There are also several sacred groves retained in the original undisturbed state due to scarcity in different forest areas of the country.

Over the years, participatory forest management has been gaining ground in India as an effective means of protecting and regenerating degraded forests. In June 1990, the Government of India issued guidelines to state governments known as JFM Guidelines, 1990, highlighting the need and procedure for the involvement of village communities and voluntary agencies in the management, planning, and implementation of programme for the protection and development of degraded forests, provision of fuel wood, fodder, NWFP, and timber to people living in and around forests. These guidelines were further amended in 2000 and 2002 to strengthen the role of Joint Forest Management Committees in forest conservation and development.

India’s economic and trade policies which have a bearing on forest and forest products are being progressively fine-tuned to facilitate the conservation and sustainable use of forests. These policies are also in tune with Agenda 21’s call for greater use of international trade. This is reflected in liberal imports of forest products to relieve the pressure on forests, nationalization of the trade of certain forest products.
products, incentives for wood substitution, subsidies for the use of fuel-saving devices, alternative sources of energy such as biogas and solar energy, and financial incentives to supply seedlings free of cost or at subsidized rates. Another way of exploiting the economic potential of forests efficiently is through eco-tourism, as has been recognized by the NFAP. Eco-tourism in its accepted sense has assumed the shape of an industry which makes minimal adverse impact on environment as well as on the local culture and heritage while helping to generate employment and income for the locals. Also in consonance with Agenda 21, in India, attempts have been made to develop and apply methods to quantify the tangible and intangible benefits of forests. To understand the real contribution of forests to the economy, the Government of India has initiated a process for Natural Resource Accounting to be integrated with the conventional system of income accounts.

On the international side, India has participated in all the IPF/IIF meetings and agrees with the overall action relating to National Forest Programme, forest assessment, criteria and indicators, traditional forest-related causes, and underlying causes of deforestation. However, India has taken the view that there has to be an instrument to coordinate the efforts of international instruments and institutions. Accordingly, India has moved for the creation of a permanent forum such as the Global Forest Facility on the lines of the Global Environmental Facility (GEF), to continue the dialogue and discussions on contentious and unresolved issues. India has also taken the view that financial resources and funding are a major problem area and therefore, it is necessary to assign this exclusive function to one of the International Arrangements and Mechanisms (IAMs). In consonance with the recommendations of the IPF, India prepared the National Forestry Action Programme which incorporates the agreed commitments by India.134

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134 Ibid.
V

Land Conservation

5.1 Introduction

Over the decades, the problem of land degradation in dryland regions has continued to worsen. Desertification is not the expansion of existing deserts but the degradation of land in semi-arid and dry sub-humid areas, which also serves as a habitat to many species. It is a gradual process of soil productivity loss and the thinning out of the vegetative cover because of human activities and climatic variations such as prolonged droughts and floods. Desertification is a global problem directly affecting 250 million people and a third of the Earth’s land surface of over 4 billion hectares. Though desertification affects Africa the most, where two-thirds of the continent is desert or drylands, it is not a problem confined to drylands in Africa. Worldwide, some 70 per cent of the 5.2 billion hectares drylands used for agriculture are already degraded and threatened by desertification.\(^\text{135}\)

Desertification is at the root of political and socio-economic problems and poses a threat to the environment equilibrium in affected regions. It also has grave natural consequences. It makes land areas flood-prone, causes soil salinization, results in the deterioration of the quality of water, silting of rivers, streams, and reservoirs. Therefore, to combat desertification, the first global Convention was adopted in Paris on 17 June 1994 known as United Nations Convention to Combat Desertification (UNCCD). It is the first and only international legal instrument to address the problem of desertification. Although this issue was initially discussed at the UN Framework on Desertification held in Nairobi in 1977, due to lack of support, the framework was not put into place. UNCCD is the only Convention stemming from a direct recommendation of United Nations Conference on Environment and Development (UNCED) in 1992. The Convention came into force on 26 December 1996. Today, there are 190 countries which are parties to the Convention.

Basic Principles

The United Nations Combat Desertification (UNCCD) is based on the basic principles of participation, partnership, and decentralization. The Convention provides a framework in which developing countries, donor countries, inter-governmental institutions, and non-governmental organizations can join in a new partnership for progress. The reason for entering into such a partnership is that arid, semi-arid, and dry sub-humid areas together account for significant proportion of the Earth’s land area and is the habitat and source of livelihood for a large segment of its population.\(^\text{136}\) The Convention is also based on the fact that desertification and drought affect sustainable development through their interrelationships with important social problems such as poverty, poor health and nutrition, lack of food security, and those arising from migration, displacement of persons, and demographic dynamics.\(^\text{137}\)

\(^{135}\) Source: http://www.unccd.int/

\(^{136}\) Preamble, United Nations Convention to Combat Desertification (UNCCD).

\(^{137}\) Ibid.
The Convention also stresses the important role played by women in regions affected by desertification or drought, especially in developing countries. It ensures that both men and women fully participate at all levels of programme to combat desertification.

According to the Convention, ‘desertification’ is ‘land degradation in arid, semi-arid, and dry sub-humid areas resulting from various factors, including climatic variations and human activities’.  

The basic aim of the Convention, i.e. ‘to combat desertification’ includes activities which are a part of the integrated development of land in arid, semi-arid, and dry sub-humid areas for sustainable development. These activities are aimed at the prevention and reduction of land degradation, rehabilitation of partly degraded land, and reclamation of desertified land.

**Basic Objectives**

The reason for having a Convention on Desertification is to secure the long-term commitment of the Parties through a legally binding document. The basic objective of the Convention is to combat desertification and mitigate the effects of drought in countries experiencing serious drought or desertification. The Convention takes into account the fact that this involves effective action at all levels, supported by international co-operation and partnership arrangements, in the framework of an integrated approach. These integrated strategies should be long-term which would focus on affected areas, on improved productivity of land, and the rehabilitation, conservation, and sustainable management of land and water resources, leading to improved living conditions of the communities residing in that part of the land.

In order to achieve these objectives, the Convention pioneers a democratic, bottom-up approach. The Convention recognizes the physical, biological, and socio-economic aspects of desertification, the importance of redirecting technology transfer so that it is demand-driven, and the involvement of local communities in combating desertification and land degradation. It clearly emphasizes the role of local people or communities who will be most affected by drought or desertification in the decisions on the design or implementation of programme to combat desertification. The Convention lays down that local people should be fully involved and be allowed to participate in the decisions that shape their lives and also that an enabling environment is created at higher levels to facilitate action at national and local levels.

Another important principle of the Convention breaks new ground by stressing the need for international partnership and co-ordination, both to avoid duplication of effort and to get away from the traditionally one-sided relationship between donors and recipients of assistance. The Convention also extends the concept of partnership to relationships within the affected countries and in doing so re-emphasizes the importance of ensuring the participation of local people and communities. The Convention stresses on the need for co-operation among all levels.

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138 Art. 1 (a).
139 Art. 1 (b).
140 Art. 2 (1).
141 Art. 2 (2).
142 Art. 3 (a).
143 Art. 3 (b).
of government, non-governmental organizations, and landholders to establish a better understanding of the nature and value of land.\textsuperscript{144} The Parties should also take into consideration the special needs and circumstances of affected developing countries, particularly the least developed among them.\textsuperscript{145}

\textbf{Obligation of Parties}

The Convention divides these obligations into three parts. Apart from the general obligations of the parties, there are specific obligations of the affected countries and developed countries. The Convention lays down that the Parties shall implement these obligations either individually or jointly and should coordinate efforts and develop a long-term strategy at all levels to fulfill these obligations.\textsuperscript{146}

Among the general obligations of the Parties, the Convention insists that programme to combat desertification and mitigate the effects of drought must not be conceived in isolation, but should be integrated into developmental policies as whole.\textsuperscript{147} The Convention also lays special emphasis on the economic environment, both internationally and within nations, and makes it clear that this must be arranged so as to enable desertification to be tackled effectively. Parties are obliged to give due attention to the effects of trade, marketing arrangements, and debt on the affected developing countries among them.\textsuperscript{148} Parties are also obliged to integrate their anti-desertification efforts with strategies for poverty eradication. The general obligations of the Parties stresses the importance of cooperation within inter-governmental organizations, regions, and sub-regions, and internationally. The Convention also stresses the need to ‘promote cooperation among affected country Parties in the fields of environmental protection and the conservation of land and water resources, as they relate to desertification and drought’. In addition to these general obligations, the affected country Parties and developed country Parties have special obligations to be fulfilled by them. Affected country Parties are required to allocate adequate resources, establish strategies and priorities, promote awareness, and facilitate the participation of local people, especially women and youth in the steps to combat desertification. The Parties should strengthen their existing legislations and enact where required, new laws and policies to combat desertification.\textsuperscript{149} On the other hand, developed country Parties are required to actively support these affected parties, especially the least developed, in combating desertification. They are obliged to provide substantial financial resources and other forms of support like technology and knowledge to the affected countries.\textsuperscript{150}

\textbf{Relationship with other Environmental Conventions}

Desertification is closely linked with global climate change and loss of biodiversity. Synergies are strongly encouraged between the three so called Rio conventions—the United Nations Framework Convention on Climate Change (UNFCC) and the

\begin{itemize}
\item \textsuperscript{144} Art. 3 (c).
\item \textsuperscript{145} Art. 3 (d).
\item \textsuperscript{146} Art.4 (1).
\item \textsuperscript{147} Art. 4 (2) (a).
\item \textsuperscript{148} Art. 4 (2) (b).
\item \textsuperscript{149} Art. 5.
\item \textsuperscript{150} Art. 6.
\end{itemize}
 Convention on Biodiversity (CBD)—to widen the impact of measures undertaken. It underlines the need to co-ordinate activities related to environmental protection and natural resource management and the complementary nature of the three conventions at all levels. A Joint Liaison Group (JLG) was thus established in 2001 between the secretariats of the three conventions. The JLG collects and shares information on work programme and operations of each convention. Recently, during the COP6, a memorandum of understanding was signed between UNCCD and CMS in which they agreed to cooperate further to achieve better coordination in the development of specific targeted actions to address issues relating to migratory species and their areas affected by drought and desertification.

**Measures to be taken by the Parties**

The Convention is to be implemented though National Action Programme supplemented by regional and sub-regional ones. Effective action to combat desertification has to be carried out locally and must be adapted to local circumstances and conditions. But it must also be integrated into national and regional strategies to ensure that it gets adequate priority to avoid duplication and to make sure that resources are used as well as possible.

National Action Programme form the core of the treaty. Affected parties should prepare, publicize, and implement them as the central element in their strategies. They are to use and build on existing successful and relevant plans and programme. They are to be closely interlinked with other efforts to formulate sustainable development policies, and are to be updated though a continuing participatory process on the basis of lessons from field action and from the results of research.

The purpose of national action programme is to identify the main causes of desertification and ways to address this issue. These programme assign the respective roles of government, local communities, and land users in the process of combating desertification. They also shall address issues like implementation of preventive measures for lands that are not yet fully degraded; enhance national climatological, meteorological, and hydrological capabilities; promote policies and strengthen institutional mechanism dealing with desertification; provide for effective participation at the local, national, and regional levels of NGOs and local people, especially women, etc.

These national action programme shall also include measures like early warning to people residing in drought prone areas; providing them alternate means of livelihood; resettlement and rehabilitation; development and efficient use of various energy sources; institutional and legal frameworks, etc.

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151 Art. 8.
152 Art. 10.
153 Art. 9.
154 Down to Earth: A Simplified Guide to the Convention to Combat Desertification, Secretariat to the Convention.
155 Art. 10 (1) and (2).
156 Art. 10 (3) and (4).
All this also applies to sub-regional and regional programme. Affected country parties agree to consult and cooperate to prepare these to harmonize, complement, and increase the efficiency of national programme. Such cooperation also includes agreed joint programme for the sustainable management of transboundary natural resources, scientific and technical cooperation, and strengthening of relevant institutions.\textsuperscript{157}

The Convention promotes co-ordination of scientific research and co-operation on the transfer of technology. Both are to be redirected to meet the requirements of the people who need it, with considerable weight placed on the value of traditional knowledge and skills.\textsuperscript{158} The Parties undertake to promote technical and scientific cooperation in the fields of combating desertification. They agree to use fully existing systems and clearing houses to facilitate cooperation between affected parties and access to suitable technologies on favourable terms and take measures to create domestic market conditions and incentives that will ease the process.\textsuperscript{159} The Parties are also required to promote and use traditional knowledge and local technology and also to adapt them for wide use and integrate them with modern technology. The Parties also agree to support research to increase knowledge of the causes and impacts of desertification and drought. This research should address the needs of the local people who are affected by desertification and should also make sure that these people benefit from it.\textsuperscript{160}

The Convention commits Parties to develop research capabilities in affected developing country Parties, particularly in Africa; to promote joint research programme; to enhance the availability of water resources; to take into account the relationship between desertification, poverty, and migration; and to include research priorities for their areas in their action programme. The Parties also agree under the Convention to integrate and exchange information through the global network of institutions.

Apart from taking measures such as formulating national action plans and development of science and technology to combat desertification, other supportive measures are required to be taken by the Parties. The Convention stresses upon the significance of capacity-building and promoting public awareness.\textsuperscript{161} Parties agree to promote the building of institutions, the training of people, and the development of capacities both locally and nationally. Affected developing countries are to review their capacities and facilities and the potential for strengthening them in cooperation with other Parties and inter-governmental and non-governmental organizations. National institutions and legal frameworks are to be built up and new ones created when needed. The Parties agree to strengthen the capacity of local people to draw up programme to manage their resources. Similarly, the Parties also undertake to provide training and technology in the use of alternative sources, especially renewable energy, to lessen dependence on fuelwood. They agree to adapt traditional methods of agriculture and pastoralism and environmentally sound technology to modern conditions.

\textsuperscript{157} Art. 11.  
\textsuperscript{158} Down to Earth: A Simplified Guide to the Convention to Combat Desertification, Secretariat to the Convention.  
\textsuperscript{159} Art. 17.  
\textsuperscript{160} Art. 18.  
\textsuperscript{161} Art. 19.
The Parties also undertake to raise public awareness by organizing campaigns and extending cooperation among themselves and with inter-governmental and non-governmental organizations. They also undertake to organize educational and literacy programme for local people in affected areas especially for women and girls. The Parties agree to promote wide and permanent public participation in education and awareness activities.

The Convention takes into account the financial provisions to carry out programme to combat desertification. Rather than setting up a single system of funding, the Convention concentrates on mobilizing resources through all existing channels, strengthening them and reorienting them to fit its integrated, bottom-up approach. The Convention makes it clear that major investments should be channeled to the people actually affected by desertification and drought. Both developed and developing Parties agreed to make every effort to ensure that adequate financial resources are available. Under the Convention, the affected developing country Parties undertake to mobilize adequate financial resources for their national action programme and in return, developed country Parties undertake to mobilize substantial financial resources including grants and concessional loans, in support of the programme. The Convention does not establish a special fund, but sets up a Global Mechanism to increase the effectiveness and efficiency of existing financial sources in tackling desertification and the effects of drought.

The Conference of the Parties is to consider adopting policies which, among other things, would facilitate the establishment of mechanisms, such as national desertification funds to channel the funds to local people.

Institutions and Procedures

The Convention establishes a number of institutions and procedures for international action. The Conference of the Parties (COP) is established as the supreme body of the Convention. The main function of the COP is to make decisions necessary for the effective implementation of the Convention. It reviews the implementation of the Convention; promotes and facilitates the exchange of information; approves the budget and activity programme of its subsidiary bodies; cooperates with international organizations and other related Conventions; and meets on a biannual basis. The Convention also establishes a Permanent Secretariat which will make arrangements for sessions of the COP and its subsidiary bodies and compile and transmit reports submitted to it. It will also facilitate assistance to developing country Parties, particularly to Africa, to compile and communicate the information required by the Convention. The Convention establishes subsidiary bodies of the COP; one is the Committee on Science and Technology (CST) and other is the Committee for the Review of the Implementation of the Convention (CRIC). CST provides the COP with information and advice on science and technological matters related to combating desertification and mitigating the effects of drought. It consists of

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162 Art. 20.  
163 Art. 21.  
164 Art. 22.  
165 Art. 23.  
166 Art. 24.
government representatives and identifies priorities for research and recommends ways of strengthening cooperation among researchers. The Convention encourages the protection of traditional knowledge that is conducive to sustainable development while also facilitating the exchange of latest data, information, and technology through the CST.

CRIC was established by COP in its 5th meeting and it reviews and analyses national reports submitted to the COP that describe the status of the Convention’s implementation by parties and observers with a view to improving the coherence, impact, and effectiveness of policies and programme aimed at restoring the agro-ecological balance in the drylands. Its terms of reference are subject to renewal at COP7 in 2005.

The COP will set up and maintain a roster of independent experts and draw on it to form ad hoc panels to give it information and advice on specific issues. The Convention makes it mandatory for the Parties to communicate to the COP what measures they have taken to implement the Convention. Affected countries are to describe their strategies to fulfill their obligations under the Convention, and those that have implemented action programme are to give detailed descriptions of them. Developed countries are to report on what they have done to help in the preparation and implementation of action programme and the financial resources they have provided or are providing.

Disputes arising between the parties are to be resolved through negotiation or other peaceful means. Any Party may propose amendments to the Convention.

In total, the Convention has five Annexes dealing with regional implementation of the Convention for Africa, Asia, Latin America and the Caribbean, Northern Mediterranean, and Central and Eastern Europe. These special regional Annexes to the Convention provide guidelines and arrangements for its effective implementation. They do not lay down new obligations on Parties apart from those in the main text of the treaty, but all provide for action programme to be an integral part of their policies for sustainable development.

5.2 Recent Developments

The Convention has now reached maturity and is evolving from the preparation of national action programme to their implementation. Till date, the Conference of Parties (COP) has met six times. During COP5, a subsidiary body to the COP, i.e. the Committee to Review the Implementation of the Convention (CRIC) was formed. Assessment of the national action programme by the parties in 2000 and 2001 showed that the strengthening of capacities for key actors at the local level proved successful in identifying and addressing challenges linked to sustainable development. The bottom-up approach of the Convention helped strengthen relationships between governments and local communities, particularly in larger countries. It also favored

167 Art. 24 (3).
169 Art. 28.
170 Art. 30.
the decentralized involvement of stakeholders and natural resources end users in the development process.

During the first session of the CRIS held during 11–22 November 2002 in Rome, many innovative solutions were identified by country Parties. The exchange of information on best practices and their replication worldwide are expected to further propel an effective fight against desertification and strengthen South-South and North-South cooperation among countries and regions.

In the World Summit on Sustainable Development in Johannesburg, the governments called on the Global Environment Facility (GEF) to become a financial mechanism for the Convention. In October 2002, GEF adopted the decision of becoming a financial mechanism for UNCCD and also designated land degradation as its fifth focal area.

The most recent meeting on Desertification, i.e. COP6, was convened from 25 August to 6 September 2003 at Hawaii, Cuba. The COP6 marked the transition from awareness-raising to implementation. Some very important steps were taken during this meeting which includes designation of GEF as a financial mechanism for the CCD and identification of CRIC criteria for the COP7 review. Substantive progress in the area of science and technology was also made with the Conference adopting recommendations made by the Committee on Science and Technology, which encouraged institutions and non-governmental organizations to develop and test benchmarks and indicators, invited Parties to carry out pilot studies on early warning systems, and proposed the collection of case studies from local and indigenous communities on traditional knowledge. The Havana Declaration which resulted from the two-day discussions among the 13 heads of state and government, was appended to the more substantial COP decisions. The Declaration commits governments to pursue peace, sustainable development, multilateralism, and comply with international law. It notes that people living in affected areas need to be at the centre of all programme to combat desertification, and urges the improvement of economic, social, and environmental conditions of the poor. The decisions adopted at the Conference serve as a roadmap for action until the next Conference of the Parties in two years.

5.3 UNCCD—Enforcement and Compliance by India

India became a signatory to the UNCCD on 14 October 1994 and ratified it on 17 December 1996. The MoEF, being the nodal Ministry for all environment and forest related matters, was made the focal point for coordinating the implementation of the CCD. However, various other Ministries are also involved in implementing specific schemes and projects to combat desertification and drought under the overall priorities determined by the Planning Commission in each Five Year Plan. The Government of India had initiated a number of measures for the protection and conservation of natural resources and ecosystems right from the inception of the first Five Year Plan in 1950-51. Over the last few decades, a large number of initiatives have been taken to strengthen programme and schemes, policy outlines and institutional frameworks in the sectors of agriculture, rural development, environment

and forests, social welfare, and poverty alleviation, which have a direct bearing on improving the economy and protection of our resources. The Constitutional Amendment in 1992 has vested more power and role to the local communities.

In addition to the land-based programme, a variety of programme/schemes are being implemented in the social sector by the Department of Family Welfare, Department of Education, Department of Women and Child Development, Ministry of Social Justice and Empowerment, Ministry of Rural Development, etc. which are relevant in the context of community development/uplift and rehabilitation in the dryland regions of the country. Various sector and cross-sector projects and programme related to desertification control were launched earlier and are continuing within the framework of the Tenth Five Year Plan. Different Ministries service these programme.

Table 5.1

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<tr>
<th>Some of the major programme are:</th>
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<tr>
<td>• Afforestation Programme</td>
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<td>• Drought Prone Area Programme (DPAP)</td>
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<td>• Desert Development Programme (DDP)</td>
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<td>• National Watershed Development Programme for Rain-fed Areas (NWDPRA)</td>
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<td>• Indira Gandhi Nahar Project</td>
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<td>• Soil and Water Conservation in the Catchment of River Valley Projects</td>
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<td>• Development of Ravine Area</td>
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The latest initiative in the support of combating desertification is the launch of a new scheme known as the National Action Programme for Combating Desertification. Under this scheme, the affected States can take up specific activities for mitigating drought through a participatory process. The focus of the Programme is in areas which are considered important by the Convention, but have not been adequately treated by the Government of India, viz. improving institutional capacity and organization at the grass root level, promoting alternative livelihoods, etc. Depending upon the evaluation of ongoing strategies and programme and assessment of current and future needs to combat desertification and mitigate the effects of drought, the Programme would be oriented to provide the thrust on meeting community needs of drinking water, food, fodder, and fuelwood, with a view to improve their quality of life.

In order to provide research support to the various programme for combating desertification, the Government of India has established a network of national level research institutes.
Table 5.2

<table>
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<th>Institutes involved in combating desertification</th>
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<tr>
<td>• Central Research Institute for Dryland Agriculture, Hyderabad</td>
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<td>• Central Arid Zone Research Institute, Jodhpur</td>
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<td>• Central Soil Salinity Research Institute, Karnal</td>
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<tr>
<td>• Central Soil and Water Conservation Research Institute, Dehradun</td>
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<tr>
<td>• Indian Grassland and Fodder Research Institute, Jhansi</td>
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<tr>
<td>• National Research Centre on Agroforestry, Jhansi</td>
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<td>• Water Technology Centre at Indian Agriculture Research Institute, New Delhi</td>
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A network of forestry research institutes under the Indian Council of Forestry Research and Education (ICFRE), Dehradun, conducts research on problems related to rehabilitation of degraded lands and increasing productivity of forests. A Desertification Cell in the Ministry of Environment and Forests has been established under the National Afforestation and Eco-development Board.

These specific schemes and research efforts are supported by institutional, policy, and legislative measures. As far as the policies are concerned there are various policies dealing with specific sector and cross-sector issues. Although most of them do not discuss desertification per se, they have important implications for combating it.

The National Land Use Policy takes into account the environmental, social, demographic, economic, and legal issues. The Policy is intended to have dynamic conservation, sustainable development, and equitable access to the benefits of intervention as its thrust.

The National Land Reform Policy, allows greater access to land by the landless rural poor and provides guidelines for introduction of land reform legislation or amendments to be initiated by the States and Union Territories.

The National Forest Policy, which is aimed at environmental stability and maintenance of ecological balance, also takes into account the need to increase forest cover on semi-arid, arid, and desert tracts.

The Draft Grazing and Livestock Management Policy is not yet a national policy. It is a policy dealing with grazing and livestock management. One of its primary initiatives is to develop large blocks of land away from human habitations in arid and semi-arid regions as grass reserves for higher production. This is particularly required for chronically drought prone states like Rajasthan, Gujarat, and Haryana.
Major policies/strategies having a bearing on desertification:

- National Land Use Policy Outlines, 1986
- National Forest Policy, 1988
- Draft Grazing and Livestock Management Policy, 1994
- National Agriculture Policy, 2000
- National Population Policy, 2000
- National Water Policy, 2002
- National Land Reform Policy
- Draft National Policy for Common Property Resource Lands
- National Policy on Environment
- Environmental Action Plan

The Draft National Policy for Common Property Resource Lands (CPRLs) seeks to provide support to the people and their production systems through restoration, protection, regeneration, and development of CPRLs.

The National Agricultural Policy, 2000, highlights the importance of social forestry and agroforestry in the maintenance of ecological balance and augmentation of biomass production in agricultural systems.

The new National Water Policy, 2002, reiterates the importance of optimal use of water resource. In view of the vital importance of water for human and animal life, for maintaining ecological balance and for economic development activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical, and equitable use has become a matter of utmost urgency. Concerns of the community need to be taken into account for water resource development and management.

As far as the legal and regulatory framework is concerned, there is no specific law dealing with desertification per se. However, in India, there are various legislations aimed at conservation and management of natural resources and preservation and protection of the environment. Environmental issues that have been part of Indian thought and social fabric are reflected in India’s Constitution under Articles 48A and 51A (g). The Panchayati Raj institution provides strong institutional structure at the village level for implementation of desertification control strategies.

On the institutional side, the National Land Use and Wastelands Development Council (NLWC) established in 1985 is the highest policy planning and coordinating agency for all issues concerning the country’s land resources. A Desertification Cell in the Ministry of Environment and Forests has been established under the National Afforestation and Eco-development Board. This would be further strengthened to
comprise of a multi-disciplinary team including agriculture, forestry, environment science, geo-hydrology, rural development, and social sciences.

Apart from all these steps taken by the Government of India, it is also proposed to initiate activities that include assessment and mapping of land degradation, drought monitoring and early warning system groups, drought preparedness contingency plans and on-farm research activities for the development of indigenous technology. Under UNCCD, a Regional Action Programme for Asian countries has been formulated to strengthen the existing capacity of the parties and to network each other for effective measures to combat desertification. Under this programme, six Thematic Programme Networks (TPN) have been identified.

Though the above mentioned efforts have been significant to an extent in combating desertification and drought and in reducing their impact, much more needs to be done considering the magnitude of the problem. To rehabilitate the total vulnerable area, a coordinated effort as well as significantly enhanced budgetary support would be required.

5.4 Conclusion

If looked at globally, UNCCD has been effective in combating desertification especially in Africa. The Convention has now reached maturity and is evolving from the preparation of national action programme to their implementation. Assessment of national action programme by the parties in 2000 and 2001 showed that the strengthening of capacities for key actors at the local level proved successful in identifying and addressing challenges linked to sustainable development. The bottom-up approach of the Convention helped strengthen relationships between governments and local communities, particularly in larger countries. It also favored the decentralized involvement of stakeholders and natural resources end users in the development process.

During the meeting of the Committee for the Review of the Implementation of the Convention in 2002, many innovative solutions were identified by country Parties. The exchange of information on best practices and their replication worldwide are expected to further propel an effective fight against desertification and strengthen South-South and North-South cooperation among countries and regions.

Work is also underway between the UNCCD and other international organizations dealing with the environment and development issues such as the Climate Change Convention and Convention on Biological Diversity to find common grounds and avoid duplication. However, the implementation of the Convention, which has been hampered due to lack of predictable financial resources, will be further expedited and strengthened now that the GEF has been designated as a financial mechanism at the COP6.
VI

Marine Conservation

6.1 Introduction

The protection and preservation of the marine environment under Part XII of the United Nations Convention on the Law of the Sea (UNCLOS), 1982 (hereinafter Convention), provides a comprehensive legal framework for controlling the serious degradation of the marine ecosystem. Although Articles 192 to 237 deal with protection and preservation of the marine environment per se, environmental provisions dealing with maritime zones are also found elsewhere in the Convention.

The importance attached to environmental provisions of the Law of the Sea under the Convention is evident in Article 1 of the Preamble, which provides that:

Consequently the States Parties recognize the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.

It can thus be seen that unlike the four Geneva Conventions on the Law of the Sea, 1958, the 1982 UN Convention on the Law of the Sea provides for a comprehensive environmental law regime governing the uses of the seas, including exploration and exploitation of their resources.

The provisions on the protection and preservation of marine environment constitute a substantial part of the new Law of the Sea Convention. Prior to the adoption of Convention pollution of the sea by oil and pollution by dumping ships and aircraft was a major concern of the international community. In addition, conservation of marine fisheries either because of over exploitation in some parts of the sea or adverse impact of pollution or available fish stocks, was also a matter of concern, but was generally dealt with as part of regulation of fishery resources of the sea.

The 1958 Convention on the High Seas required states to draw up regulations to prevent pollution of the seas by the discharge of oil from ships or pipelines or resulting from the exploration and exploitation of the seabed and the subsoil. It also

174 Article 24, Convention on the High Seas.
required states to take measures to prevent pollution of the seas from dumping of radioactive wastes taking into account relevant international standards and regulations. However, radioactive pollution was not defined by the Convention.

Similarly, the 1958 Convention of the Continental Shelf obliged States to undertake appropriate measures in the safety zones established around continental shelf and installations to protect living resources from harmful agents. However, harm resulting from such exploitation to the marine environment beyond the limits of national jurisdiction was not covered. Other conventions that dealt with oil pollution from ships or nuclear materials provided a piecemeal approach to deal with problems posed to marine environment due to pollution from different points or non-point sources.

However, the United Nations Conference on Human Environment held at Stockholm in 1972, provided an international perspective to the problem of protection and preservation of the marine environment. Certain basic concepts and principles adopted by the Stockholm Declaration on assessment and control of marine pollution, provided the basis for the development of the Articles of Part XII of the 1982 Convention. In this regard, Principle 7 of the Stockholm Declaration provides:

States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities, or to interfere with other legitimate uses of the sea.

The scope of the Convention is very wide as it takes into consideration the global dimension of marine pollution and the different sources of pollution. It extends to environmental degradation in the maritime zones, internal waters, high seas, and also the international seabed area.

In essence, the Convention is a basic, universal, legal instrument, which establishes general rules to serve as the legal framework for specific global or regional instruments. It thus plays a coordinating role and provides that obligations under Part XII are without prejudice to the specific obligations assumed by states under special conventions and agreements concluded previously which relate to the protection and preservation of the marine environment. However, it provides a rider that such specific obligations should be carried out in a manner consistent with the general principles and objectives of the Convention.

6.2 Structure of Part XII of the UNCLOS, 1982

The Structure of Part XII reflects a complex scheme for the protection and preservation of the marine environment. For convenience it can be divided into: (i) General provisions; (ii) Rules for global and regional cooperation; (iii) Technical

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175 Article 25.
176 Article 5 (7).
assistance and monitoring; (iv) Harmonization of international and national rules; and (v) Enforcement and safeguards and special provisions.

**General provisions**

States have the obligation to protect and preserve the marine environment. This simple sentence though not limited to the prevention of prospective damage to the marine environment, also extends to the ‘preservation of the marine environment’. Preservation would require a more pro-active approach by states to maintain and improve the present condition of the marine environment.

The word ‘protect’ indicates measures relating to imminent or existing danger or injury. The word ‘preserve’ points towards conservation of natural resources and retention of the quality of the marine environment within appropriate limits and standards generally agreed upon. ‘Conservation’ is the term that is normally used to refer to the protection of the living resources. ‘Protection and preservation’ on the other hand refer to marine environment, which is used throughout the Convention, as a matter of long term policy. ¹⁷⁹

Article 193, while reiterating the right of states to permanent sovereignty over their natural resources, calls for preserving the rights of other states. It states:

States have the sovereign right to exploit the natural resources pursuant to the environmental policies and in accordance with their duty to protect and preserve the marine environment.

This right to permanent sovereignty over natural resources has generally been accepted to be customary law and was also reflected in Principle 21 of the 1972 Stockholm Declaration, which provided that:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within the jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

The Convention also provides that states shall undertake individually or jointly all measures which are necessary to prevent, reduce, and control pollution of the marine environment from any source, using the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavour to harmonize their policies in this connection. States are called upon to undertake due diligence obligations (prevent, reduce, and control), on the basis of the best available means at their disposal and in accordance with the capabilities.

The Convention thus takes into consideration the needs and aspirations of a number of developing countries whose primary priority is often socio-economic development. It is, however, seen that developing states with limited resources and technological

backwardness are urged by the developed states to cope with higher international environmental standards. This is not to deny the need for harmonizing common but differentiated (preferential treatment obligations) national policies with international rules and standards, with regard to preservation of the marine environment.

As regards the definition of ‘pollution of the marine environment’ the Convention states that it means:

The introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hinders marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

It calls upon states to take all measures to ensure that activities under their jurisdiction or control do not cause damage by pollution to other states and their environment and the pollution arising from incidents or activities under their jurisdiction does not spread beyond the areas on which they exercise sovereign right with this Convention.

States are also obligated to adopt measures to minimize to the fullest extend possible the pollution of the sea caused by: (a) release of toxic, harmful, and noxious substances, especially which are persistent; from land based sources; from or through the atmosphere; and by dumping; (b) pollution from vessels caused by accidents or emergencies and also intentional or unintentional discharge through vessels or ships, as well as regulation of the design, construction, equipment, operation, and Manning of vessels; (c) pollution from installation and devices used in the exploration or exploitation of natural resources from the sea; and (d) pollution from installation and devices operating in the marine environment which are involved in preventing accidents and ensuring safety of operations at sea.

While undertaking these measures, states are also called upon to protect and preserve rare or fragile eco-systems as well as habitat of depleted, threatened, or endangered species and other forms of marine life.

Another general obligation upon states is to prevent the transfer of pollution directly or indirectly, damage or hazards from one area to another or to transform one type of pollution into another. Such an obligation would ensure that efforts of states are not duplicated and also they do not endanger the existing fragile environment of the oceans.

The Convention also provides for the protection of the marine ecosystems from invasion by alien species. In this regard, states shall also take measures to prevent, reduce, and control pollution by means of technologies under their control and shall not intentionally or otherwise introduce species, alien or new, to the particular part of the marine environment which may cause significant harm to the marine environment.
Global and Regional Cooperation

The Convention although international in nature, calls upon states either on a global or regional basis, directly or through competent international organizations, in developing international rules and standards and recommended practices and procedures for the protection and preservation of the marine environment.

It provides a customary duty of notifying ‘existing or imminent pollution’ which is likely to cause damage to states, as well as other competent international organizations. Further, while undertaking such notification, the Convention provides that that is the duty of all states to cooperate to the extent possible in accordance with their capabilities, with the competent international organization in eliminating the effects of pollution and preventing or minimizing the damage caused.

The Convention has attracted wider acceptance by a number of developing and lesser-developed states because it provides preferential treatment to them in their efforts to prevent, control, or reduce pollution. Such help is by way of allocation of appropriate financial resources, technology transfer, and assistance in capacity building and training.

As regards, monitoring and environmental assistance of risks or effects of pollution on the marine environment, the Convention provides that states are obliged to keep under surveillance the effects of activities, which are likely to cause harm to the marine environment.

6.3 Harmonization of International Rules with National Legislation

The Convention establishes a framework for development and adoption of national measures for the protection of the marine environment.\textsuperscript{180}

One of the important functions of the Convention is to provide international rules and standards for the enforcement of marine pollution abatement activities. This would involve harmonization of national laws and regulations with international rules, standards, and recommended practices and procedures relating to the protection and preservation of the marine environment. During the negotiations of the Convention, developing countries had serious objections to harmonization, as it would affect developmental activities and progress in areas relating to international shipping, increasing land based pollution of the sea, and the potential impact of growing exploitation of the seabed and subsoil. It was felt that concern for marine environment should not be a stumbling block to the socio-economic development of poorer states.\textsuperscript{181}

\textsuperscript{180} Article 194.
As regards standards setting, Section 5 of Part XII deals with six sources of marine pollution. These include pollution from land-based sources; pollution from sea bed activity subject to national jurisdiction; pollution from activities in the Area; pollution by dumping; pollution from vessels; and pollution from or through the atmosphere.

As regards pollution from land-based sources, states are under an obligation to adopt national legislations and regional and global rules, while bearing in mind their economic capacities and also the need for their socio-economic development. To date, there is no global treaty or convention that regulates land-based marine pollution. However, the United Nations Environment Programme (UNEP) is engaged in a Global Programme for Action (GPA) for adopting detailed national, regional, and where possible, international rules for combating land-based marine pollution on the basis of the Montreal Guidelines.

On pollution from seabed activities, Part XII provides for harmonization of policies at the regional and international levels. Pollution from activities in the area is to be governed by international rules, regulations, and procedures established in accordance with Part XI of the Convention. The International Seabed Authority, the body responsible for seabed activities, adopted the Regulation governing Prospecting, Exploration, and Exploitation of Poly-metallic Nodules (Mining Code) in July 2001. This Mining Code provides for detailed rules for future exploitation of seabed minerals and resources, which is set to begin in 2007.

A combination of national legislation and international rules is envisaged with respect to pollution by dumping. States are under an obligation to abide by a due diligence duty to preserve the marine environment from dumping. The Convention also provides that dumping within the territorial sea, or the EEZ, or the continental shelf, may not be carried out without the express prior approval of the coastal state.

In response to Part XII of the Convention, which is rather generic in nature, the international community put in place a comprehensive regime to regulate pollution by dumping in 1972, called the London Convention. This Convention, which is widely adhered to, governs the disposal at sea of wastes or any other matter from vessels, aircraft, platforms, or any manmade structures at sea. The London Convention underwent a radical change when it was amended in 1996 by a Protocol, which adopts a precautionary approach to dumping of wastes at sea.

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182 Article 207.
183 Article 208.
184 Article 209.
185 Article 210.
186 Article 211.
187 Article 212.
189 Article 210.
Another aspect regulated is the ‘Pollution from Vessels’. It provides that states are under an obligation to establish international rules and standards and national laws and regulations of at least the same effect. States also have a duty to promote the adoption of standards with regard to ports and national waters that includes territorial sea and EEZ. As regards territorial sea, while adopting anti-pollution laws, coastal states have a duty to ensure that they do not hamper the innocent passage of foreign vessels. With respect to EEZ, coastal states may adopt laws and regulations giving effect to generally accepted international rules and standards. Further, subject to stringent standards applied by competent international organizations, coastal states may adopt special mandatory provisions implementing international norms.

With respect to pollution from vessels, one of major sources of marine pollution, the Convention calls upon states to establish international rules and standards to prevent, reduce, and control pollution of the marine environment from vessels. The main international convention regulating marine pollution from vessels is the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 (MARPOL 73/78). It establishes specific international regulations whereby states undertake to eliminate intentional pollution of the marine environment by oil and other harmful substances and minimize all accidental discharges. The Convention has attracted widespread support, although two of its five annexes have not yet come into force.\footnote{Annex I comprises 26 regulations for prevention of pollution by oil and six appendices (coming into force, 2 October, 1983); Annex II regulates control of pollution by innocuous liquid substances in bulk (coming into force, 6 April, 1987); Annex III regulates prevention of pollution by harmful substances in package form (coming into force, 1 July, 1992); Annex IV regulates prevention of pollution by sewage (not yet in force); Annex V regulates prevention of pollution by garbage from ships (coming into force, 31 December, 1988).}

**Enforcement Provisions**

The Convention provides for Flag State and Port State jurisdictions for the prevention, reduction, and control of pollution of the marine environment caused by vessels. States are obligated to ensure that vessels sailing their flags or of their registry are prohibited from sailing unless they comply with the requirements of international rules and standards.

**Special Provisions**

Apart from these substantive provisions, Part XI of the Convention contains special provisions on ice-covered areas and the responsibility, liability, and sovereign immunity of state ships.

The Convention provides for coastal states to adopt and enforce non-discriminatory laws for the prevention, reduction, and control of marine pollution in ice-covered areas. Canada, USA, the Russian Federation, and other states who did not oppose the presence of such an article in the Convention surround the Arctic region. Further, problems regarding navigation and ecology in ice-covered areas are addressed under the Convention. This in turn would mean that the competence of coastal states over

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marine pollution caused by vessels in ice-covered areas extends up to the outer limit of
the EEZ. Such a legal basis saw Canada adopting the Canadian Arctic Water Pollution
Prevention Act, 1970, regarded by many as a unilateral measure to protect the fragile

States are made responsible and liable for causing damage to the marine environment.
Principle 22 of the Stockholm Declaration, which influenced the insertion of such a
clause during the negotiation stage of the Convention, provides:

\begin{quote}
States shall cooperate to develop further the international law regarding liability
and compensation for the victims of pollution and other environmental damage
caus ed by activities within the jurisdiction or control of such areas beyond their
jurisdiction.
\end{quote}

It may be pertinent to note that the International Law Commission (ILC) has, after a
debate of more than 50 years, completed its work on rules of Responsibility of States.
Breach of an international obligation entails commission of a wrongful act for which
compensation or reparation has to be paid by the erring state. Although the ILC has
recently completed the work on the responsibility of states, the right to reparation
upon suffering a legal injury by a state is recognized as a part of customary law,
accepted by all nations.

The maxim of \textit{sic utero tuo ut alienam non laedas} has established a basis of
responsibility in national and international laws.\footnote{In Latin it means, ‘Use your own property so as not to injure that of others’}. As opposed to responsibility that
to only on the breach of an international obligation, liability as a topic is also the
agenda of the ILC. The topic is being considered as ‘International Liability for
Injurious Consequences Arising out of Acts not Prohibited by International Law’. The
ILC is considering this topic under two broad headings: Prevention of Transboundary
Damage caused by Hazardous Activities and Allocation of Loss, as a part of the
compensatory regime.

The Convention provides that it would be inapplicable to any warship, naval
auxiliary, other vessels or aircraft owned or operated by states and used for the time
being only on government non-commercial service, with regard to protection and
preservation of the marine environment.

\section*{6.4 Enforcement and Compliance by India}

While it would be interesting to study the complete state practice of India in the field
of marine environment, it would be a difficult exercise on account of time and space
for the purposes of this publication. Be that as it may, some of the important
environmental problems faced by India relate to conservation of forests, preservation

\footnote{In the \textit{Trail Smelter Arbitration} (3 UNRIAA 1938/1941, p.1907) between the United States and Canada in which Canada
complained of escape of noxious sulphur gases into its territory from the United States, the Arbitral
Tribunal stated that ‘No State has a right to use or permit the use of its territory in such a manner as to
cause injury by fumes to the territory of another or the properties or persons therein, when the case is of
serious consequence and the injury is established by clear and convincing evidence’.}
of grasslands, wetlands, mangroves, and the others related to sustainable use of natural resources, which could include regulation of industry, forestry, agriculture, marine resources, and movement of hazardous wastes.

There are a number of general laws enacted by the Parliament of India and State Legislatures, which provide for detailed rules towards environmental protection and prevention of pollution and other man-made hazards. One of the oldest such laws is the Indian Penal Code, 1869, which provides for environmental related offences such as nuisance, trespass, pollution, and handling of other hazardous substances.

Under the framework of the Constitution of India, a number of subjects are mentioned in which environmental duties to preserve the natural resources of the country have been enumerated [Articles 48-A and 51-A(g)]. Moreover, the Constitution also provides procedures in Article 252 and 253 for adopting national legislations with regard to the needs of two or more states. It may also be noted that the Union Government, in pursuance of the Stockholm Declaration of 1972 and acting under Article 253, adopted the Water (Prevention and Control of Pollution) Act, 1974, and the Water (Prevention and Control of Pollution) Cess Act, 1977.

India has a coastline of 6,100 km, extending into the Indian Ocean, with a further 1,400 km of islands in the Arabian Sea and the Bay of Bengal. It has an exclusive economic zone of 2.02 million sq. kms and a threat to these regions from marine pollution and other oil pollution does not have a specific legal protection. As regards islands—Andaman and Nicobar in the Bay of Bengal and the Lakshadweep in Arabian Sea—the Government of India set up an Island Development of Authority (IDA) under the chairmanship of the Prime Minister in 1985. The IDA oversees the activities of these islands and ensures the socio-economic development and protection of eco systems therein.

Recently, the Government of India declared certain bio-diversity rich marine areas as Marine National Park and Marine Sanctuaries. Such National Parks/Sanctuaries are located in Gujarat, Tamil Nadu, and Andaman and Nicobar Islands. Apart from this, marine species like certain sharks and rays, all Giant Groupers, all Sygnathidians, several species of Coral, all Holothurians, several species of Molluscs, certain sponges, etc. have also been included in Schedules of the Wildlife (Protection) Act, 1972, thereby giving them the highest degree of protection.

**Environment Protection Act, 1986**

Bearing in mind the need to have a comprehensive legislation encompassing various sectors affecting the environment, the Union Government in 1986, enacted the Environment (Protection) Act (EPA). It is a piece of umbrella legislation ‘for the protection of environment and for matters connected therewith’.

The EPA provides for comprehensive definitions of a number of terms such as environment, environmental pollutant, hazardous substances, pollution damage, etc. Under the EPA, the Central Government is empowered to take all necessary measures for protecting and preserving the quality of the environment and is also authorized to constitute authorities for the purpose of exercising its functions. In 1996, the Central
Government laid down the Environment Protection Rules, which provide for detailed standards of emission or discharge of pollutants.

It entrusts the Central Government, i.e. the Ministry of Environment and Forests, with the powers to ‘take all such measures, as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling, and abating environmental pollution’. The Ministry of Environment and Forests is the nodal agency in the administrative structure of the Central Government for the planning, promotion, coordination, and overseeing of the implementation of various environmental and forestry programme. It is also the nodal agency in the country for the implementation of UNEP related activities.

As regards the coastal areas of India, which are subjected to various forms of environmental degradation such as dredging, oil spills, pollution, aquaculture, and unsuitable constructions, the Government of India has issued a notification on Coastal Regulation Zones in 1991. The coastal zone regulation also governs the threats to coral reefs and the mangrove ecosystems.

Further, to be able to manage the vast coastlines of India and also to promote sustainable development of the India Ocean and seas, in 1981, the Department of Ocean Development (DOD) was established. The chief objective behind the establishment of a separate department is to ensure sustainable exploration and exploitation of living and non-living marine resources for the well-being of the country. Some of the areas under the DOD include polar sciences, marine living and non-living resources, marine environment and coastal zone management, ocean observation and information services, and marine research. One of the important contributions of the DOD was to evolve an Ocean Policy Statement of India in 1982.

India enacted the Maritime Zones (the Territorial Waters, Continental Shelf, Exclusive Economic Zone, and Other Maritime Zones) Act, 1976, which provides that ‘all lands, minerals and other things of value underlying the ocean within the territorial shelf or the continental shelf or exclusive economic zone shall vest in the Union’.

It is to the credit of India that some of the customary features of the Convention were incorporated in the Maritime Zones Act, 1976, much before the United Nations Convention on the Law of the Sea (UNCLOS) itself was adopted. In December 1982, India signed the Convention and it came into force for India in 1995, one year after the Convention entered into force in 1994.

India has enacted legislation in a number of fields impacting upon the marine environment. The aquatic and marine resources of India were legislated upon by the Indian Fisheries Act, 1897, which seeks to establish penal offences for the placement of explosive substances or poisonous material in the water with the intent of destroying the catch of fish.
However, fishing beyond the territorial waters is regulated by the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981. This Act regulates the poaching activities of foreign fishing vessels in our exclusive economic zone and also provides for detailed rules prohibiting the use of explosive and poisonous substances that can kill, stun, or disable fish. The Marine Products Export Development Authority Act, 1972, establishes an authority whose primary function is the development and regulation of offshore and deep-sea fishing and undertaking measures for conservation and management of fisheries. While the Central Government has powers to regulate fishing by foreign trawlers in the EEZ under this Act, it was seen that due to the opposition of local fisherman, the deep sea fishing policy of the government was revised in 1991, with stringent regulations now in place to accommodate the needs of Indian fisherman.

The central and state governments share the responsibility for the prevention of marine pollution and they work closely with the help of pollution control boards of the maritime coastal states/union territories and the Ministry of Surface Transport. Work relating to pollution abatement is broadly distributed thus: the Indian Merchant Shipping Act, 1958 (for control of pollution from ships and offshore platforms in the EEZ), and the Indian Ports Act, 1963, under the Ministry of Petroleum and Natural Gas (MPNG) (concerning pollution upto 500 meters from oil platforms and structures); the Ministry of Environment and Forests’ (MEF) Water (Prevention and Control of Pollution) Act, 1974, (for the control of pollution arising from land-based sources with a jurisdiction of upto 5 km in the sea); and the Central Pollution Control Board (CPCB).

It has also been noticed that owing to the need for prompt action and response to ocean disasters or oil spills, the Ministry of Defence (MoD), and not the Ministry of Environment and Forests, has been made responsible for pollution response measures. This was an outcome of the ‘Maersk Navigator’ tragedy early that year, when a vast oil slick spread from the entrance to the Strait of Malacca to within 20 km of the Indian Nicobar Islands.

As a result, the Coast Guard was made directly responsible for combating marine pollution. It may be recalled that the Coast Guards Act, 1978, was enacted to provide for the establishment of an armed force of the Union for ensuring the security of the maritime zones of India with a view to protecting the maritime and other national interests in such zones. One of the important duties of the Coast Guard is the enforcement of maritime legislations, which includes regulation of illegal fishing and poaching, and preservation and protection of the marine environment. In this regard, the Coast Guard has formulated the National Oil Spill Disaster Contingency Plan which lays down a series of actions to be taken in the event of a major disaster of this nature and contains standard formats for reporting spills as well as forwarding data on equipment holding in the country. Since the late 1970s, the Coast Guard has undertaken 29 oil spill operations.

Other central legislations having an impact on marine environment are the Atomic Energy Act, 1962, which regulates the disposal of radioactive wastes and other substances. As regards marine pollution by oil, the Merchant Shipping Act, 1958, provides a legal framework for waste discharges from ships. The Wildlife Protection Act provides for designation of protected areas in coastal and marine areas and protects marine species such as whales, dolphins, turtles, corals, certain fishes, mollusks, etc.

India has enacted domestic laws or become party to international Conventions which having a bearing on the marine environment. Among them, India became a Consultative Party Member of the Antarctic Treaty system in 1983 and has ratified the Protocol on Environmental Protection to the Antarctic Treaty. As regards maritime safety, India is a party to the International Convention for the Safety of Life at Sea, 1974. To boost regional cooperation in the SAARC region under the UNEP Regional Seas Programme, India is a party to the South Asian Cooperative Environment Programme (SACEP). In addition, India has also ratified the International Whaling Convention and the Ramsar Convention on Wetlands of International importance, 1971.

6.5 Conclusion

The measures of preservation or conservation, especially with regard to natural resources of marine environment help maintain the ecological balance of the marine environment. In this sense, the concepts of Part XII of the Convention go much further than merely combating pollution after it has already taken place. It entails taking of legal and administrative measures and the application of scientific methods and procedures which do not simply arrest deterioration of marine eco-systems, but also provide the means for protecting and preserving the marine environment from harmful effects of pollution and other hazards.

The United Nations Convention on the Law of the Sea (UNCLOS), 1982, provides for the most comprehensive regime governing all aspects of access, use, utilization, preservation, and protection of marine areas and environment. It sets out the limits of coastal states’ jurisdiction over different maritime zones and provides for the establishment of an International Seabed Authority to authorize and control exploration and exploitation of resources of the international seabed area, beyond the limits of national jurisdiction. Likewise, exploitation in the EEZ is qualified by an obligation to ensure proper conservation and management measures in such a way that living resources in the EEZ are not endangered by over exploitation.

The legal regime for the protection and preservation of the marine environment was further strengthened by the United Nations Conference on Environment and Development adopting Agenda 21, Chapter 17 of which contains a comprehensive programme of action for protection of the oceans.
VII

Culture and Nature Conservation

7.1 Introduction

Heritage is our legacy from the past. Our cultural and natural heritage is an irreplaceable source of inspiration and is priceless and irreplaceable, not only for an individual nation, but for mankind as a whole. Parts of that heritage, because of their exceptional qualities, can be considered to be of outstanding universal value and as such, worthy of special protection against the dangers which increasingly threaten them.

In an attempt to remedy this perilous situation and to ensure, as far as possible, the proper identification, protection, conservation, and preservation of the world’s irreplaceable heritage, they are covered under the agenda of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) adopted in 1972 and the Convention Concerning the Protection of the World Cultural and Natural Heritage (WHC). The most significant feature of the Convention is to link together in a single document the concepts of nature conservation and the preservation of cultural sites. Nature and culture are complementary and cultural identity is strongly related to the natural environment in which it develops. By regarding heritage as both cultural and natural, the Convention reminds us of other ways in which people interact with nature, and of the fundamental need to preserve the balance between the two. Presently, the Convention has 178 countries as its members.194

The Convention is based on the premise that parts of cultural or natural heritage are of outstanding value and therefore need to be preserved as a part of the world heritage of mankind as a whole. Moreover, the protection of this heritage is not always properly done at the national level due to lack of resources and insufficient economic, scientific, and technological resources.195

The Convention defines the kind of natural or cultural sites which can be considered for inclusion in the World Heritage List. Cultural heritage refers to ‘monuments, groups of buildings, and sites with historical, aesthetic, archaeological, scientific, ethnological, or anthropological value’.196 Natural heritage refers to ‘outstanding physical, biological, and geological formations, habitats of threatened species of animals and plants and areas with scientific, conservation, or aesthetic value’.197 It is the duty of member states to identify potential sites and delineate their properties as mentioned in the Convention.198

194 As of 1 May 2005.
196 Art. 1.
197 Art. 2.
198 Art. 3.
**Obligations of the Parties**

It is the duty of each party to ensure identification, protection, conservation, preservation, and transmission to future generations of their cultural and natural heritage. A party can do this conservation either from its own resources or with any international assistance and co-operation particularly scientific, financial, artistic, and technical assistance.\(^{199}\)

Following are some of the measures which the parties are obliged to take for the preservation and conservation of cultural and natural heritage.\(^{200}\)

### Table 7.1

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<th>Parties should:</th>
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<tr>
<td>➢ Adopt a general policy for the protection of their cultural and natural heritage. They should also integrate this policy with their planning programme.</td>
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<tr>
<td>➢ Set up services with adequate staff and funds to protect such heritage.</td>
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<tr>
<td>➢ Conduct scientific and technical research on the dangers that threaten their cultural and natural heritage.</td>
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<tr>
<td>➢ Take necessary legal, scientific, technical, and financial measures.</td>
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<tr>
<td>➢ Establish national or regional centres for training in protection and preservation of cultural and natural heritage and also encourage any</td>
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**World Heritage Committee**

The Convention also provides for the establishment of an Intergovernmental Committee for the Protection of the Cultural and Natural Heritage of Outstanding Universal Value, called the World Heritage Committee.\(^{201}\) This Committee comprises 21 parties representing an ‘equitable representation of the different regions and cultures of the world’, and a Secretariat at UNESCO and the General Assembly of State Parties to the Convention\(^{202}\). The Convention names three international non-governmental or intergovernmental organizations to advise the Committee in its deliberations, i.e. International Union for Conservation of Nature (IUCN), International Council on Monuments and Sites (ICOMOS), and International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). While IUCN is responsible for expert evaluation of natural properties, it works closely with two other bodies on matters relating to cultural landscapes and mixed sites.\(^{203}\)

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\(^{199}\) Art. 4.

\(^{200}\) Art. 5.

\(^{201}\) Art. 8.

\(^{202}\) Art. 8 (1) and (2), 14 and 16.

\(^{203}\) Art. 8 (3).
**Procedure for the inclusion of properties to the World Heritage List**

Each State Party is required to submit to the World Heritage Committee a tentative list of properties which it intends to nominate for inclusion in the World Heritage List. This tentative list will constitute the inventory of the cultural and natural properties situated within the territory of each State Party and which it considers suitable for inclusion in the World Heritage List. The purpose of these tentative lists is to enable the Committee to evaluate within the widest possible context the ‘outstanding universal value’ of each property protected under the Convention and to list those properties under the ‘World Heritage List’. The Convention also requires the Committee to decide in case of urgent need which properties included in the World Heritage List are to be inscribed on the ‘List of World Heritage in Danger’. These are those properties which require for their conservation major operations and for which assistance requested under the Convention can be considered. The Committee shall define the criteria on the basis of which a property can be included in either of the lists.

**Functions of the World Heritage Committee**

The World Heritage Committee shall study the requests of State Parties for international assistance for the maintenance, conservation, and protection of their cultural and natural heritage. The Committee has to ensure that such cultural or natural properties are eligible for inclusion in the World Heritage List. It is the duty of the Committee to decide on the action to be taken with regard to these requests and the extent of its assistance. The Committee has to come out with an operational scheme for the protection of such cultural or natural heritage with the responsible government in whose territory such property is situated.

**World Heritage Fund**

The Convention establishes a World Heritage Fund as a trust fund for compulsory and voluntary contributions and other resources, the use of which is to be decided by the Committee.

**Conditions and Arrangements for International Assistance**

Any party may request international assistance for cultural or natural heritage property identified on the List or the Danger List which has outstanding universal value situated within its territory. Assistance granted by the World Heritage Committee could be in the form of either research studies pertaining to that property or provisions of experts, technicians etc. to ensure that the approved work is correctly

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204 Art. 11 (1).
205 Art. 11 (2).
206 Art. 11 (4).
207 Art. 11 (5).
208 Art. 13 (1).
209 Art. 13 (2).
210 Art. 13 (3).
211 Art. 13 (4).
212 Art. 13 (6), 15 to 18.
213 Art. 19 and 20.
carried out or training of staff or supply of equipment or low interest loans or grants.\textsuperscript{214}

The World Heritage Committee, the main body in charge of the implementation of the Convention, has developed precise criteria for the inscription of properties on the World Heritage List and for the provision of international assistance under the World Heritage Fund. These are included in a document entitled ‘Operational Guidelines for the Implementation of the World Heritage Convention’. This document can be revised by the Committee at any time to reflect new concepts, knowledge, or experiences.

At Present there are 788 properties from all over the world listed in the World Heritage List. Out of these, 611 properties belong to cultural, 154 natural and 23 mixed (having both natural and cultural values) properties.\textsuperscript{215}

\textit{Criteria for Selection}\textsuperscript{216}

To be included in the World Heritage List, sites must satisfy the selection criteria. These criteria are explained in the Operational Guidelines which, besides the text of the Convention, is the main document on World Heritage. The criteria are revised regularly by the Committee to match the evolution of the World Heritage concept itself.

\begin{table}[h]
\centering
\begin{tabular}{|l|}
\hline
\textbf{Cultural Heritage should:} \\
\hline
\hspace{2cm} represent a masterpiece of human creative genius, or \\
\hspace{2cm} exhibit an important interchange of human values over a span of time or within a cultural area of the world on developments in architecture or technology, monumental arts, town planning or landscape design, or \\
\hspace{2cm} bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or has disappeared, or \\
\hspace{2cm} be an outstanding example of a type of building or architectural or technological ensemble or landscape which illustrates a significant stage or significant stages in human history, or \\
\hspace{2cm} be an outstanding example of a traditional human settlement or land-use which is representative of a culture or cultures, especially when it has become vulnerable under the impact of irreversible change, or \\
\hspace{2cm} be directly or tangibly associated with events or living traditions, with ideas or with beliefs, or with artistic and literary works of outstanding universal significance (a criterion used only in exceptional circumstances, and together with other criteria). \\
\hline
\end{tabular}
\end{table}

\textsuperscript{214} Art. 22.
\textsuperscript{215} As of July 2005.
\textsuperscript{216} Source: Operational Guidelines of WHC.
Table 7.3

Natural properties should:

- be outstanding examples representing major stages of the Earth’s history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features, or
- be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, freshwater, coastal and marine ecosystems, and communities of plants and animals,
- contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance, or
- contain the most important and significant natural habitats for in situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

Mixed sites have both outstanding natural and cultural values. In 1992, the World Heritage Committee added a new category of ‘Cultural Landscapes’ under the Operational Guidelines. Cultural Landscapes represent the combined work of nature and of man. They are illustrative of the evolution of human society and settlement over time, under the influence of physical constraints and/or opportunities presented by their natural environment and or successive social, economic, and cultural forces, both external and internal. They should be selected on the basis both of their outstanding universal value and of their representativity in terms of a clearly defined geo-cultural region and also for their capacity to illustrate the essential and distinct cultural elements of such regions. The protection, management, and integrity of the site are also important considerations. There are three main categories:

- the clearly defined landscape designed and created intentionally
- the organically evolved landscape, and
- the associative cultural landscape.

Examples of cultural landscapes include agricultural areas and natural areas significant to specific groups of people like the Uluru-Kata Tjuta National Park in the Northern Territory of Australia and Tongario National Park in New Zealand, which was renominated to the World Heritage List in 1994.

Protecting Endangered Sites

World Heritage conservation is a continuous process. Listing a site does little good if it subsequently falls into a state of disrepair or if a development project risks destroying the qualities that made the site suitable for World Heritage status in the first place. The Convention makes it obligatory for the State Parties to report regularly

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217 Art. 1.
on the condition of sites, on measures taken to preserve them, and on their efforts to raise public awareness of cultural and natural heritage. If a country is not fulfilling its obligations under the Convention, it risks having its sites deleted from the World Heritage List. In case a particular site faces any serious danger like threat from mining, unbridled tourism, agriculture, development activity, etc., then the site will be placed on the World Heritage in Danger List. This list is designed to call the world’s attention to natural or human-made conditions which threaten the characteristics for which the site was originally inscribed on the World Heritage List. Endangered sites on this list are entitled to particular attention and emergency action.

7.2 Recent Developments

In the recently concluded 14th General Assembly of the State Parties to the World Heritage Convention, discussions focused on new initiatives to recognize and enhance cultural diversity and the intangible cultural heritage. In October 2003, the USA has also returned as a member of the Convention after a gap of 19 years. In another recent development, the International Council on Mining and Metals undertook to recognize World Heritage properties as ‘no-go’ areas.

On the other hand, in one of the most important initiatives, World Heritage was one of the cross cutting themes at the fifth IUCN World Parks Congress held in Durban from 7–8 September 2003. This step illustrates the growing realization that the World Heritage Convention is a versatile instrument which can be applied to conservation. It reflects the importance of World Heritage issues for the design, planning, and management of a wide range of protected areas. One of the concrete results of the Congress was the launching of a new World Heritage Marine Site Managers Network. This will help the World Heritage site managers, managers of sites involved in the World Heritage nominations, as well as partner organizations, institutions, and experts to work together. The network will serve as a clearing house to ensure regular contact and information exchange. Another important issue addressed at the Congress was the problem faced by natural and mixed World Heritage in danger. Although the Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict is designed to protect cultural heritage, there is no similar international legal instrument for the protection of natural heritage. Therefore, at the Congress it was recommended to have international and national instruments to strengthen the protection of World Heritage Sites and other protected areas in times of armed conflict.

7.3 IUCN—World Conservation Union and India

The IUCN-World Conservation Union is the world’s international ‘umbrella’ organization established in 1948. The relationship of IUCN with India dates back to 1950 when the Bombay Natural History Society (BNHS) became one of the first organizations in India to join as a member followed by the Indian Board of Wildlife and the Ministry of Environment and Forests, Government of India.

India has a long relationship with IUCN. The Government of India was the first country in South Asia to join IUCN as a state member in 1969. It is also the first and

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the only country in the region to host the General Assembly of IUCN in 1969. At present there are 22 members of IUCN in India including the Ministry of Environment and Forests, Government of India; National Board of Wildlife (NBW); Wildlife Institute of India (WII); Indian Institute of Forest Management (IIFM); and Centre for Environmental Law (CEL), WWF-India. The launch of Project Tiger in India in 1973 was the outcome of the IUCN General Assembly meeting in Delhi. India has done enormous work in poverty alleviation and conservation of natural resources and has the ability and potential to take the leadership in these fields in the South Asia Region for which IUCN provides a platform.

During the first meeting of the National Board for Wildlife held on 15 October 2003 under the Chairmanship of the Prime Minister, it was resolved to set up an IUCN Regional Office at New Delhi. Accordingly, an MOU was signed between the Government of India and the World Conservation Union, IUCN, during the 3rd World Conservation Congress held from 17–25 November 2004, at Bangkok. Accordingly, the IUCN Country office at New Delhi would be functional soon.

7.4 Enforcement and Compliance by India of WHC

India is a party to the Convention Concerning the Protection of the World Cultural and Natural Heritage, 1973 and ratified on 14 October 1977. Systematic monitoring and reporting is the continuous process of observing the conditions of World Heritage sites with periodic reporting on its state of conservation. It is the prime responsibility of the State Party to put in place on-site monitoring arrangements as an integral component of day-to-day conservation and management of the sites. The State Parties are also obligated to have policies and legislations for the conservation and protection of cultural and natural heritage of their country. In India, The Archaeological Survey of India and Ministry of Environment and Forests are the national agencies dealing with World Heritage activities. Currently, India is a member of the World Heritage Committee. Earlier, India was the vice-chairperson of the Committee in the years 1985, 1986, and 1988.

India implements protection of World Heritage natural sites through its system of national parks. In all, five natural sites of India, viz., Kaziranga National Park and Manas Tiger Reserve, both in Assam; Keoladeo National Park, Rajasthan; Sundarbans National Park, West Bengal; and Nanda Devi National Park, Uttaranchal, are listed under the World Heritage List. Apart from this, the Valley of Flowers National Park, Uttaranchal, has also been inscribed the World Heritage status as an extension of Nanda Devi National Park. Out of these five sites, two are seriously threatened in recent years, the Manas National Park and Kaziranga National Park. Manas National Park has been listed on the List of World Heritage in Danger under the WHC in 1992. These natural sites are given protection under the Wildlife (Protection) Act, 1972, as amended in 2002.

Cultural World Heritage sites seek to conserve the human landscape rather than the biological. India’s sites are protected under the Ancient Monuments and Archaeological Sites and Remains Act, 1958, administered by the Archaeological Survey of India. Sites reflect the rich diversity of India’s heritage and Hindu, Buddhist, Jain, Muslim, and Christian structures are listed. The NGO, INTACH, is
involved in monitoring and fund-raising for these sites. Preservation of cultural heritage is more easily appreciated within the country, although values of biodiversity maintenance have not been effective.

More of symbolic importance, the WHC has had minimal environmental impact in India. Financial assistance through the WHC has been restricted to cultural sites only.

Table 7.4

<table>
<thead>
<tr>
<th>Year</th>
<th>Site Description</th>
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</thead>
<tbody>
<tr>
<td>1983</td>
<td>Ajanta Caves, Aurangabad</td>
</tr>
<tr>
<td>1983</td>
<td>Ellora Caves, Aurangabad</td>
</tr>
<tr>
<td>1983</td>
<td>Agra Fort, Agra</td>
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<tr>
<td>1983</td>
<td>Taj Mahal, Agra</td>
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<tr>
<td>1984</td>
<td>Sun Temple, Konark</td>
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<tr>
<td>1985</td>
<td>Group of Monuments at Mahabalipuram</td>
</tr>
<tr>
<td>1986</td>
<td>Churches and Convents of Goa</td>
</tr>
<tr>
<td>1986</td>
<td>Khajuraho Group of Monuments</td>
</tr>
<tr>
<td>1986</td>
<td>Group of Monuments at Hampi</td>
</tr>
<tr>
<td>1986</td>
<td>Fatehpur Sikri</td>
</tr>
<tr>
<td>1987</td>
<td>Group of Monuments at Pattadakal</td>
</tr>
<tr>
<td>1987</td>
<td>Elephanta Caves</td>
</tr>
<tr>
<td>1987</td>
<td>Brihadisvara Temple, Thanjavur</td>
</tr>
<tr>
<td>1989</td>
<td>Buddhist Monuments at Sanchi</td>
</tr>
<tr>
<td>1993</td>
<td>Humanyun’s Tomb, Delhi</td>
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<tr>
<td>1999</td>
<td>Darjeeling Himalayan Railway</td>
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<tr>
<td>2002</td>
<td>Mahabodhi Temple Complex, Bodh Gaya</td>
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<tr>
<td>2003</td>
<td>Rock Shelters of Bhimbekta</td>
</tr>
<tr>
<td>2004</td>
<td>Chhatrapati Shivaji Terminus (formerly Victoria Terminus)</td>
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<tr>
<td>2004</td>
<td>Champaner–Pavagadh Archaeological Park</td>
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Source: http://whc.unesco.org

Table 7.5

<table>
<thead>
<tr>
<th>Year</th>
<th>Site Description</th>
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<tbody>
<tr>
<td>1985</td>
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<td>1985</td>
<td>Manas National Park</td>
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<tr>
<td>1985</td>
<td>Keoladeo National Park</td>
</tr>
<tr>
<td>1987</td>
<td>Sunderbans National Park</td>
</tr>
<tr>
<td>1988</td>
<td>Nanda Devi National Park</td>
</tr>
</tbody>
</table>

Source: http://whc.unesco.org
7.5 Conclusion

The World Heritage Convention has achieved a great deal for conservation since it was first adopted 30 years ago. Over those decades, however, much has changed. New threats have appeared, new stakeholders and interest groups have emerged, and new concepts of protected areas have evolved. Therefore, the earlier approach of tried-and-true may no longer apply. It is no longer focused only on listing the world’s jewels, but on conserving them and managing threats from tourism, mining, etc.
VIII

Antarctic Conservation

“As we make our mark on more corners of the Earth, it is becoming ever more important to save what remains unspoilt. Even though most people will never have the opportunity of seeing for themselves the amazing ice formations, the vast penguin colonies or the awe-inspiring views of the mountains and glaciers of Antarctica, it is still a great consolation to know that somewhere on Earth there exists a whole continent that is an almost pristine wilderness.”

Sir Peter Scott
The Greenpeace Book of Antarctica

8.1 Introduction

Antarctica, the last great wilderness on earth, is a continent of extremes. It is the coldest, highest, driest, windiest, remotest, and most desolate place on the planet. Yet despite these profoundly forbidding characteristics the Antarctic commons has attracted increasing political, economic, and diplomatic attention in recent years. This interest has been stimulated by the tremendous bounty of living marine resources, concern over ozone depletion and environmental degradation, and exaggerated public speculation about the potential of exploiting mineral wealth, especially hydrocarbons, on and around the continent. Antarctica is a continent without a tree, and with only two species of flowering plants. Being the coldest place on earth, Antarctica is a continent of extremes, often referred to as the ‘frozen wasteland’ or ‘the largest desert in the world’. In view of these facts, Lee Kimball’s question seems relevant: “[Antarctica] is cold, harsh, distant, and near lifeless. Why should anyone care about this huge glacier squashing the primeval bedrock beneath its billions of tons of ice?”

The answer lies in the fact that there is a huge amount of biological, historical and geographic interest in the unique environment of the isolated white continent, as well as many meteorological and astrological answers to be found in its surroundings. Several areas central to the great curiosity sparked by Antarctica are as follows:

- The continent and the surrounding ocean support an enormous and active ecosystem made up of a number of separate but interrelated environments and a diversity of species.
- Much of our planet’s history is preserved in the ice and bedrock.
- Antarctica is known as a ‘clean laboratory’ due to its purity. Coupled with its central place in the world’s weather system, global atmospheric and temperature

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221 Refer to http://www.rechten.rug.nl/stai/iel/papers2k/2k02.htm#N_2
anomalies are likely to show up and be noticed first in Antarctica. Also currents generated in Antarctica influence ocean movement throughout the world.

- The possible existence of great mineral resources buried in the ice has also been a source of great interest.

The 1959 Antarctica Treaty froze existing territorial claims\(^{222}\) to the region. As no claims for territorial sovereignty can be lodged upon it, many have argued that this constitutes a significant step in Antarctica’s status as a global commons. Indeed, during the 1980’s people began to talk about Antarctica as one of the last three areas of the human environment to be known as the ‘Global Commons’. The oceans and the global atmosphere are believed to be the other two areas which can not be claimed as the property of some state or group. With the 1991 mining moratorium over Antarctica, this general question of the area’s territorial definition has been brought dramatically into a strictly environmental context.\(^{223}\)

The environmental policy for Antarctic is unique in two ways:

- It is primarily managed cooperatively by interested countries on the basis of international agreements;
- Policies are mainly proactive, seeking to address potential problems before they arise.\(^{224}\)

The absence of agreed national sovereignty has shaped the international regime. The area south of 60°S is subject to a form of international governance involving 44 States (1999) under the Antarctic treaty System, although other states have contested the propriety of this subset of the global community regulating, outside the UN system, what they assert is a global commons.

Since the first Antarctic Treaty Consultative Meeting (ATCM) in 1961, the parties have met frequently, now annually, to discuss issues as diverse as scientific cooperation, measures to protect the environment, and operational issues - decisions based on consensus. This process has allowed the Antarctic Treaty to evolve into a system with a number of components that meet the special needs of managing activities in the Antarctic, while protecting national interests. This regime is now known by the broader title of the Antarctic Treaty System\(^{225}\), which operates under the umbrella of the annual

\(^{222}\) Discussed in the later part of the Chapter  
\(^{223}\) Al Gillespie, “Antarctica, Environmentalist’s Victory or Hidden Agendas?”  
http://www.nottingham.ac.uk/~llzweb/TEXTAG.HTM  
\(^{225}\) The term Antarctic Treaty System was codified by the Consultative Parties in 1979 at the ATCM in Washington in an international instrument Recommendation X — I of Antarctic Mineral Resources. The term ATS was acknowledged by UN in 1983 resolution of General Assembly on ‘Question of Antarctica’ (UNGA Res 38/77 of December 15, 1983 para 3 of the Preamble and Para I of the text). According to the 1991 Madrid Protocol, ATS means “the Antarctic Treaty, the measures in effect under the treaty, its associated separate international instruments in force and the measures in effect under those instruments” (Article 1 (e) of the Protocol)
ATCM. In fact the Antarctic Secretariat has been recently established in Buenos Aires, Argentina in September 2004.

Components of the Treaty System

The treaty system has evolved through the years by adoption of various conventions, agreed measures and the Protocol.

8.2 The Antarctic Treaty, 1961

The framers of the Treaty intended to guarantee that “…Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord”. The treaty covers everything south of 60°S latitude, known as Antarctic Treaty Area (ATA). The salient features of this treaty are:

- The suspension of territorial claims
- The prohibition of all military activities, nuclear experiments and the use of territory for nuclear disposal
- The freedom of scientific investigation, with the sole exception of having to give notice of expeditions or the setting up of research bases
- International cooperation in scientific activities, with exchange of information and personnel

Even though military activities is prohibited, in most cases the military provides the logistic support to the scientists, which is specifically allowed. Another noteworthy goal, apart from preservation of the pristine continent, is the fostering of international cooperation in scientific research. Bilateral cooperation in research through joint programming and sharing of bases (e.g. Norway does not have a base on the continent, but conducts its research cooperatively with UK & US) has now become a normal practice.

Since entering into force on 23 June 1961, the Treaty has been recognised as one of the most successful international agreements. Problematic differences over territorial claims have been effectively set aside and as a disarmament regime it has been outstandingly successful. The Treaty parties remain firmly committed to a system that is still effective in protecting their essential Antarctic interests. Science is proceeding unhindered.

The Antarctic Treaty is therefore, clearly based on the objectives:

- to ensure that Antarctica is used for peaceful purposes only;
- to ensure the continuance of freedom of scientific investigation and international co-operation in scientific investigation in Antarctica;
- to set aside disputes over territorial sovereignty.
Agreed Measures for the Conservation of Antarctic Fauna and Flora, 1964

The Agreed Measures were adopted in 1964 to protect endemic and native wildlife and plants. The provisions include a requirement for permits to take or harm birds and seals, and rules to prevent the uncontrolled introduction of non-indigenous organisms. In addition, the measures provide for areas of outstanding ecological interest to be set aside as a Specially Protected Area. Sites of Special Scientific Interest were later added to protect significant scientific values.

Convention for the Conservation of Antarctic Seals, 1978

The Seal Convention was developed to provide a means to regulate commercial sealing, should such an industry ever be resumed. Southern elephant seals and Antarctic fur seals had been reduced to near extinction in the 19th Century. Although there is no indication of any interest in sealing, the Convention provides for such activities to be undertaken sustainably. Some species of seals are totally protected, and catch limits are set for others.


CCAMLR was adopted in 1980 in response to fears that unregulated fishing for krill, one of the key species in the Antarctic marine food web, might adversely affect whales, seals, penguins and other species that directly or indirectly depend on krill for food. The Convention adopts an ‘ecosystem approach’ - it provides that krill and all the other living resources of the Southern Ocean are treated as an integrated system where effects on predator, prey and related species are considered and decisions on sustainable harvesting levels are made on the basis of sound scientific advice. Conservation Measures under CCAMLR establish protected species, set catch limits, identify fishing regions, regulate when fishing may occur and what fishing methods can be used, and establish fisheries inspection procedures.

Convention on the Regulation of Antarctic Mineral Resources Activities, 1988

CRAMRA was adopted in 1988 at Wellington, New Zealand in the form of a unique multinational minerals treaty. Yet within two years, the legal attraction and political support for that instrument among most Consultative Parties had substantially withered off. With growing environmental concerns there was a change in the stance of Australia, followed by France and New Zealand. And so CRAMRA was abandoned. Even though CRAMRA did not come into effect, yet it was significant in paving the way towards the Protocol (a comprehensive instrument) and substantially influenced the content of its several provisions, specially the 50 year ban on mining exploitation and activities.
8.3 The Protocol on Environmental Protection to the Antarctic Treaty, 1991

The Protocol was adopted in 1991 in response to proposals that the wide range of provisions relating to protection of the Antarctic environment should be harmonised in a comprehensive and legally binding form. It draws on and updates the Agreed Measures as well as subsequent Treaty meeting recommendations relating to protection of the environment.

The Protocol:
- designates Antarctica as a ‘natural reserve, devoted to peace and science’;
- establishes environmental principles to govern the conduct of all activities;
- prohibits mining;
- subjects all activities to prior assessment of their environmental impacts;
- provides for the Committee for Environmental Protection, established in 1998, to advise the ATCM;
- requires the development of contingency plans to respond to environmental emergencies; and
- provides for the elaboration of rules relating to liability for environmental damage.

The Protocol includes Annexes that detail obligations relating to:

- **Annex I: Environmental impact assessment**
- **Annex II: Conservation of Antarctic Fauna and Flora**
- **Annex III: Waste disposal and waste management**
- **Annex IV: Prevention of Marine Pollution**
- **Annex V: Management of Protected Areas**

8.4 Negotiating the Protocol

The conclusion of the Protocol resulted from negotiations during the Eleventh Antarctic Treaty Special Consultative Meeting among the Antarctic Treaty Consultative Parties - Argentina, Australia, Belgium, Brazil, Chile, China, Ecuador, Finland, France, Germany, India, Italy, Japan, Republic of Korea, Netherlands, New Zealand, Norway, Peru, Poland, South Africa, Spain, Sweden, the Soviet Union, the United Kingdom, the United States and Uruguay.

Fourteen Contracting Parties which are not Consultative Parties - Austria, Bulgaria, Canada, Colombia, Czechoslovakia, Cuba, Denmark, Greece, Guatemala, Hungary, 

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226 This text was adopted at the Antarctic Treaty Consultative Meeting in Peru, May/June 1999, as an introduction to the Antarctic Treaty, particularly for intending visitors to the Antarctic (Introducing the Antarctic Treaty, http://www.antdiv.gov.au/information/treaty/treaty.asp)
Democratic People’s Republic of Korea, Papua New Guinea, Romania and Switzerland, as well as representatives of a number of international organizations, attended as observers.

The Special Consultative Meeting, convened pursuant to a recommendation adopted in Paris in October, 1989, had as general terms of reference the “further elaboration, maintenance and effective implementation of a comprehensive system for the protection of the Antarctic environment.” The first session of the Special Consultative Meeting took place in Vina del Mar, Chile, November 19-December 6, 1990; and the second in Madrid, April 22-30, June 17-22, and October 3-4, 1991.

The Protocol, including the annexes on environmental impact assessment, conservation of Antarctic fauna and flora, waste disposal and waste management, and prevention of marine pollution, was adopted by consensus of the twenty-six Antarctic Treaty Consultative Parties. The Protocol was opened for signature on October 4 in Madrid and, thereafter, in Washington until October 3, 1992. All 26 of the Antarctic Treaty Consultative Parties, including the United States, signed the Protocol during that period, along with ten of the Contracting Parties that are not Consultative Parties.

It was decided that the Protocol would enter into force thirty days following the ratification of all Consultative Parties to the Antarctic Treaty. At the signing ceremony on October 4, 1991, 23 of the 26 Consultative Parties signed the Protocol. Japan, India, and South Korea did not immediately sign because their delegations did not have authorization from their governments. Eight other non-consultative treaty nations also signed the Protocol. The Consultative Parties that signed the Protocol, thereby initiating their formal commitment to ratify it, were the United States, Argentina, Australia, Belgium, Brazil, Chile, China, Ecuador, Finland, France, Germany, Italy, the Netherlands, New Zealand, Norway, Peru, Poland, South Africa, Spain, Sweden, the U.S.S.R. (Russia), the United Kingdom, and Uruguay.

On 15 December 1997 Japan, as the last Consultative Party, ratified the Protocol. Consequently the Protocol entered into force on 14 January 1998. From the day the Protocol entered into force, no Non-Consultative Party may become a full Antarctic Consultative Party unless it has ratified the Environmental Protocol. Annex V on Area Protection and Management will enter into force on the date on which that Annex has been approved by all Antarctic Treaty Consultative Parties. The Protocol concluded in Madrid on October 4, 1991, builds upon the Antarctic Treaty to extend and improve the Treaty’s effectiveness as a mechanism for ensuring the protection of the Antarctic environment.

The Environmental Protocol was negotiated in haste, and to a larger extent, the provisions were taken over from previous recommendations adopted earlier. Even some of the Protocol’s basic environmental principles came from CRAMRA – the very

instrument the Protocol has suspended. But the Protocol did bring about new regulations into the Antarctic Treaty System by the fact that:

(i) the Protocol approached the protection of the Antarctic environment in a comprehensive manner;
(ii) the Protocol ‘codified’ the existing recommendations into a legally binding instrument;
(iii) the Protocol provided for the establishment of a new institution within the Antarctic Treaty System, the Committee for Environmental Protection (CEP), that became operative in 1998 – with the coming into effect of the Protocol.
(iv) the Protocol supplements the Antarctic Treaty and neither modifies nor amends the Treaty Article IV (I). Consistency with other components of the Antarctic Treaty System is the subject of a special provision, Article V (in the Madrid Protocol).

8.5 Environmental Principles Imbedded in the Environmental Protocol

Protection of the Antarctic environment is to be fundamental considerations in the planning and conduct of all human activities in Antarctica. This includes protection of its intrinsic value (including wilderness and aesthetic values) and its value as an area for the conduct of scientific research (especially research essential to understanding the global environment) With this aim, all activities are to be planned and conducted so as to avoid:

- adverse effects on climate or weather patterns
- significant adverse effects on air or water quality
- significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments
- detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora
- further jeopardy to endangered or threatened species
- degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance

The environmental principles in the Protocol also include requirements for:

- prior assessment of the environmental impacts of all activities
- regular and effective monitoring to assess predicted impacts and to detect unforeseen impacts.

Through the Protocol the Parties have agreed to prohibit any mineral resources activities for the next 50 years.

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228 C.C. Joyner, The Legitimacy of CRAMRA, in Olav S. Stokke and Davor Vidas (Ed.), n. 15, pp. 255-267
Annexes to the Protocol

An outstanding feature of the Protocol is the annexes. The Annexes form an integral part of the Protocol and additional annexes may be adopted in accordance with the provisions of Article IX of the Antarctic Treaty. In the initial version agreed to in October 1991 there were four annexes while at ATM XVI a fifth Annex was added. Additional annexes as agreed to from time to time will initially take the form of Recommendations agreed to at ATMs. It is interesting to note that given the importance attached to the role of the annexes in the Protocol, with the Protocol merely being a framework instrument under which various Annexes can be developed to deal with environmental issues as they arise, that additional annexes can be adopted simply by consensus at ATMs. This should be contrasted with the stricter modification or amendment procedures of the Protocol, which by adopting the mechanism of Article XII of the Antarctic Treaty, will require unanimous agreement before acceptance.

Table 8.1

The Protocol includes Annexes that detail obligations relating to the Protocol on Environmental Protection to the Antarctic Treaty that have been drawn up are:

<table>
<thead>
<tr>
<th>Annex</th>
<th>Obligation</th>
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<tr>
<td>I</td>
<td>Environmental Impact Assessment</td>
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<tr>
<td>II</td>
<td>Conservation of Antarctic Fauna and Flora</td>
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<td>III</td>
<td>Waste Disposal and Waste Management</td>
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<td>IV</td>
<td>Prevention of Marine Pollution</td>
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<td>V</td>
<td>Area Protection and Management</td>
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The first four annexes form an integral part of the Protocol. Of the five annexes, Annex I is perhaps the most significant at present as it creates the procedure for EIA. Article 3 of the Annex provides for a comprehensive environmental evaluation of proposed activities under the EIA process. This results in a determination being made on whether the proposed activity proceeds, or, if the proposal goes before the Committee and the ATCPs. Annex V concerning the establishment and management of special reserves in Antarctica was adopted in 1992 at the 16th ATCM in Bonn, after the Protocol, and has to go through a separate ratification process.

In 1998, Annex I-IV came into effect along with the protocol, but Annex V could not come into force, as many countries had not ratified it. At the XXIVth ATCM at St.

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231 Discussion on ‘Liability’ at the ATCMs is going on for quite sometime now, and may be in near future form an important Annex to the Protocol.
232 Article 25, which makes an exception in regard to the adoption and modification of Annexes.
233 This text was adopted at the Antarctic Treaty Consultative Meeting in Peru, May/June 1999, as an introduction to the Antarctic Treaty, particularly for intending visitors to the Antarctic (Introducing the Antarctic Treaty, http://www.antdiv.gov.au/information/treaty/treaty.asp)
Petersburg, Russia in 2001, India was the ‘only’ Consultative Party remaining to ratify the annex. India ratified the Annex in 2002.

Annex I: Environmental impact assessment - activities are assessed in the planning to stage to identify their possible impact on the environment. If the impacts are likely to be more than minor or transitory, a Comprehensive Environment Evaluation must be prepared and opportunity provided for the Committee for Environmental Protection and other Consultative Parties to comment on it.

Annex II: Conservation of Antarctic Fauna and Flora - updates the existing rules relating to protection of animals and plants (requiring a permit for taking or interfering with them) and relating to the introduction of non-indigenous organisms.

Annex III: Waste disposal and waste management - this Annex specifies wastes that may be disposed of within the Antarctic Treaty area and wastes that must be removed. It also provides rules relating to the disposal of human waste and the use of incinerators. The Annex requires the development of waste management plans. Particularly harmful products such as PCBs, polystyrene packaging beads and pesticides are prohibited in the Antarctic.

Annex IV: Prevention of Marine Pollution - the discharge of potentially harmful substances from ships (including oily mixtures and garbage) is regulated, as is the disposal of ship-generated sewage. The Annex adopts practices broadly consistent with those applying in the relevant annexes of MARPOL. Disposal at sea of any plastics is prohibited.

Annex V: Management of Protected Areas - establishes an improved protected area system that integrates the previous categories of protected areas into Antarctic Specially Protected Areas (entry to which requires a permit) and Antarctic Specially Managed Areas. Management plans are required for both categories. The protected area system also provides for the designation of historic sites and monuments, which must not be damaged or removed.

Annex VI: Liability arising from Environmental Emergencies - applies to environmental emergencies in relation to scientific research programme, tourism and all other governmental and nongovernmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty. Measures and plans for preventing and responding to such emergencies are also included in this Annex (Art. 3 & 5 respectively).

Dispute settlement procedures are included in the Protocol. These include compulsory and binding procedures for disputes over the interpretation or application of, and compliance with, the provisions of the Protocol relating to mineral resource activities, environmental impact assessment and response action, as well as most provisions included in the Annexes.
The Protocol establishes a Committee on Environment Protection, as an expert advisory body to provide advice and formulate recommendations to the Antarctic Treaty Consultative Meetings in connection with the implementation of the Protocol.

According to Article XII, the Antarctic Treaty opens the possibility for a special conference to review the operation of the Treaty. Such a conference may be convened at the request of any Consultative Party once the Treaty has been in force for 30 years (that is, after 23 June 1991). All Parties, not just Consultative Parties, have the right to participate in this conference.

A number of SPECIALISED BODIES assist the Treaty parties in the conduct of their work. Specific tasks may be directed to these bodies, or they may be invited to provide observers or experts to participate in Treaty forums.

1. The Scientific Committee on Antarctic Research coordinates Antarctic research programs and encourages scientific cooperation. Through its various subordinate groups it is able to provide expert information on a range of disciplines and on the scientific implications of operational proposals of the Treaty meetings.

2. The Council of Managers of National Antarctic Programs comprises the heads of each of the national Antarctic operating agencies. COMNAP meets annually to exchange logistic information, encourage cooperation and develop advice to the Treaty parties on a range of practical matters.

3. The Antarctic Treaty parties have also developed a close relationship with environmental inter-governmental and non-government organisations that represent the broader community interests in conservation. Organisations such as the International Union for the Conservation of Nature (IUCN), the United Nations Environment Programme (UNEP) and the Antarctic and Southern Ocean Coalition (ASOC) are also invited to the Treaty meetings as experts.

4. Bodies with technical expertise relevant to the Treaty discussions also participate. They include the International Hydrographic Organisation, the World Meteorological Organisation and the Intergovernmental Oceanographic Commission.

5. The International Association of Antarctic Tour Operators (IAATO) is an industry body representing the interests of the growing tourist trade in Antarctica. Many tour operators are affiliated with IAATO, which also provides experts to the annual Treaty meetings.

In 1998, when the Madrid Protocol came into effect, the requirement for its proper implementation by Consultative parties became imminent. The notion of implementation refers to “all measures that have been taken by a state party to fulfil the objectives of the Madrid Protocol”. Implementation can be considered to have two separate components, which at times operate in parallel and at times sequentially: legal implementation – incorporation of the relevant provisions of the protocol into the national legal system; and
practical implementation – the measures taken to put the protocol into action, including the application and enforcement of the national law.\textsuperscript{235}

Table 8.2

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<th>Implementaiton of the Protocol</th>
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<td><strong>International</strong></td>
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International Measures:

1. **Issues of jurisdiction, control and enforcement**: The AT regulates jurisdiction in a limited manner\textsuperscript{236}, failing to resolve the question of jurisdiction over nationals of treaty parties who are not observers or scientists, and also does not address the issue in relation to nationals of the third states. Growing Antarctic tourism and illegal fishing in Southern ocean makes it mandatory to keep a watch over third states that offer ‘flag of convenience’ to tourist and fishing vessels. Since all the gateway ports to Antarctica are subject to the jurisdiction of parties to the protocol, a concept such as ‘Departure State jurisdiction’ was proposed by United Kingdom at the XXI ATCM, 1997. CCAMLR in 1997 adopted ‘Scheme to promote Compliance by non-Contracting Party Vessels with CCAMLR Conservation Measures’\textsuperscript{237}, according to this if a non-party flagged vessel engages in fishing activity in the CCAMLR regulated waters, it will be presumed to have undermined the CCAMLR Conservation measures and be liable for inspection.

2. **Issues related to institutions**: ATS has been quite unaffected by the institutional development during its evolution over the past four decades. Ever since the treaty came into existence in 1961, treaty meetings, which is the main policy-making forum of Antarctic cooperation, is being held periodically to evaluate and assess the issues and related concerns. This meeting of treaty parties was earlier held once in 2 years, it was converted into an annual meeting following a decision of the XVI Consultative Meeting, (Bonn, 1991) which was inspired by the adoption of the Protocol. The meting was held in locations chosen in accordance with a preordained principle of rotation among COPs as host states, based on alphabetical order in English language. The host country provided some sort of

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\textsuperscript{235} IP 40, Legal Implementation of the Five Annexes of the Environmental Protocol to the Antarctic treaty, submitted by ASOC at the 24\textsuperscript{th} ATCM, St. Petersburg, Russia, 2001.

\textsuperscript{236} Art. VIII of the Antarctic Treaty.

\textsuperscript{237} Conservation Measure 118/XVI, Report of the 16\textsuperscript{th} meeting of the Commission, Hobart, Australia, 27 October – 7 November, 1997
basic secretarial functions with the responsibility for a) preparing for the meeting 
b) circulating documents prior to the meeting c) providing administrative and 
secretarial services during the meeting d) preparing the Final report e) providing 
certified copies to the Treaty parties and the Secretary General of UN f) providing 
authentic texts of the measures adopted in the meeting. The Recommendations 
XIII-1: providing for ‘national contact points’; and XIII-2: providing for 
presentation of reports at each ATCM has greatly facilitated communication 
among the treaty parties and exchange of information among the components of 
the ATS. The Government of United States acts as a depository government and 
provides secretarial assistance as and when required. The practice of ad hoc 
secretariat before every ATCM has not always proved very successful in terms 
providing /availability of certified texts for further reproduction; and as it has to 
be established every time from scratch, it proves to be a financial burden on the 
host nation.

At the 24th ATCM in St. Petersburg, Russia, it was decided by consensus to 
establish The Antarctic Treaty Secretariat in Buenos Aires, Argentina. The 
logistics is yet to be decided.

3. The Liability for environmental damage: The implementation of a liability annex 
to the Protocol – Annex VI has been successfully agreed upon after years of 
deliberation. By providing a legal obligation to that effect, it gives Antarctic 
operators (both governments and nongovernmental) an incentive to be more 
cautious in the conduct of their Antarctic activities. Perhaps one of the most 
significant gaps in the Environmental Protocol - the lack of an Annex on liability, 
has now been covered.

This gap was recognised within the Protocol, which states (Art 16):

Consistent with the objectives of this Protocol for the comprehensive 
protection of the Antarctic environment and dependent and associated 
ecosystems, the Parties undertake to elaborate rules and procedures relating 
to liability for damage arising from activities taking place in the Antarctic 
Treaty area and covered by this Protocol....

A liability regime is essential for the completion of the Protocol for several reasons. First, 
should an accident occur that threatens the Antarctic environment, it provides a legal 
obligation for immediate and ongoing action to mitigate the effects of that accident. 
Second, where it is not possible to restore the environment to the state it was in before the 
damage occurred, it provides for compensation to be paid. Third, by providing legal 
obligations, it gives Antarctic operators an incentive to be more cautious in the conduct 
of their Antarctic activities.239

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238 Davor Vidas (Ed.), n. 11, p. 127.
239 Refer to www.asoc.org/liability/
At the XVII ATCM at Venice, 1992, the ‘Group of Legal Experts’ was established, and convened for the first time in 1993, under the Chairmanship of Prof. Wolfrum\textsuperscript{240}. The deliberations took place on the basis of draft ‘openings’ prepared by the Chairman. The fifth to the eighth offerings presented a systematic view of issues. This Group of Experts presented their report in 1998, which listed key pending issues for an Antarctic liability regime, and was then dissolved. However, in 1996 US presented a draft text that focused on ‘liability that would result from a failure by an operator or party to carry out appropriate emergency action. Since 1999 ATCM at Lima to \textsuperscript{24}th ATCM in Russia (2001), these key issues have been addressed in informal consultations and negotiations are undertaken at the Working Group I meetings. Nevertheless, major policy dilemmas between a comprehensive and restricted regime still remains to be discussed and negotiated.\textsuperscript{241}

**Domestic Measures:**

Every nation that is a Party to the Antarctic Treaty is under the obligation to effectively implement the Recommendations, Measures and Decisions arrived upon at the ATCMs. The practical implementation of the Protocol rests on the Contracting Parties and requires that the parties make all the arrangements necessary application of their national legislation; e.g. an organisational structure will have to be developed for the well functioning of the EIA provisions and the permit requirements.\textsuperscript{242}

As has been pointed out by ASOC’s IP presented at XXIV ATCM, 2002:

“the fact that a Party has not produced the legal instruments to implement certain aspects of the Protocol does not necessarily mean that it is not implementing its Protocol obligations and that it is perhaps using ad hoc procedures. The opposite is also true: the existence of implementing legislation does not necessarily imply adequate practical implementation. Implementing legislation could be legal but not real. It should be noted, however, that the Protocol is not a unicum: certain obligations may be self-executing while others are not.\textsuperscript{243} Even those obligations that are clearly self-executing may be subject to considerable differences in interpretation. The Protocol establishes obligations of result rather than obligations of action.”\textsuperscript{244}

\textsuperscript{240} The Group of Legal Experts meet nine times during the period 1993-98 in conjunction with Consultative Meetings and intersessionally. The deliberations took place on the basis of draft ‘offerings’ prepared by the Chairman. The last, eighth, of the ‘offerings’ is annexed to the ‘Liability – Report of the Group of Legal Experts’.

\textsuperscript{241} Quick Reference National Stances on Liability Post SATCM (September 2000), Refer to the Annexure at the end.

\textsuperscript{242} Kees Bastmeijer, “Implementing the Environmental Protocol Domestically, An Overview”, in Davor Vidas (Ed.), n. 20, p.301.


\textsuperscript{244} ASOC Information Paper 55, Legal Implementation of the Five Annexes of the Environmental Protocol to the Antarctic Treaty, tabled at the XIV th ATCM, 2001.
1. **Environmental Impact Assessment:** The environmental principle as embodied in Article 3 of the Protocol which apply to activities in the Antarctic treaty Area state that these ‘shall be planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts’ (Art. 3 (3) (c)). Article 8(1) of the protocol states that the proposed activities shall be subject to procedures set out in Annex I for prior assessment of the impacts of those activities.

The ‘**Guidelines for environmental impact assessment in Antarctica**’ provides a non-mandatory basis for planning a CEE. Some CPs have inducted this requirement in their domestic legislation in different ways. For example, in UK the preliminary assessment is in the form of a permit with detailed information attached and approved by competent authority.\(^{245}\) The New Zealand legislation has a separate provision (Art. 17 of the New Zealand Antarctica (Environmental Protection) Act 1994). In the legislation of some states, including Norway and Netherlands, no distinction has been made between the preliminary assessment and initial environmental evaluation (IEE).\(^ {246}\) Even though the national competent authority is usually responsible for undertaking/ensuring EIAs, the Protocol provides for it to be tabled at the CEP for information and discussion.

Nonetheless, certain factors have undermined the desired effect of EIA such as:

(a) The requirement for EIA exclusively depends on the discretion of the national authority.
(b) It does not apply to activities of states (and its nationals) that is ‘not’ a party to the treaty.
(c) There is no laid down international procedure that addresses preliminary assessment, and national practices vary.

Sharing of expertise and baseline data, developing guidelines, etc. can help in effective environmental assessment.

2. **Permit System:** The concept of permits goes back to the 1964 Agreed Measures for the Conservation of Fauna and Flora that required a permit to take native mammals, to control of activities within specially protected areas, and to regulate the introduction of non-indigenous species (Art. VI, VII & IX). This was further incorporated into the Annex II (Conservation of Antarctic Fauna and Flora) & Annex V (Area Protection & management) of the Protocol.

The issuing of permit is again at the discretion of the national competent authority which decides that taking of particular species in or out of Antarctica will not effect the environment. The criterion being that if permit is issued ‘it will not jeopardize the survival or recovery of that species or local population’ (Annex II, Art. 3 (5)). In case it is

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\(^{245}\) Refer to Art. 4 of the UK Antarctic Regulations 1995.

\(^{246}\) Kees Bastmeijer, n. 24, p. 298.
understood to have an impact, EIA is to be conducted. A permit system to be effective needs to have clear limits, like the fishing limits under CCAMLR.

3. **Enforcement:** The onus of implementation and enforcement rests with the national competent authority of all the parties to the treaty. Enforcement as to protocol implementation is generally through set guidelines and manuals that the nodal authority prepares with reference to the text Protocol. Many parties have formulated legislation to help enforce their treaty obligations. Any breach to these set guidelines is dealt with by the national competent authority and/or by the organization to which the national may be responsible to, as per the legal procedures established by the Government.

**National Antarctic Programme** are permanent, and establish long-term and short-term scientific activities for the nation in question. These programmes have developed as a response to intensified Antarctic research, particularly towards understanding of the global environment. These developments have required:

- establishment of national Antarctic operating agencies;
- complex logistics far beyond what was needed in the days of exploratory expeditions;
- credible science based on the entire pool of scientific resources available to nations taking part.

Enforcement is thus left to the Contracting Parties who are obliged to take “appropriate measures” within their competence – including administrative actions – to ensure compliance with the Protocol, and to publish annually a report of such measures undertaken. An inspection system (of sorts) is provided in Article 14, with reports and comments thereon ultimately made publicly available. This parallels the inspection system under the ATS and CCAMLR.\(^{247}\)

While the 1959 Antarctic Treaty initially sought to neutralise sovereignty and promote scientific cooperation, increasingly an environmental focus in Antarctic management has begun to prevail. The result is a comprehensive environmental law regime which increasingly controls all activities undertaken on the continent and the surrounding Southern Ocean. Antarctica is a unique model for development and implementation of international environmental law with successes often replicated in other global or regional law instruments. This permits some important lessons to be drawn from the Antarctic experience for the development of international environmental law and treaty-making generally.\(^{248}\)

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According to Laura Pineschi the adoption of the treaty is the most, “...dramatic and definitive step towards an environmentally oriented Antarctic regime [that has ever] been made.”

The 1991 Protocol on Environmental Protection to the Antarctic Treaty has created for the first time an integrated environmental protection regime for Antarctica. Negotiated at a time when there was considerable debate over whether mining should be permitted in Antarctica and not long after the Treaty parties had concluded negotiations for a specific Antarctic minerals regime, its entry into force in 1998 is a testament to the international goodwill to cooperatively manage Antarctica and the robustness of the Antarctic Treaty system. The Protocol is also another milestone in the international management of Antarctica and generally for international environmental law.

The most significant feature of the Madrid Protocol is the prohibition of any mineral activity except for research purposes. It also sets out detailed requirements for environmental impact assessment of all human activities, and strengthens the existing measure for the conservation of flora and fauna. New standards for waste disposal and management and marine pollution are also set out. The Madrid protocol is yet another example of the extraordinary agreements that constitute the Antarctic Treaty System. States have repeatedly set aside their national interests, and worked together to achieve a peaceful solution as to the use and exploration of Antarctica.

8.6 The Antarctic Treaty System and Territorial Sovereignty

Territorial sovereignty does not necessarily mean physical control of a territory but rather the right of a State to dispose of its territory. Territorial jurisdiction gives a State the power of effective physical control of persons and goods in a certain territory. In principle, territorial sovereignty and territorial jurisdiction are in the same hands. The State having territorial sovereignty and territorial jurisdiction at the same time is competent to settle a matter on its territory erga omnes. The right to exercise exclusive control over a territory normally follows from territorial sovereignty. But there are cases known where territorial sovereignty and telltale jurisdiction are not in the same hands, e.g. the Panama Canal treaties, the mandates and trusteeship agreements and in the case of belligerent occupancy.

A State can have territorial jurisdiction without having territorial sovereignty. Therefore, territorial jurisdiction over a terra nullius is possible if the State or an association of States acquires exclusive control over the territory. But States are not able to acquire title to territorial sovereignty over a res communis or even to exercise exclusive control if such a territorial competence is not specially granted. Under such premises developments

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250 As against all
251 Land belonging to no one
252 Things common to all
under international customary law in relation to the area south of 60° south latitude has to be examined.\(^{253}\) This basic principle of international law for territorial sovereignty was established by the Isle of Palmas and Eastern Greenland cases,\(^{254}\) establishing the need for effective control and settlement. These requirements are, arguably, not possible to fulfill in Antarctica due to the fact that its extreme conditions make it unfit for human habitation.

Recent developments in State practice indicate that the principle of the common heritage of mankind (CHM) first developed for the international seabed and ocean floor and subsoil thereof, might also be applied to Antarctica. In the debates of the First Committee of the 38th General Meeting of the United Nations, Antarctica was declared the CHM and the General Assembly adopted resolution 38/77 \(^{255}\) under which the Secretary General was requested “to prepare a comprehensive, factual and objective study on all aspects of Antarctica, taking fully into account the Antarctic Treaty System and other relevant factors.” The Secretary General’s report “Question of Antarctica”\(^{256}\) was prepared for the 39th United Nations General Assembly but the political positions of States concerned remained unchanged. Moreover, India and Brazil, prominent opponents, obtained Consultative Status in 1983 and changed their position from criticism to that of defending the Antarctic Treaty System against any proposed modification from Third World countries.\(^{257}\) Previously the conference of non-aligned countries in New Delhi in March 1983,\(^{258}\) as well as in 1984, had called for the international management of Antarctica and its natural resources for the benefit of mankind.

Parallel to these developments in State practice, it is emphasised that Antarctica, analogous to Outer Space, the High Seas, the Deep Sea Bed and Ocean Floor, is \textit{res communis}\(^{259}\) and therefore is not subject to the rules of effective occupation.\(^{260}\) The


\(^{254}\) Isle of Palmas, US v Netherlands, 2 UNRIAA 829 (Perm. Ct. Arb. 1928); Legal State of Eastern Greenland, Denmark v Norway, 1933 PCUJ (ser. A/B) No. 53


\(^{257}\) Ibid, p.1317.

\(^{258}\) NAC/Conf. 7/Doc. 7/Rev. 2. The Economic Declaration of the summit asserted “the United Nations should undertake a comprehensive study on Antarctica, taking into account all relevant factors, including the Antarctic Treaty, with a view to widening international cooperation in the area”.

\(^{259}\) In civil law, things common to all; that is, those things which are used and enjoyed by everyone, even in single parts, but never be exclusively aquired as a whole, eg. light, air

concepts of territorial sovereignty and territorial jurisdiction do not apply to Antarctica. There are two main arguments involved. According to Reeves, the Antarctic continent, due to its specific nature is *sui generis* and not subject to acquisition. The other argument reflects the recent State practice discussed above, and introduced the principle of CHM. The initially existing possibility of effective occupation of the Antarctic Continent under international law is now excluded. As the territorial claims of the claimant States are not valid according to the standards of effective occupation, the Antarctic continent now has the status of a *terra communis*. This reasoning is expressed by Prof. Subhash C. Jain in his article thus,

“It may be made clear here that none of the theories of traditional international law such as discovery or effective occupation has any validity in the modern anti colonialist and anti-imperialist era. They are outdated and have outlived their utility.... Moreover, Antarctica is not an object of sovereign claims because it is res annulments.”

Honnold, however, does not deny that basically a stateless area can be appropriated under the rules of effective occupation. His argument is based on the idea that analogous to the regimes of the High Seas, Outer Space and the new jurisdiction for the Deep Sea Bed in the LOSC, a so-called “law of common spaces” has been generated which exclusively governs such areas under no State’s territorial sovereignty. Therefore the existing classical principles of international law concerning the acquisition and loss of territories would not apply to an area such as Antarctica. He argues as follows,

“Although the relationship between future seabed and Antarctic regimes will be subject to negotiation, both regimes should be governed by similar common-space principles. Furthermore, all spaces lying within the Antarctic Treaty area are subject to certain principles arising uniquely out of Antarctic practice and agreement, such as the principle of peaceful use.... Therefore all spaces of the Antarctic Treaty area, including the seabed, continental shelf, land, water, and all ice formations are subject at present and should remain subject in the future to all principles of common-space law outlined in this note, regardless of the nature of the common-space regime that assumes the responsibility for governing each of those spaces.”

Thus, no State or States is entitled to act in Antarctica without regard for the interests of the world at large. As interesting as this concept is *de lege ferenda* it is hardly the case


261 J. S. Reeves, n. 38, p. 19.
262 Unique or of itself or one of a kind.
263 Land common to all.
264 Subhash C. Jain, n.38, p. 268.
265 Edward E.S Honnold, n.38, 847ff.
266 Ibid, p. 849.
267 “What the law ought to be” (as opposed to what law is).
that an international regime to govern Antarctica as a world common space is recognised de lege lata\textsuperscript{268}. Honnold’s main thesis is based on the pretended analogy of the High Seas, Deep Sea Bed, Outer Space and Antarctica as areas which as a result of their specific natural conditions exclude them from being subject to acquisition, “the deep sea bed, outer space and Antarctica are all unsuitable as sites for extended human habitation, and the principal benefits to be gained from each space have not historically required exclusive control”\textsuperscript{269}.

The classification of Outer Space and Celestial Bodies as \textit{res communis homonym} or as \textit{res nullium}\textsuperscript{270}, however, is not an undisputed question among scholars.\textsuperscript{271} The range of opinions reaches from a unique qualification of Outer Space and Celestial Bodies as \textit{res communis homeroom} to the statement that those celestial bodies on which man can set foot are open to effective occupation. As a material criterion for the justification of the analogy of the High Seas, Deep Sea Bed, the Outer Space and Antarctica, Honnold also refers to the historically open and unrestricted access to those areas for all countries. Therefore it would contradict the established historical practice to create a legal regime restricting the universal access and open use to a limited number of countries.

Antarctica, Outer Space, High Seas and Deep Sea Bed are similar because access to these areas is aggravated by extremely difficult natural conditions. But this is changing. Areas to which access for man has not been possible until recently can be controlled now - the case of Antarctica shows this very clearly. In this area, the ATR has led to vaults activities of man since the success of the International Geophysical Year (IGY) in 1957-58. The range of these activities reaches from a close network of research stations which operate year-round to the exploitation of living resources and international tourist activities. Furthermore, there is no doubt that for nearly thirty years the ATR, free of the East-West and North-South antagonisms, has guaranteed peace, stability and freedom of international research activities and cooperation in the area south of 60° South Latitude.

Extensive regulations for the protection of the Antarctic environment and its dependent ecosystems underline the efficacy of the Antarctic Treaty System. For this reason, a comparison of these areas might indicate any real common features which could justify a legal analogy. Each of these areas has its own specific requirements concerning access and its effective control. Cultivation and utilisation, e.g. of the Deep Sea Bed and Antarctica, are subject to different legal and natural conditions. Similarities in the legal system governing the High Seas, Outer Space and Deep Sea Bed are therefore supposed to be based not on real and compelling common features of these areas, but rather on certain coincidences in the parallel historical development of the corresponding legal regimes.

\textsuperscript{268} “What the law is” (as opposed to what law ought to be).
\textsuperscript{269} Ibid, p. 847.
\textsuperscript{270} Approimating from a state of nature or independence into private ownership through first occupancy, takes or actions of possession.
\textsuperscript{271} See Ulrich Nussbaum, n 32, p. 73-76.
In any case, with Honnold’s reasoning the Sahara or the Arctic ice deserts or other areas hardly accessible to man could also be subjected to a law of common spaces. What is decisive is that Antarctica, unlike the Deep Sea Bed and Ocean Floor, being terra firma, like any other landmass is subject to acquisition under the standards of classical international law. At present, even considering the recent developments of the Law of the Sea, there is no rule of international law stipulating that the acquisition of ice-covered areas depends on qualitatively different conditions; nor does any rule exclude it a priori in favour of internationalisation.

Accordingly, the Permanent Court of International Justice affirmed in its leading judgment in the Eastern Greenland Case the validity of the acquisition of areas which are ice-covered and difficult to control. Furthermore the legal status of the Antarctic continent as terra nullius was generally acknowledged and has never been seriously doubted; on the other hand it was debatable from the very beginning whether the Sea Bed and Ocean Floor are subject to national occupation. So far no State has officially asserted that Antarctica is de lege lata to be qualified as terra communis. Consequently, the principle of the CHM is not valid for Antarctica in the sense that it excludes appropriation of the landmass, i.e., any modification of the existing territorial status of the area south of 60° South Latitude must follow the basic principles of international law governing the acquisition and loss of areas.

It is perhaps natural that article IV of the Antarctic Treaty has been described as ‘the cornerstone of the Treaty’, for it provided a form of words sufficient at least to suspend the sovereignty disputes and to clear the way for science and international cooperation. This ‘imaginative juridical accommodation’ represented the fundamental act of statesmanship required from the twelve governments to secure the treaty.

According to article IV (1),

Nothing contained in the present Treaty shall be interpreted as,

a) a renunciation by any Contracting Party of previously asserted rights or claims to territorial sovereignty in Antarctica.

b) A renunciation or diminution by any Contracting Party Antarctica which it may have whether as a result of its activities or those of its nationals in Antarctica, or otherwise;

272 Decisions of the Permanent International Court of Justice, 25ff (1933).
273 “Land belonging to no one”.
275 “What the law is” (as opposed to what law ought to be).
276 Christopher C. Joyner, n. 38, p. 432.
c) Prejudicing the position of any Contracting Party as regards its recognition or non-recognition of any other State’s right of or claim or basis of claim to territorial sovereignty in Antarctica.

The formula of article IV (1) enables all treaty powers, whether claimants, non-claimants or those pursuing a non-recognition stance, to preserve their position and to co-exist in a pragmatic manner. A variety of descriptive expressions have been utilised to explain the effect of this article; in fact, the term ‘freeze’ was oft-employed in the preparatory talks, and has been repeated, since, along with a range of other words and phrases, including ‘suspension’, ‘on ice’ and ‘moratorium’.

The impact of the legal freeze was reinforced by article IV (2)’s assertion that nothing performed after 1961 can alter the position on sovereignty of any treaty power.

No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force.

The treaty supports article IV (1)’s attempt to keep the clock stopped at 1961, since in theory claims can be neither improved nor worsened. According to this view, the establishment of a base station in a new location or the escalation of Antarctic research activities by a claimant could do nothing either to strengthen and extend its claim or to undermine the position of other treaty parties. Conversely, inaction or neglect would not weaken the position of any party, even if such a policy might threaten a government’s eligibility for Consultative Party status (article IX (2)).

The treaty powers accepted that article IV represented merely a non-solution of a problem which could never be swept completely under the carpet. The passage of time has exacerbated the potential problems, since certain non-claimants (e.g. the Soviet Union and the USA) have reinforced their ‘rights’ in Antarctica, other governments (Brazil and Peru) have announced ‘rights’ also, and the common heritage approach constitutes a challenge not only to existing claims but also to the whole basis of Article IV.

Therefore, four groups of state interest can be identified which adopt significantly different legal perspectives on the question of Antarctic sovereignty.²⁷⁸

- Antarctic Treaty states which claim territorial sovereignty in Antarctica;
- Antarctic Treaty parties which deny or do not recognise, claims to territorial sovereignty and which make no claim of their own;
- Antarctic Treaty parties which do not recognise any claim to Antarctic sovereignty but which reserve their right to make a claim in future;

• States which are not party to the Antarctic Treaty regime but which deny claims to sovereignty on the ground that Antarctica is, or should, become part of the common heritage of mankind.

Each group of States has a political and legal power to protect its interests in a manner which has been described by Australia’s Ambassador Brennan as a four-way veto. It is probable that, had the validity of these claims been litigated, they would have been conceded according to the principles of acquisition. For the present, however, sovereignty is something of a trump card which has been employed to maintain a preferred position in any Antarctic negotiations. Critical to the success of the entire Antarctic Treaty regime is Article IV\(^2\) of the Antarctic Treaty which preserves the conflicting positions of claimant states, potential claimants and non-claimants. On the one hand, it ‘freezes’ old claims and on the other, it enforces the principle of non-appropriation in respect of post 1961 activities on Antarctica.

All these incidences and historical happening paved the way for a regime formation in Antarctica. The Antarctic Treaty regime developed on the basis that Antarctica is to be used exclusively for peaceful purposes and to promote scientific cooperation, and Article IV helps in securing the goals for Antarctica – demilitarisation, denuclearisation and scientific cooperation.

### 8.7 Antarctic Liability Regime

“Activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems.” (Article 3, Madrid Protocol)

The continuing place of science in Antarctica was formally, and legally, recognised under the 1959 Antarctic Treaty, the terms of which reserve the continent for scientific investigation, co-operation and other peaceful purposes.\(^3\) Concerns for the protection of the Antarctic environment has resulted in major developments of the Law of State responsibility, especially the specific issue of liability. These developments were particularly evident in the CRAMRA. This Convention was based on very stringent principles and requirements for the protection of the environment, which was a noteworthy development in itself. In the 1991 Protocol on Environmental Protection to the Antarctic Treaty (herein known as the Madrid Protocol or the Protocol), the Antarctic Treaty Consultative Parties (ATCPs) committed themselves to comprehensive protection of the Antarctic environment and designated Antarctica as a natural reserve devoted to

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\(^2\) The Protocol on Environmental Protection to the Antarctic Treaty of 1991 also embodies the spirit and concept of Article IV of the Antarctic Treaty, thereby succeeding to keep at bay conflicts that would arise in the absence of freezing of territorial claims.

\(^3\) The Antarctic Treaty of 1961 was signed in Washington on 1 December 1959.
peace and science.\textsuperscript{281} The comprehensive regime has also favoured an environment impact assessment and an early warning notification obligation. Article 16 of the Madrid Protocol called for the adoption of procedures relating to liability in the form of one or more annexes to the Protocol. It was understood that liability for harm to the Antarctic environment should be included in such an annex.\textsuperscript{282}

A meeting of legal experts took place at the University of Cambridge, 7-12 October 1996, to construct an effective liability regime for environmental damage in Antarctica, referred to as the \textit{Annex on Environmental Liability to the Madrid Protocol}. The group consisted of representatives of all the ATCPs, as well as of the other Contracting Parties to the Antarctic Treaty. This was the most recent in a series of biannual meetings on this topic held since the first meeting in October 1993. The purpose of the meeting was to discuss, and to attempt to resolve, some of the complex issues of law and policy raised by the issue of liability. Two fundamental issues confronting the group concerned the scope of the liability annex and the definition of damage.

The liability annex, experts believed would provide compensation for harm to the Antarctic environment, excluding issues of liability for harm to individuals or equipment in the Antarctic Treaty area. The Cambridge meeting was important because representatives of the Scientific Committee on Antarctic Research (SCAR) attended the meeting and presented a statement expressing views and concerns of the scientific community over the future of scientific research in Antarctica under the proposed liability annex.

The Annex VI on Liability arising from Environmental Emergencies was finalised in June 2005, and will enter into force once it has been formally accepted by all states which were Consultative Parties at the time of its completion.

The purpose of the Annex on Environmental Liability,\textsuperscript{283} as set out in the preamble, is ‘to promote the prevention, minimisation and containment of damage to the Antarctic environment and dependent and associated ecosystems, and to provide for adequate compensation for damage.’ Article 3 of the liability annex defines ‘damage’ and, more importantly, identifies which activities and events do not constitute damage for purposes of the annex. The definition of damage mirrors the environmental principles elaborated in Article 3 of the Madrid Protocol. According to proposed Article 3 (l)(a) of the liability annex, ‘damage’ means any harmful impact on the Antarctic environment and dependent and associated ecosystems caused by an activity in the Antarctic Treaty area that is of a more than minor and more than transitory nature. Setting aside for the moment exceptions to this definition, one finds that damage includes any impact of a more than


minor and transitory nature (Article 8 of the Protocol and Articles 2 and 3 of Annex 1 referring to ‘more than minor or transitory’ impacts, unlike the proposed liability Annex, which refers to ‘more than minor and more than transitory’ impacts). Absent from this definition is any reference to ‘fault’ on the part of the operator who caused the harmful impact. Liability in the absence of fault is known as ‘strict liability.’ This type of liability regime is often reserved for activities that are extremely hazardous or where fault is difficult to ascertain. Such a regime promotes a high level of care by operators engaging in these activities.

Annex 1 to the Madrid Protocol requires that fundamental consideration be given to protection of the environment, including the aesthetic and wilderness values and its value as an area for the conduct of scientific research, in the planning and conduct of all activities. The Parties to the Protocol wanted visitors to Antarctica to conduct their activities with a high level of care. While the general rule for liability in Antarctica may be that nearly every impact amounts to damage, this stance is considerably modified, and weakened, by paragraphs that enumerate impacts that will not be recognised as damage for purposes of the liability annex, despite their harm to the Antarctic environment. Paragraphs (1)(aa) and (bb) of Article 3 of the liability annex identify impacts that do not constitute damage, namely, impacts that have been assessed as unavoidable in a Comprehensive Environmental Evaluation (CEE) and, perhaps, those assessed as unavoidable in an Initial Environmental Evaluation (IEE) in accordance with Article 8 of the Protocol and Annex 1 to the Protocol and judged acceptable by the competent authorities of the State Party concerned.

The Antarctic Treaty was designed to create a legal framework for the containment of both existing and potential politico-legal disputes in order to preserve peace and stability in the region and to promote the cause of science and IGY-type cooperation. In one respect at least the treaty provided an element of certainty in the form of an international legal answer intended to reconcile varying viewpoints, albeit only in a manner suspending rather than resolving the sovereignty problem. However the divisions between claimants, non-claimants and those refusing to recognised claims have never completely disappeared from the international political scene in Antarctica, such as evident from the continuing sovereignty-related activities of such claimants as Argentina, Australia and Chile or more recently by the impact of the sovereignty aspect upon the marine and mineral regime negotiations of the 1970s and early 1980s. The leading critics of the Antarctic Treaty System, most notably Dr. Mahathir, the Prime Minister of Malaysia, believe that,

Uninhabited lands... the largest of which is the continent of Antarctica... do not legally belong to the discoverers as much as the colonial territories do not belong to the colonial powers.\(^{284}\)

In 1983, the ATS was criticized for being and ‘exclusive club’ of rich and powerful states. But slowly the situation started improving with two major changes. Since 1983,

\(^{284}\) UNGA A/37/PV 10, pp. 17-20, (Mahathir, 29 Sept. 1982).
Non-Consultative Parties had been eligible to attend Consultative Meetings, albeit without any formal decision making powers.

In the same year India and Brazil became Consultative Parties, while China and Uruguay gained consultative status two years later. This prevented the rich North versus the poor South from near colliding status and somewhat pacified the Malaysian led criticism of the ATS. 1980s, in fact saw a major surge of nations wanting to join the treaty. This led to a change in the ATS, both quantitatively and qualitatively. Not just States but many international and non-governmental organisations (NGOs) were gradually admitted into the consultative process, some as experts and others as observers.

For the last three decades, Antarctica has been stuck in a “legal ‘twilight zone’ between an international commons and state sovereignty”. The Protocol does nothing to reconcile the region’s sovereignty dilemma. It is comparable to applying a blindfold over the eyes of someone needing glasses in order to remedy blurred vision, the immediate problem has been disguised only to increase the potential for a disaster in the future. Prudent solutions entail discarding the Protocol and replacing it with a more realistic agreement that remedies the sovereignty issue, or modifying the Protocol to achieve the same results. Japan has stated that it is “convinced that the co-operative efforts of all the Consultative Parties is in the interests of the entire international community”. Yet, when a super giant oil field is found off the Antarctic coast, whatever Antarctic solidarity exists will quickly melt away unless an adequate governing regime is implemented.

Antarctica’s international political role has proved mainly a function of the sovereignty dispute, that is, of the politico-legal controversy concerning its ownership, such as demonstrate by the disagreements between rival claimants or between claimants and non-claimants. The historical development of the sovereignty question has been ‘diplomatic Monopoly game for Antarctic real estate’, a ‘game’ which some feared might spill over into something more serious, has provided the most enduring source of official and academic interest in Antarctica, especially as it offered the major challenge to the negotiators of the Antarctic Treaty.

The sovereignty situation in Antarctica is shrouded in accusations of illegitimate territorial claims due to non-compliance with international standards for the acquisition of territorial rights. Since it is doubtful that declared Consultative Parties like Chile and Argentina will ever abandon their claims, and non-declared parties like the United States, Russia, and Japan, are also unlikely to forfeit their rights to Antarctica’s future, the time is nearing when the issue of sovereignty must be resolved to avoid the territorial conflicts that may otherwise erupt. Exploration and conservation of Antarctica and the Southern Ocean depend upon these recognized claims of sovereignty. Without sovereignty and the individual ownership that accompanies it, there will be less incentive to conserve oil


resources and maintain sustainable development levels once the Antarctic oil rush begins.\textsuperscript{287}

The various inter-state rivalries over Antarctic territory has been complicated by legal controversies arising out of disagreements over the most appropriate method of supporting claims in a ‘new territory’ not previously subject to an internationally-recognised sovereignty.\textsuperscript{288}

There is a tendency to advocate the idea of a ‘continent for science’, but this concept has been threatened by a range of political and other problems, which raise the question of whether politicians and diplomats will ever allow Antarctica to become a scientific laboratory. There is a need to treat science in Antarctica in a more critical manner in order to correct some of the existing misconceptions regarding the role of Antarctic science. However, Phillip Law, a former director of Australia’s Antarctic research programme, has introduced a more cautious note,

“International competition for territorial gain has now been replaced by international rivalry in science, as the various Antarctic nations strive to demonstrate their scientific competence and technical prowess in the various fields of Antarctic research. Science constitutes Antarctica’s chief product and continent remains in a relatively pristine condition. But the future will bring new pressures, such as for the exploitation of resources, and hence question marks must be raised concerning the preservation of this state of affairs. The potential resources yield of krill, fish, oil or of natural gas has been depicted as the key threat to the Antarctic environment.”

The Protocol’s deficiencies may stem from a lack of foresight caused by the hastened scramble to enact a comprehensive Antarctic environmental agreement. If the Protocol is to have any real permanence, sovereign claims must be established in Antarctica and effective regulations must be implemented to govern oil and other resource exploitation in the region. Unregulated exploration of Antarctic oil would not only pose a substantial threat to the environment, it would also represent a serious threat to the Antarctic Treaty System itself. Many nations had hesitated to ratify the Protocol so that they may keep their options open on the minerals issue. Since a possibility existed that the Protocol might fail, a replacement governing agreement was sought to be developed to ensure stability in the region. In establishing a new Antarctic agreement, the Consultative Parties would have had to negotiate whatever terms best served their various interests as long as they do not violate the principles of \textit{jus cogens}. A crucial component of any agreement ultimately forged would have had a method of addressing the sovereignty dilemma so that peaceful resolution of Antarctic territorial claims could be achieved.

\textsuperscript{288} T. W. Balch, n.38, pp. 273-5.
Another factor that undermines the Protocol is that the Recommendations of the Consultative Parties become effective “only” once they are adopted unanimously (which is not very easy given the different geo-political background), rather than upon the more usual basis of a two-third majority. Further more, they are ‘not’ binding on the Non-Consultative Parties to the treaty unless those Parties specifically accept them, and of course, Recommendations are not binding upon States which are not party to the treaty.

Recent history of the Antarctic Treaty System illustrates the unlikelihood of serious compliance or enforcement of the Protocol by the Consultative Parties. The absence of an established mechanism makes compliance monitoring and enforcement a difficult task. If no action is taken against an admitted wrongdoer, there can be little hope of enforcement under the current agreements. Action is even more unlikely when oil prospects present opportunities for substantial economic gain. The failure of parties to adhere to the terms of other Antarctic agreements increases the likelihood that the requirements of the minerals ban will be similarly ignored.289

The absence of a treaty Secretariat has affected the smooth functioning of the Antarctic Treaty System. With more and more nations joining the treaty system, the need for a centralised system of Antarctic treaty records was felt. During the course of the XIVth ATCM at St. Petersburg, Russia (September 2001), the stale-mate over the location of the Treaty Secretariat was broken, and it was unanimously decided that Buenos Aires, Argentina will host the Secretariat and this Secretariat was officially inaugurated in September 2004.

Given the widespread acceptance of the Antarctic Treaty regime, the provisions that have developed within the Antarctic Treaty System brings to the forefront not only the responsibility of the Antarctic community towards the protection and preservation of the continent, but also extends environmental obligations to the environmental issues in general.

8.8 India in Antarctica

“What a wonderful opportunity the first Indian Antarctic Expedition gave to a young team of our scientists. Drawn from seven different research institutions, they worked on common objectives of significant national importance. It also proved India’s capability to undertake Antarctic exploration of a high order...”290 Smt. Indira Gandhi, Late Prime Minister of India

India’s Antarctic programme in 1980s was envisaged and founded under the direction of late Prime Minister - Smt. Indira Gandhi. In the initial phase, there was a lot of scepticism and uncertainty about the venture. At the time when the United Nations Convention on the Law of the Sea was being finalised, India’s ocean research programme began with a new vigour and initiative. While, on one hand, India gained recognition as

289 Joseph J Ward & Emdash, n. 58.
one of the pioneer investors for seabed mining, on the other hand, India’s venture further out in the turbulent sea, towards the unknown, also picked up momentum.  

The first Indian with the Antarctic spirit and the unsung hero of India’s Antarctic adventure was undoubtedly Paramjit Singh Sehra. Sehra participated in the 17th Soviet Antarctic Expedition from 1971-73 that led him to the distinction of being the first Indian to winter at the South Pole and circumnavigate Antarctica. For his accomplishment he was awarded the Soviet Antarctic medal, Ribbon and a polar watch. His expedition sparked interest back home in India for further exploration of the icy continent, including opening Indian Antarctic base in Antarctica.

**Ocean Policy Statement** of 1982 stressed on the fact that

“nearly 2 million sq. km. area, or very nearly two-third of the landmass has come under India’s jurisdiction. In this area, exclusive right to utilise living and non-living resources vests with the nation. Besides, India has been recognised as a ‘Pioneer Investor’ in ocean mining. This gives India the exclusive right to operate in an area of up to 150,000 sq. km. in the high seas for the recovery and processing of polymetallic nodules.”

Based on this Ocean Policy Statement, Department of Ocean Development (DOD) decided that it would be useful from scientific point of view to send a scientific expedition, as it would add to the knowledge of factors relating to the Indian Ocean and the ‘monsoon phenomenon’ on which the economy of the country is critically dependent. In addition, it was felt that the study of the ice-bound regions which are akin to our northern frontiers would throw light on several aspects of life form buried in the cold grave for ages. The Antarctic ice sheets are an excellent archive of climatic changes and of the anthropogenic pollution and greenhouse effect. The waters of the southern ocean affect the circulation pattern of the global ocean system and support a diverse biomass.

The study of the impact of the Antarctic environment on the climate of the Indian subcontinent and of its environment, spatial distribution of geo and marine resources, is of immense importance. Further more, studies conducted in Antarctica, it was believed, would help identify and tackle global environmental phenomenon and enable us to take concrete steps for environmental protection in our surrounding ocean areas as well as in linked surroundings.

Many nations have been involved in exploring the frozen continent and surrounding waters. India participated in the International Indian Ocean Expedition (IIOE – 1959-1965), where 20 countries and 46 ships took part. This expedition was initiated by a Scientific Committee on Oceanic Research (SCOR) and conducted by Intergovernmental Oceanographic Commission of UNESCO. This expedition covered the Indian Ocean, Red Sea, Persian Gulf and the adjacent areas extending southwards up to the Southern Oceans, but did not go beyond 40°S.

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Keeping up with the requirement of the time, India soon formulated its Antarctic programme under the aegis of then Prime Minister Indira Gandhi. In fact, it was reported that in 1977, she had ordered a secret study on Antarctica. It was also said that in May 1981, a two-page memo on the Antarctic from the Foreign Office along with a dossier on the region, based on CIA report, was sent to her. It highlighted the Indian stake in Antarctica.\footnote{294} With the establishment of the Department of Ocean Development on 28\textsuperscript{th} May 1981, ‘Operation Gangotri’ was initiated.

With the nodal agency in place and scientific achievements in target sight, India embarked on her maiden voyage to the icy continent in 1981, finally landing on the Dronning Maud Land of Antarctica on 9 January 1982. Based on India’s experience at the international fora, the main objective of the Indian Antarctic Research Programme can be enumerated as follows:\footnote{295}

- The Antarctic mission objective is to plan, promote, coordinate and execute the entire gamut of polar sciences and logistics activities of the country, in order to ensure a perceptible and influential presence of India in Antarctica.
- Uphold strategic interests in the global framework of nations in the southern continent and the surrounding oceans expressed through our Consultative status in the Antarctic Treaty.
- As a treaty obligation, demonstrate India’s sustained interest in Antarctica by conducting substantial scientific activities, such as establishment of a scientific station and the despatch of annual scientific expeditions.
- Accordingly, pursue a scientific work plan in consonance with our long-term science strategy which is aimed towards addressing issues pertinent to our national needs and those which have global relevance.

India launched its first expedition in 1981 and was granted full Consultative Status in 1983.\footnote{296} The Department of Ocean Development (DOD), New Delhi (established in 1981) is the nodal ministry responsible for India’s Antarctic programme. The National Centre for Antarctic and Ocean Research (NCAOR) at Goa is the autonomous institute that plans and executes the Antarctic programme and provides logistic support for the expeditions since 1997. The Ministry of External Affairs (UN) is the agency in charge of diplomatic and political affairs concerning Antarctica. For the first expedition the programme was mooted in July/August 1981 and the Department of Ocean Development initiated action to organise the expedition on a priority basis.

India’s first expedition took place in 1981 from Goa. The first base was set up in 1983 named “Dakshin Gangotri” and the second base, which is operational till date, is called “Maitri”. The first permanent station ‘Dakshin Gangotri’ which was built on the ice

\footnote{296} India acceded to the Antarctic Treaty on 19 August 1983, and became a Consultative Party on 12 September 1983; see Final Report of the Vth Special ATCM, Canberra, 12 September 1983.
shelf at latitude 70° 05’S and longitude 120 00’E during the third expedition emphasised India’s commitment to Antarctic science. While the first Indian research station in Antarctica, “Dakshin Gangotri” was commissioned in 1983 and was functional until 1987; in 1988, the second Indian permanent station “Maitri” (Lat 70.45° 52” S, Long. 11.44° 03”E), with modern infrastructural facilities for conducting contemporary scientific research was established in the Schirmacher Oasis. Dakshin Gangotri station is now maintained as a supply base. Scientists from diverse fields drawn from national laboratories, institutes and universities are provided with adequate opportunities to carry out experiments in all major branches of Polar Science. The logistic support is extended by the various wings of the Defence Services and Laboratories of the Defence Research and Development Organisation.

India has played an active role on issues related to the environment. The first three scientific expeditions to Antarctica ascertained India’s sustained interest and proven capabilities to conduct front ranking Antarctic science, which paved the way for India’s admission into the Antarctic Treaty. Moving a step further, on 1st October, 1984, India became a member of SCAR (the Scientific Committee on Antarctic Research) and later in 1986, joined CCAMLR (the Convention on the Conservation of Antarctic Marine Living Resources). India is one of the 27 Consultative Parties to the ‘Protocol on Environmental Protection to the Antarctic Treaty’ that was signed in 1991 at Madrid and came into effect in 1998. India ratified the protocol in 1996. As party to the Protocol, India needs to fulfil all of its obligations.

The formative years of polar science in India were shaped through the first three expeditions which were primarily aimed to develop different facilities to conduct scientific investigations in the fields of:

a) Climatology and astrophysics
b) Biological oceanography
c) Geology and geophysics
d) Engineering and communication

As mentioned in the Report of the Working Group on the Tenth Five Year Plan for DOD, the objectives of the Indian Antarctic Expedition were summed up as follows:

a) To ensure a perceptible and influential presence of India in Antarctica.
b) To sustain the national interests in the global framework of nations in Antarctica and the Southern Oceans expressed through the Consultative Status in the Antarctic Treaty and by conducting substantial scientific activities.
c) Pursue a scientific work plan which is dynamic and is aimed towards addressing issues pertinent to national needs, having application potential and those which have global relevance.

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During the Seventh Plan period, India was actively participating in the minerals negotiations regime related to the convention on the Regulation of Antarctic Mineral Resources (CRAMRA). The focus of Antarctic activities had shifted towards the possibility of exploiting minerals to derive economic gains from the continent. Accordingly, the following thrust areas were identified in the *Seventh Plan Document*

a) To continue scientific studies on living and non-living resources, particularly with an emphasis on geo-resource distribution, including investigations on krill resources for deriving economic benefits.

b) To explore progressively larger and larger areas in Antarctica to select possible sites for establishing more stations in the continent.

c) To improve the living and working conditions in Antarctica.

d) To evaluate the prospects of mineral resources in Antarctica.

e) To build expertise and trained manpower in logistic and scientific work under extreme cold conditions.

The Antarctic Research Programme, which was initiated in 1981, has taken the shape of a major national programme that has distinct multi-institutional and multi-disciplinary approach. Since 1981, besides 24 scientific expeditions to Antarctica, one expedition was sent to the Weddel Sea area in 1989-1990 and another in 1995-1996 to the Antarctic waters to assess the potential of living resources. India has actively participated in all the Treaty meetings including its associated bodies and agencies. India’s commitment to uphold the principles of the Treaty system was lately demonstrated through the ratification of the Protocol of Treaty on Environment Protection in April 1996. India was one of the original voters of this protocol in 1991.

### 8.9 India’s Adherence to the Environmental Protocol

At the special meeting of the Antarctic Treaty Consultative Parties at Vina del-Mar (Chile) from 19 November to 6 December 1990, which considered the question of comprehensive measures for the protection of the Antarctic environment against the backdrop of political situation resulting from the decision of the Governments of Australia and France, to set aside the Convention on the Regulation of Antarctic Mineral Resource Activities adopted in June 1988, India took a principled stand on the question of *ban on mining* in Antarctica. In this context of comprehensive measures for the protection of the Antarctic environment and India advocated that it would be ideal if mining activities could be banned in Antarctica and the continent exclusively used for peaceful and scientific research activities.

It was further stated that:

“If the special ATCM could not arrive at a consensus for an all time ban on mining activities, there should be a legally binding moratorium for a specific period, extension of which may be reviewed taking into account the factors prevailing at the time of review, including the availability of
fail safe technologies. Thus, the major elements of the Indian approach and the proposal put forward by India at the meeting provided a basis for bridging the opposing stands.”

Although the concern for the protection of the Antarctic environment was widely shared, there were major differences between the various approaches over the means designed to enhance further protection of the Antarctic environment. The Franco-Australian approach called for a legally binding permanent ban on all mining activities and advocated a fully integrated approach for the protection of the Antarctic environment. The approach outlined by New Zealand, though differed only in form, came very close to the Franco-Australian approach. On the other hand U.K., U.S.A., Argentina, Norway and Uruguay opposed the Franco-Australian approach and did not favour a ban on mining activity.

At the resumed session in Madrid during April 1991 agreement was reached among the 26 Consultative Parties to the Antarctic Treaty to adopt comprehensive measures for the protection of the Antarctic environment and to designate Antarctica as a nature reserve devoted to peace and science. The Protocol puts a prohibition on mining in Antarctica for 50 years, any amendment after that needing the agreement of all Consultative Parties. The outcome of the meeting in Madrid has vindicated India’s stand.

For the past few years there has been no Indian representation in the informal discussions on liability at the ATCMs. India’s absence has been felt by developing nations who are fighting to preserve the sanctity for an equitable world order within the treaty system. The situation is improving slowly with the establishment of NCAOR and more focus view on ATCMs and other geopolitical issues.

**Environmental Impact Assessment and Monitoring:**

Environmental Impact Assessment studies through the analysis of diverse samples of land, air and water from Antarctica with the aim to generate baseline data required for devising an environmental monitoring protocol have been taken up.

Studies on EIAs were conducted through periodic monitoring of the status of air, noise, water, biological and land components of the environment, to help prepare a waste management plan for Indian Antarctic operations. Scientists from the National Environmental and Engineering Research Institute, Nagpur have been quite instrumental in these gathering and analysis of such data. Recently, NPL has come forward for monitoring environmental gases at Maitri using the sophisticated Gas Chromatography technique. Geological Survey of India is equally active in analysis and identifying areas in Schirmacher Oasis for protection under the Protocol, especially Annex V.

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298 Section 9.2 Eleventh Antarctic Treaty Special Consultative Meeting, Annual Report, 1990-91
Department of Ocean Development, Government of India, New Delhi; http://dod.nic.in/vsdod/ ayr90-91/ar_anexp.htm

299 Ibid.
Indian studies have already generated base line data on various environmental parameters of the oasis eco-system including the development of waste management protocol of Maitri and establishment of environmental lab. The programme needs to be continued with the following aims as envisaged in the Tenth Plan:

- Continuous monitoring and conservation of soil, water and air qualities
- Environmental audit and impact of waste management protocol.
- Develop oil handling, storage, spill and other emergency handling protocols.
- To extend assessment of EIA from local to regional levels.
- Generate baseline data for CEE/EIA studies in new areas of operation.

**8.10 Conclusion**

The Antarctic treaty powers have employed the treaty as a framework for a range of scientific research conducted upon both national and international basis in such spheres as the earth sciences, glaciology, atmospheric sciences, and the marine sciences, and performed by, or organised under the auspices of, such bodies as the BAS, the National Science Foundation in the USA and the Department of Ocean Development in India. There exist varying levels of government involvement and control in such aspects as the organisation of research and the provision of logistical support through bases, ships and aircraft.

**Article 3** of the Treaty states that:

“In order to promote international cooperation in scientific investigation in Antarctica, as provided for in Article II of the present Treaty, the Contracting Parties agree that, to the greatest extent feasible and practicable:

a. information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy of and efficiency of operations;

b. scientific personnel shall be exchanged in Antarctica between expeditions and stations;

c. scientific observations and results from Antarctica shall be exchanged and made freely available.”

Approximately 29 nations, all signatory to the Antarctic Treaty, send personnel to perform seasonal (summer) and year-round research on the continent and in its surrounding oceans; the population of persons doing and supporting science on the continent and its nearby islands south of 60 degrees south latitude (the region covered by the Antarctic Treaty) varies from approximately 4,000 in summer to 1,000 in winter; in addition, approximately 1,000 personnel including ship’s crew and scientists doing onboard research are present in the waters of the treaty region.\(^\text{300}\)

\(^{300}\) Information from NSF Polar Programme office website. Summer (January) population - 3,687 total; Argentina 302, Australia 201, Belgium 13, Brazil 80, Bulgaria 16, Chile 352, China 70, Finland 11, France 100, Germany 51, India 60, Italy 106, Japan 136, South Korea 14, Netherlands 10, NZ 60, Norway 40, Peru 28, Poland 70, Russia 254, South Africa 80, Spain 43, Sweden 20, UK 192, US 1,378 (1998-99); Winter
Article 6 of Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol)\(^{301}\) on “Cooperation” states that:

1. “The Parties shall cooperate in the planning and conduct of activities in the Antarctic Treaty area. To this end, each Party shall endeavour to:
   (a) promote cooperative programs of scientific, technical and educational value, concerning the protection of the Antarctic environment and dependent and associated ecosystems;
   (b) provide appropriate assistance to other Parties in the preparation of environmental impact assessments;
   (c) provide to other Parties upon request information relevant to any potential environmental risk and assistance to minimise the effects of accidents which may damage the Antarctic environment or dependent and associated ecosystems;
   (d) consult with other Parties with regard to the choice of sites for prospective station sand other facilities so as to avoid the cumulative impacts caused by their excessive concentration in any location;
   (e) where appropriate, undertake joint expeditions and share the use of stations and other facilities; and
   (f) carry out such steps as may be agreed upon at Antarctic Treaty Consultative Meetings.

2. Each Party undertakes, to the extent possible, to share information that may be helpful to other Parties in planning and conducting their activities in the Antarctic Treaty area, with a view to the protection of the Antarctic environment and dependent and associated ecosystems.

3. The Parties shall co-operate with those Parties which may exercise jurisdiction in areas adjacent to the Antarctic Treaty area with a view to ensuring that activities in the Antarctic Treaty area do not have adverse environmental impacts on those areas.”

The political benefits of such cooperative trends are difficult to quantify, but they have been significant, especially as political necessities contributed; to the dedication of Antarctica to science. Maish’s references to ‘the scientist-diplomats’ implied an appreciation of the inter-connection of science and politics, such as in terms of exerting a

\(^{301}\) Refer to the Text of the Protocol.
moderating and harmonizing effect upon international relationships and significantly scientific cooperation in Antarctica— for example, between the Soviet Union and the USA or between Argentina and the UK has proceeded in spite of their divisions in other parts of the world. There is also the hope that the experience of practical cooperation in Antarctica might exert significant political effects beyond the treaty area, although it remains difficult to assess the impact of Soviet-American cooperation in the sphere of Antarctic science upon their wider global relationship. One problem looming on the horizon of the Antarctic Treaty System concerns the detention of ‘scientific investigation’ as allowed and promoted by Articles II and III. In fact, like many issues, the matter was raised at the preparatory.

New Delhi hosted the XXX Antarctic Treaty Consultative Meeting from April 30- May 11 2007. This ATCM has been quite significant for India as the third Antarctic base to be situated at Larsemann Hills, East Antarctica was approved. This will not only strengthen India’s scientific pursuits but will also provide for a stronger strategic role. India also presented IP 60 Scientific activities at Indian station Maitri and proposed new research base at Larsemann during 2006 -2007 season.

XXX ATCM, New Delhi 2007, saw Climate Change and Marine Protected Areas being discussed as paramount for conserving the pristine biodiversity of Antarctica for science and for future generation. Tourism issues regarding the carrying capacity of ships was discussed and according to IAATO (IP 121) tourism activities resulted in an estimated total of 37,506 tourists entering the Antarctic Treaty Area, a 14 % increase in visits over the 2005/06 season – which raised a concern among many parties!

At the XXX ATCM 2007, India’s effort at setting up the third scientific base at Larsemann Hills met with success with the CEE being approved by the CEP. On the front of Annex VI on Liability, Sweden was the first Party to approve Annex VI (Liability) and to enact domestic legislation covering this issue, in helping them to understand the implications for their own future domestic legislation. Belarus acceded to the Antarctic Treaty between XXIX and XXX ATCM and participated in New Delhi as a Non Consultative Party. It announced its intentions for an extensive research programme, including the construction of a new station.

The alleged ‘good’ of science in Antarctica must be balanced against environmental factors, since even the scientific use of the continent poses environmental risks, such as through the effects of refuse and sewage around bases, of excessive disturbance in heavily- researched locations, and even the alleged visual ‘pollution’ caused by base structures.

Therefore, Antarctic science programme embrace a diverse range of disciplines and occur in both national and international frameworks. It is impossible to cover all the possibilities, but it is worth pointing to a further cooperative aspect, which derives from the manner in which the more expertise of particular value to new comers. As a result, entrants into the sphere of Antarctic research have relied extensively upon this advice on
such matters as costing, the design of base stations and of research programme, and the form of logistical support. In general, the formal commencement of Antarctic research programme by newcomers has often been preceded by the appointment of scientists to the base stations of existing treaty powers.

With year 2007-2009 being declared as International Polar Year, it is hoped that this will increase not just the scientific pursuit by the various member nations but will also increasing our understanding about impacts that’s altering our biological and weather patterns. A cooperative and collaborative effort to reduce human footprint is the only way forward to protect and preserve the pristine environment of Antarctica.
IX

Hazardous Substances: Wastes, Chemicals, and Pesticides

9.1 Introduction

The rapid industrial growth in the last few decades and rate of consumption of natural resources is leading to disturbances in the ecological system. Detection of traces of toxic chemicals in drinking water supplies, aerated drinks, polar ice caps, groundwater sources, and in food and vegetables has focused the attention of the public worldwide on the risks posed by the inappropriate disposal of hazardous waste and accidental release of toxic chemicals into the environment. The cause for alarm is not only the growing rate at which natural resources are being depleted, but also the growing quantum of wastes and more so the change in the composition of the wastes. With industrial processes becoming more complex, the wastes the industry is spewing out are becoming more hazardous, toxic, and dangerous.

The disposal of waste per se in an environmentally sound manner is a problem; history bears witness to the fact that improper disposal of even relatively less hazardous waste can lead to environmental degradation. The classic examples of environmental disaster due to hazardous wastes are episodes such as those in Minamata Bay, Japan, where 400 people died and approximately 2,000 people suffered crippling neurological diseases after consuming fish poisoned by mercury wastes discharged into the sea and also the case of leaks from chemical dumps, such as those in Love Canal in the United States and Lekkerkerk in the Netherlands, making the land unsuitable for human habitation. In India, also due to discharge of ‘H’ chemical by an industry in Bichhiri village, the water became contaminated and a lot of people were affected. The main problem was due to indiscriminate disposal of hazardous wastes. The developed countries, which are the major waste producers, found it to be very expensive to treat such waste and were not ready to take the burden of safe disposal of such wastes within their borders. This led to the transboundary movement of hazardous wastes which is invariably from developed to developing and least developed countries. This resulted in several notorious incidents which occurred in the mid-1980s involving the unlawful dumping in developing countries of hazardous wastes produced in developed countries. Therefore, a need was felt to have an international law regulating such transboundary movement of hazardous wastes. This set the stage for the Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 1989 (Basel Convention), which is intended to establish a global regime for the control of international trade in hazardous and other wastes. It was negotiated under the auspices of the UNEP on the basis of texts produced by a working group which had drawn from the Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes in 1985. These were a set of non-binding principles primarily designed to assist governments in developing and implementing national policies on hazardous wastes. They called for waste minimization,
promotion of low-waste technologies and transfer of technology, prior notification to importing countries and also to countries likely to be affected by transboundary pollution during waste disposal. In June 1987, the Cairo Guidelines were approved and adopted by the UNEP governing council. The same year, the governing council asked the UNEP to convene a working group on a global convention on transboundary movement of hazardous wastes which was to draw primarily from the Cairo Guidelines. The Convention, which was adopted in 1989 and came into force on 5 May 1992, establishes rules designed to regulate trade in these wastes rather than prohibit it. As of February 2004, 159 Countries have ratified the Convention. The Basel Convention provides a framework for the world community to ensure that the environmental and health problems associated with hazardous waste generation and disposal can be modulated, reduced, and eventually eliminated. The Basel Convention must be understood in the larger perspective of international trade, environmental protection, and protectionism.\textsuperscript{302} The purpose of establishing a regulatory mechanism is best articulated in the Preamble to the Convention which states inter alia that the Parties to the Convention are determined to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous and other wastes. The Convention also clearly states that the Parties to the Convention are convinced that the states should take measures for the proper exchange of information on and control of the transboundary movement of hazardous wastes and other wastes from and to those states.\textsuperscript{303} The Basel Convention proceeds on the premise that each and every contracting party has the sovereign right to ban the entry or disposal of foreign hazardous wastes and other wastes in their territory.

\subsection*{9.2 Objectives and Scope of the Basel Convention}

The main objectives of the Convention are to minimize the generation of hazardous wastes in terms of quantity and hazardousness, to dispose of them as close to the source of generation as possible, and to reduce the movement of hazardous wastes. The scope of the Convention is quite wide in the sense that the definition of ‘Hazardous Wastes’ in the Convention includes toxic, poisonous, explosive, corrosive, flammable, ecotoxic, and infectious substances.\textsuperscript{304} The definition has to be read with Annexures I to III which spell out the various categories of wastes. Apart from taking into ambit those wastes which are declared hazardous by domestic laws,\textsuperscript{305} it also includes clinical wastes, asbestos, and PCB contaminated materials, etc. The other wastes included in the Convention are household wastes and solid waste incinerator ash. All those wastes are excluded from the scope of the Convention which are radioactive or which derive from the normal operation of a ship provided they are covered by any another international instrument.\textsuperscript{306}

\textsuperscript{302} The Basel Convention and The Import of Hazardous Wastes to India, International Environment Law Series, Bhutani, Shalini, Centre for Environmental Law, WWF-India, 1996.

\textsuperscript{303} See the Preamble of the Basel Convention.

\textsuperscript{304} Art. 1.

\textsuperscript{305} Art. 2 (1).

\textsuperscript{306} Art. 1(3) and (4).
In the context of the Convention, transboundary movement involves the movement between two or more states. It includes movement of hazardous waste from one state to another.\textsuperscript{307} Similarly, ‘Environmentally Sound Management’ (ESM) means taking all practical steps to minimize the generation of hazardous wastes and strictly controlling its storage, transport, treatment, reuse, recycling, recovery, and final disposal, the purpose of which is to protect human health and the environment.\textsuperscript{308}

**Obligations of the Parties**

The Convention sets forth general obligations requiring parties to ensure that transboundary movement of wastes is reduced to the minimum, consistent with environmentally sound and efficient management, and it reflects an approach premised upon the view that wastes should, as far as possible, be disposed of in the state where they were generated.\textsuperscript{309} The parties must not allow exports to parties which have prohibited by legislation all imports, or where they have reason to believe that the wastes will not be managed in an environmentally sound manner, and are obliged to co-operate to improve and achieve environmentally sound management of such wastes.\textsuperscript{310} Parties may prohibit the import of such wastes and must consent in writing to any specific imports which they have not prohibited.\textsuperscript{311} The Convention also requires parties to provide information about a proposed transboundary movement of hazardous wastes and other wastes to the states concerned and also clearly state the effects of the proposed movement on human health and environment.\textsuperscript{312} The parties must prevent the imports of such wastes if they have reason to believe that they will not be managed in an environmentally sound manner.\textsuperscript{313} In order to encourage states to become parties to the Convention, wastes may not be exported to or imported from a non-party and they cannot be exported for disposal to the Antarctic area.\textsuperscript{314} The Convention considers such traffic illegal which contravenes notification or consent requirements, or fails to conform to the documents, or results in deliberate disposal in contravention of the Convention and general principles of international law. Such illegal traffic in hazardous wastes or other wastes is criminal.\textsuperscript{315} The Convention requires that parties should allow transboundary movement of wastes only if the exporting country does not have the technical capacity, facility, or suitable disposal sites or the wastes in question are required as a raw material for recycling or recovery industries in the state of import or in accordance with other criteria decided by the parties.\textsuperscript{316} The transport and disposal of hazardous and other wastes may only be carried out by authorized persons; transboundary movements must conform to generally accepted and recognized international rules and standards of

\textsuperscript{307} Art. 2 (3).
\textsuperscript{308} Art. 2 (8).
\textsuperscript{309} Art. 4.
\textsuperscript{310} Art. 4 (2) (d) and (e), 4 (8) and 11.
\textsuperscript{311} Art. 4 (1) (a) and (c).
\textsuperscript{312} Art. 4 (2) (f).
\textsuperscript{313} Art. 4 (2) (g).
\textsuperscript{314} Art. 4 (5) and (6).
\textsuperscript{315} Art. 4 (3) and 9.
\textsuperscript{316} Art. 4 (9).
packaging, labeling, and transport, take account of relevant internationally recognized practices, and be accompanied by a movement document until disposal. The Convention makes sure that the exporting parties do not transfer their obligation of environmentally sound management of wastes to the importing country.

The Convention also makes it mandatory for the parties to designate or establish one or more competent authorities and one focal point. ‘Competent Authority’ means a governmental authority designated by a party to be responsible within such geographical area as the party may think fit, for receiving the notification of a transboundary movement of hazardous wastes or other wastes, and any information related to it, and for responding to such a notification.

9.3 Regulation of Transboundary Movements of Hazardous and Other Wastes

Since hazardous wastes pose potential threat to human health and the environment, one of the guiding principles of the Basel Convention is that, in order to minimize the threat, hazardous wastes should be dealt with as close to where they are produced as possible. Therefore, under the Convention, transboundary movements of hazardous wastes or other wastes can take place only upon prior written notification by the state of export to the competent authorities of the states of import and transit. Each shipment of hazardous waste or other waste must be accompanied by a movement document from the point at which a transboundary movement begins to the point of disposal. Hazardous waste shipments made without such documents are illegal. In addition, there are outright bans on the export of these wastes to certain countries. Transboundary movements can take place, however, if the state of export does not have the capability of managing or disposing of the hazardous waste in an environmentally sound manner. Even the transit states can prohibit transit passage, and the exporting state must not allow transboundary movement to commence until it has the written consent of the transit state as well. The Convention allows for general notifications and consents to cover a twelve month period in which wastes having the same characteristics are shipped regularly to the same disposer via the same exit office of the exporting state, entry office of the importing state, and customs office of the transit state. Importing states and transit states which are parties may require the wastes to be covered by insurance or other guarantee.

Basel Ban

At the Second meeting of the Conference of Parties (COP2) in March 1994, Parties agreed to an immediate ban on the export from OECD countries to non-OECD countries of hazardous wastes intended for final disposal. They also agreed to ban, by 31 December 1997, the export of hazardous wastes intended for recovery and recycling. However, because this decision was not incorporated in the text of the Convention itself, the

317 Art.4 (7).
318 Art. 4 (10) and (11).
319 Art. 5.
320 Art. 6
question was whether it was legally binding or not. Therefore, at COP3 in 1995, it was proposed that the ban be formally incorporated in the Basel Convention as an amendment. But this decision of incorporating the ban formally into the Convention does not use the distinction of OECD/non-OECD countries. Rather, it bans hazardous waste exports for final disposal and recycling from what are known as Annex VII countries (Parties that are members of the EU, OECD, Lienchtenstein) to non-Annex VII countries (all other Parties to the Convention). The Ban amendment has to be ratified by three-fourths of the Parties present at the adoption of the Amendment in order to come into force. The total number of ratifications, as of 9 December 2003, stands at 42. Therefore, it has not yet come into force.

Transboundary Movement with Non-Parties

The Convention does not permit contracting parties the exportation of hazardous or other wastes to non-parties or their importation from a non-party, unless there exists a bilateral, multilateral, or regional agreement regarding transboundary movements. Such agreements, or arrangements must not derogate from the environmentally sound management of hazardous and other wastes and the provisions of these agreements should not be less environmentally sound than those provided by the Convention.

At the second meeting of the Conference of Parties (COP2) in 1994, it was decided that when states have entered into bilateral, multi-lateral, or regional agreements and arrangements, they shall report to the open-ended Ad Hoc Committee responsible for facilitating the implementation of the Convention, through the Secretariat, on the conformity of such agreements or arrangements taking into consideration a list of questions which were developed by the Committee itself. The purpose of using these questions is to assist parties, when reporting, in focusing on particular issues.

National Reporting of Hazardous Wastes

The Convention makes it obligatory on the parties to report information on the generation and movement of hazardous wastes in their country. Every year, a questionnaire is sent out to member countries, requesting information on the generation, export, and import of hazardous wastes covered by the Convention. This information is reviewed and compiled by the Secretariat and is presented in an annual report, which includes statistical tables and graphic representations of the data.

Technical Assistance offered by the Convention

In order to assist countries (as well as interested organizations, private companies, industry associations, and other stakeholders) to manage or dispose of their wastes in an environmentally sound way, the Secretariat cooperates with national authorities in developing national legislation, setting up inventories of hazardous wastes, strengthening national institutions, assessing the hazardous waste management situation, and preparing hazardous waste management plans and policy tools. It also provides legal and technical

321 Art. 11.
advice to countries in order to solve specific problems related to the control and management of hazardous waste spill. The Secretariat cooperates with parties and relevant international organizations to provide rapid assistance in the form of expertise and equipment.

The Convention has established regional and sub-regional training centres in various regions of the world to strengthen the capacity of national governments in complying with the Convention’s technical requirements, and its institutional and legal aspects. The Third Conference of Parties (COP3) in 1995 selected sites to establish regional and sub-regional centres for training and technology transfer regarding the management of hazardous wastes. To this end, the Basel Convention has established Regional Centres for Training and Technology Transfer in the following countries: Argentina, China, Egypt, El Salvador, India, Indonesia, Nigeria, Senegal, Slovak Republic, South Africa, Russian Federation, Trinidad and Tobago, and Uruguay. However the operation of many of these centres is only now beginning in earnest and the future of these centres remains uncertain mainly due to lack of finances.

Financial Assistance

The Convention calls upon all parties to make contributions, and trust funds have been set up. One of the tasks for the Bureau of the COP is to oversee the development and execution of the Secretariat of the Basel Convention’s budget as derived from the Trust Fund and other sources. 322

Administrative Structure

To facilitate the implementation of the Convention, the states are to designate or establish one or more competent authorities and a focal point. 323 It is these authorities which are to oversee the process of generating requests for consent to monitor and control the movement of hazardous wastes. The focal point means the entity of the party which is responsible for receiving and submitting information. 324 Competent Authority means one governmental authority designated by a state to be responsible within such geographical area as the state may think fit, for receiving the notification of a transboundary movement of hazardous wastes or other wastes, and any information related to it.

The Convention also has a provision for the establishment of the Conference of Parties (COP) and the Secretariat. 325 The Conference of Parties keeps under continuous review and evaluation the effective implementation of the Convention and promotes the harmonization of the appropriate policies. In addition, it may adopt amendments to the Convention and its annexes, taking into consideration among other things, available scientific, economic, and environmental information. Till date, the COP has met six times. The Second meeting of the COP held in Geneva less than two years after the

322 Art. 14.
323 Art. 2 (6) and (7), Art. 5.
324 Art. 13, 16 and 19.
325 Art. 15 and 16.
coming into force of the Convention, has adopted a full-fledged work programme for the implementation of the Basel Convention. The Basel Ban was also initiated in this meeting. The Parties also adopted 27 decisions which constitute a detailed and comprehensive work programme containing legal, technical, and financial components which are essential for the effective and efficient implementation of the Convention.

The Secretariat of the Basel Convention is to receive and convey information from and to Parties on sources of technical assistance and training, available technical know-how, sources of advice and expertise and availability of resources, with a view to assisting them upon request in various areas relating to the Convention. The Secretariat is also to provide parties, upon request, with information on consultants or consulting firms having the necessary competence in the management of hazardous wastes. It also assists parties upon request with identification of cases of illegal traffic.

There are four subsidiary bodies formed under the Convention, each with a designated research and developmental role concerning the Convention. The following are the subsidiary bodies:

- The Open-ended Ad-hoc Committee for the implementation of the Basel Convention, established in 1992, reviews activities and documents before they are adopted by the COP, prepares for COP meetings, and assists in implementing the Convention.
- The Technical Working Group, also established in 1992, prepares technical guidelines for the environmentally sound management of hazardous wastes, develops criteria on which wastes are suitable for recovery or recycling operations, and assists the COP on technical matters.
- The Ad-hoc Working Group of legal and technical experts was established in 1990 to develop a draft protocol on liability and compensation for damage resulting from transboundary movements of hazardous wastes and their disposal. Other tasks include working on an emergency fund under the Convention, the relationship between an emergency fund and the protocol on liability and compensation, and other legal and institutional aspects related to the implementation of the Basel Convention.
- The Consultative Subgroup of legal and technical advisers established under the legal and technical experts group is currently working on issues related to the establishment of a mechanism for implementation and compliance under the Convention.

9.4 Recent Developments

The third meeting of the COP adopted decisions on the Amendment to the Convention. This amendment stated that parties which are members of OECD, EC, Lienchtenstein, are to prohibit immediately all transboundary movements of hazardous wastes destined for final disposal to other states. The Fourth COP adopted altogether 25 decisions which developed further and facilitated the implementation of the Convention. It stressed the
need for international technical assistance and capacity building and supported the establishment of regional centres for training and technology transfer regarding the ESM of hazardous wastes and other wastes. It also gave high priority to work on the prevention of illegal traffic in hazardous wastes and emphasized the need to build up the capacity of states in preventing illegal traffic and solving the environmental damages caused by existing cases.

In 1999, a protocol to the Convention was adopted at the Fifth Conference of Parties (COP5) known as the Basel Protocol on Liability and Compensation. The Protocol talks began in 1993 in response to the concerns of developing countries about their lack of funds and technologies for coping with illegal dumping or accidental spills. The objective of the Protocol is to provide for a comprehensive regime for liability as well as adequate and prompt compensation for damage resulting from the transboundary movement of hazardous wastes and other wastes, including incidents occurring because of illegal traffic in those wastes. The Protocol addresses which state or party is financially responsible in the event of an incident. Each phase of a transboundary movement from the point at which the wastes are loaded on the means of transport to their export, international transit, import, and final disposal is considered.

The Sixth COP was held in Geneva, Switzerland, from 9−14 December 2002. The COP considered and adopted decisions on a range of issues relating to implementation of the Convention, amendment of the Convention and its annexes, and institutional, financial, and procedural arrangements. Many of these decisions, including technical guidelines on the environmentally sound management of biomedical and healthcare wastes, plastic wastes, waste lead-acidic batteries, and the dismantling of ships, had been examined and approved by the subsidiary bodies during the intersessional period. After lengthy negotiations, COP6 also set the budget for the Convention, adopted a Strategic Plan and finalized the Framework Agreement on the legal establishment of the Regional Centers for Training and Technology Transfer.

Dramatic growth in chemicals production and trade during the past three decades had highlighted the potential risks posed by hazardous chemicals and pesticides. Countries lacking adequate infrastructure to monitor the import and use of such substances were particularly vulnerable. The concern over trade in hazardous chemicals and pesticides began when Rachel Carson’s book *Silent Spring* published in 1962, created widespread awareness in industrialized countries about the adverse impacts of toxic chemicals on the environment, increasing public concern about environment and health safety. In the 1980s, UNEP and FAO developed voluntary codes of conduct and information exchange systems, culminating in the Prior Informed Consent (PIC) procedure introduced in 1989. PIC required exporters trading in a list of hazardous substances such as toxics and chemicals to obtain the prior informed consent of importers before proceeding with the trade. In 1998, governments decided to strengthen the procedure by adopting the Rotterdam Convention, which makes PIC legally binding. The Rotterdam Convention is only a first step to tackle international trade in pesticides and industrial chemicals. The Convention does not impose controls on hazardous exports. It only enables countries to
decide which substances they want to receive, and express prior informed consent before receiving imports of a specified list of chemicals.\textsuperscript{326}

The Rotterdam Convention was adopted on 10 September 1998 by a Conference of Plenipotentiaries in Rotterdam, The Netherlands. The Convention came into force on 24 February 2004. As of now, there are 73 signatories and 53 parties to the Convention.

The main objectives of the Convention are to promote shared responsibility and cooperative efforts among parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by facilitating information exchange about their characteristics by providing for a national decision-making process on their import and export and by disseminating these decisions to parties.\textsuperscript{327}

The Convention covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons by participating parties and which have been subject to notification by parties for inclusion in the procedure. Severely hazardous pesticide formulations that present a hazard under conditions of use in developing countries or countries with economies in transition may also be nominated for inclusion in the procedure.\textsuperscript{328} Once a chemical is included in the PIC procedure a ‘decision guidance document’ containing information concerning the chemical and the regulatory decisions to ban or severely restrict the chemical for health or environmental reasons, is circulated to importing countries.

The Convention provides a procedure for nominating banned or severely restricted chemicals.\textsuperscript{329} Each party that bans or severely restricts a chemical or pesticides shall notify the secretariat no later than 90 days after the regulatory action has taken effect. The secretariat must verify the notice within 6 months and then inform other member countries of its decision. In case the recommendation comes from two geographical regions then the secretariat shall forward those decisions to the Chemical Review Committee which will review the information and recommend to the Conference of Parties on whether the particular chemical should be subject to the prior informed consent procedure.

The Convention provides for the possibility of a developing country member or those with economies in transition to inform other member countries that it is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory.\textsuperscript{330}

According to the Convention, export of a chemical can take place only with the prior informed consent of the importing party.\textsuperscript{331} The PIC procedure is a means for formally

\textsuperscript{327} Art.1 of Rotterdam Convention.
\textsuperscript{328} Art. 3.
\textsuperscript{329} Art. 5.
\textsuperscript{330} Art. 6.
\textsuperscript{331} Art. 12.
obtaining and disseminating the decisions of importing countries as to whether they wish
to receive future shipments of a certain chemical and for ensuring compliance with these
decisions by exporting countries.

Initially, the Convention had 27 chemicals carried forward from a preexisting voluntary
PIC procedure. Four more have been added since its adoption. There are a total of 31
chemicals currently subject to the interim PIC procedure. Among these chemicals are 21
pesticides, five industrial chemicals, and five severely hazardous pesticide formulations,
but many more are expected to be added in the future. The Convention does not cover
specific group of chemicals such as narcotic drugs, radioactive materials, wastes,
chemical weapons, pharmaceuticals, food and food additives. Chemicals in quantities not
likely to affect human health or the environment are also excluded, provided they are
imported for research or analysis purposes. There are five annexes to the Convention
addressing the procedures for inclusion of chemicals in the PIC procedure, the chemicals
subject to the PIC procedure and the requirements for export notifications.

The Convention also provides for information exchange and places an obligation on the
parties to facilitate exchange of scientific, technical, economic, and legal information
concerning the chemicals. The party shall also make information on domestic regulatory
actions public and inform other member countries of domestic regulatory actions on the
PIC list.332

There is a special treaty to eliminate or restrict the production or use of Persistent
Organic Pollutants (POPs), i.e., Stockholm Convention on Persistent Organic Pollutants
which was adopted in 2001. This Convention was adopted in response to the urgent need
for global action to protect human health and the environment from POPs. POPs are
chemicals that remain intact in the environment for long periods, become widely
distributed geographically, accumulate in the fatty tissue of living organisms, and are
toxic to humans and wildlife. A conference of Plenipotentiaries adopted the Stockholm
Convention on 22 May 2001. The Convention has come into force in May 2004. As on
May 2004, there were 151 signatories and 86 parties to the Convention.

The main objective of the Stockholm Convention is to protect human health and the
environment from the POPs.333 The Convention requires Parties with regulatory and
assessment schemes to take into consideration the POPs screening criteria set out in
Annex D of the Convention when assessing pesticides or industrial chemicals currently in
use.334 Parties must take certain measures to eliminate from production and use certain
chemicals already listed in the Convention.335 The Convention restricts the import and
export of POPs to cases in which, for example, the purpose is environmentally sound
disposal.336 It also requires that POPs not be transported across international boundaries

332 Art. 14.
333 Art. 1 (Stockholm Convention).
334 Art. 4 (4).
335 Art. 3.
336 Art. 3 (2).
without taking into consideration relevant international rules, standards, and guidelines.\textsuperscript{337}

The Stockholm Convention obliges parties to develop strategies for identifying POPs wastes and to manage these in an environmentally sound manner. The POPs content of wastes is generally to be destroyed or irreversibly transformed. The Convention requires parties to take measures to reduce or eliminate releases of POPs from intentional production and use,\textsuperscript{338} unintentional production,\textsuperscript{339} and stockpiles and wastes.\textsuperscript{340} The Convention also requires information exchange and research on POPs alternatives.\textsuperscript{341} It obliges each party using DDT to develop an Action Plan including the implementation of alternative production.\textsuperscript{342}

The chemicals slated for elimination under the Stockholm Convention are the pesticides aldrin, chlordane, dieldrin, endrin, DDT, furans, dioxins, heptachlor, hexachlorobenzene, mirex, and toxaphene, as well as the industrial chemicals, polychlorinated biphenols or PCBs. These persistent organic pollutants are currently known as ‘the dirty dozen’. Continued use of the pesticide DDT is allowed for disease vector control until safe, affordable, and effective alternatives are in place. Countries must make determined efforts to identify label and remove PCB containing equipment from use by 2025. The Convention also seeks the continuing minimization and where feasible, elimination of the releases of unintentionally produced POPs such as the industrial by-products, dioxins and furans.

The Convention also provides for the future establishment, by the Conference of the Parties, of a subsidiary body to be called the Persistent Organic Pollutants Review Committee. This Committee will assess the chemicals that have been proposed for addition to the Convention and will make recommendations to the Conference of Parties.

\section{9.5 Enforcement and Compliance by India}

India is a party to the Basel Convention and a signatory to the Stockholm Convention. As far as the Rotterdam Convention is concerned, India has not yet ratified it, although it signed the Basel Convention on 15 March 1990, after observing its consequences and implications for one year. The changing political equations in the Basel forum are best exhibited by the Indian government’s position on the 1989 Basel Convention. India ratified the Convention on 24 June 1992 after taking an active part as a key Southern player in negotiating the agreement. In India, the Ministry for Environment and Forests (MoEF) is the nodal point for these conventions. There is a Hazardous Substances Management Division within the MoEF dealing with management of chemical emergencies and hazardous substances.

\begin{footnotesize}
\begin{enumerate}
\item Art. 6 (1).
\item Art. 3.
\item Art. 5.
\item Art. 6.
\item Art. 9 and 11.
\item Annex B.
\end{enumerate}
\end{footnotesize}
As far as the Basel Convention is concerned, India has been regularly attending all the meetings. Since the mid-1990s, however, its support to the convention has waned. India has indicated a lack of support for a 1995 amendment, which essentially bans hazardous wastes trade from industrialized to developing countries. It no longer lobbies with developing countries at the Basel forum, and at the 1999 Conference of Parties (COP5) India argued for the need to revise the Convention’s rules on export and disposal. Recently, the MoEF participated in the 5th and 6th meetings of the Expanded Bureau of Conference of Parties (COP) and the 20th meeting of the Technical Working Group, the Legal Working Group held during the year 2002-03. The Ministry also participated in COP6 of the Convention held in Geneva in December 2002. The four major issues discussed during COP6 were the strategic plan for implementation of the Basel Convention, the establishment of Basel Convention Regional Centres, mechanism for effective implementation of the Convention, and partnership with industry and multilateral environmental agreements. As part of the requirements of the parties, the Government of India has been regularly contributing to the Trust Fund at the prescribed UN rate of 0.36% and a voluntary contribution is made towards the Technical Co-operation Fund since 1993. As far as the Basel Ban is concerned, India has not signed it.

Despite being an active participant during the two years of negotiations, India has not yet signed the Rotterdam Convention. It did sign the final act when the agreement was adopted in September 1998, basically signifying that the country complies with the text of the treaty. During the negotiations, India, along with some African countries, pushed for the liability clause which would have provided compensation for damages incurred from the use of imported toxic chemicals. However, this demand was rejected in the later part of the negotiations, in the face of opposition from countries such as the US and Canada. India has a mixed position on the Convention, since it is both an importer and exporter. However, during the year 2002-03, India also participated in the 3rd session of the Interim Chemical Review Committee Meeting under the Rotterdam Convention. Under the Rotterdam Convention, the designated national authority for industrial chemicals is the Joint Secretary (Chemicals), Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizer and for pesticides, the authority is the Director/Deputy Secretary, Department of Agriculture and Cooperation, Plant Protection Division, Ministry of Agriculture.

Since India has signed the Stockholm Convention in May 2002, it has initiated a project titled ‘Preliminary Assessment to Identify the requirements for Developing a National Implementation Plan as a First Step to Implement the Stockholm Convention on POPs’, with support from the Global Environment Fund.

In our country there has been a steady strengthening of environmental jurisprudence in the past two decades. Constructing a legal framework adept at dealing with environmental issues seemed to be a natural post-Stockholm symptom and the need for the same was reiterated by the environmental disaster at Bhopal. In fact it is the country’s own encounter with the hazardousness of chemicals that worked as a catalyst to the

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343 Annual Report, 2002-03, MoEF.
legislative process of the Environment (Protection) Act, 1986. This Act is an umbrella legislation designed to provide a framework for the co-ordination of central and state authorities established under the Water (Prevention and Control) Act, 1974, and Air (Prevention and Control) Act, 1981. Under this Act, the Central Government is empowered to take measures necessary to protect and improve the quality of the environment by setting standards for emissions and discharges, regulating the location of industries, management of hazardous wastes, and protection of public health and welfare. As the opening words explain it is an Act to provide for ‘the protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property’.

The Act defines ‘Hazardous Substance’ as ‘any substance or preparation which, by reason of its chemical or physico-chemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organisms, property, or the environment’. The Act makes it mandatory that “no person shall handle or cause to be handled any hazardous substances except in accordance with such procedure and after complying with such safeguards as may be prescribed”.

The EPA, 1986, also confers power on the Central Government to make rules in respect of matters delineated in the Act which inter alia include laying down:

- the procedures and safeguards for the handling of hazardous substances,
- the prohibitions and restrictions on the handling of hazardous substances in different areas, and
- standards for the quality of environment in its various aspects, etc.

Under the EPA, 1986, the MoEF has issued several notifications to tackle the problem of hazardous waste management. These include:

- Hazardous Waste (Management and Handling) Rules, 1989, which brought out a guide for manufacture, storage and import of hazardous chemicals and for management of hazardous wastes. In what is perhaps the most significant provisions under the Rules vis-a-vis the Basel Convention, the import of hazardous wastes from any country to India for dumping or disposal is prohibited. The State Pollution Control Board or Committee, however, is authorized to allow import of such wastes for processing or reuse as a raw material after examining each case on merit. The permission given for transboundary movement of hazardous wastes in exceptional cases is obviously liable to be misused. The Rules also contain a Schedule which lays down the waste categories, the types of wastes, and the regulatory quantities per factory/premise. Radioactive Wastes, covered under the Atomic Energy Act, 1962, and wastes discharged from ships, covered under the Merchant Shipping Act, 1958, are explicitly excluded from the Hazardous Wastes Rules, 1989.

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344 Section 2 (e) of the EPA, 1986.
345 Section 8.
346 Section 6 and 25.
The Hazardous Waste (Management and Handling) Rules, were amended in 2000 with the view inter alia, to provide guidelines for the import and export of hazardous waste in the country. Exporters and importers of hazardous wastes are required to comply with the articles of the Basel Convention. It also provides for fixing the liability for damages caused during the handling or disposal of hazardous wastes on the waste generator, transporter, and disposer who are liable to pay the damages. Provisions have been made to deal with the illegal traffic as prescribed under the Basel Convention. Forms for the notification and movement document for transboundary movement of hazardous wastes as prescribed in the Basel Convention have been incorporated in these rules. Wastes listed in Lists A and B (Annex VIII and IX) of the Basel Convention have been included in Schedule 3 of these rules.

The Rules have again been amended in 2003 to further streamline implementation and to include the environmentally sound management of hazardous wastes as required by the Basel Convention. The salient features of the Hazardous Waste Management Rules, 2003, include the following:

- Definition of Hazardous Wastes rationalized
- Schedules I and II revised
- Registration of units recycling identified hazardous wastes with MoEF/CPCB made mandatory
- Clear linkage/harmonization of Schedule III list wastes with EXIM policy and Basel Convention
- 29 highly hazardous wastes prohibited for import/export

The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989, as amended up to 2000, were also promulgated by the Central Government. These Rules apply to industries that use or store specified hazardous chemicals. The Rules define the terms used in this context, and set up an Authority to inspect once a year industrial activity connected with hazardous chemicals of industrial activities and isolated storage facilities, in which there is a threshold quantity of hazardous chemicals. On 19 January 2000, the Central Government amended the Rules. The amendment redefined ‘major accident’, introduced fresh parameters to identify toxic chemicals, flammable chemicals, and explosives, and altered the Schedules, including the insertion of a revised list of hazardous chemicals in Schedule I. Wastes listed in Lists A and B of the Basel Convention have been included in Schedule 3 of these Rules. These lists are only applicable to the wastes that are exported or imported.

The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989, and The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996, are the main instruments for ensuring chemical safety in the country. The Rules require the Centre and the States to constitute ‘crisis groups’ at the national, state, district, and local levels. The Central Crisis Group is responsible for dealing with major chemical accidents. These Rules emphasize the importance
of disseminating information and oblige each crisis group to provide information regarding chemical accident prevention, preparedness, and mitigation to members of the public on request.

- Biomedical Waste (Management and Handling) Rules, 1998, as amended in 2000, were formulated along parallel lines, for proper disposal, segregation, transport, etc. of infectious wastes. Hospitals, clinics, blood banks, and other organizations generating bio-medical wastes are regulated through licensing and reporting system under these rules.

- The recent amendment to these rules known as Biomedical Waste (Management and Handling) Amendment Rules, 2003, formulates that the Army hospitals will be regulated by the Ministry of Defence.

- Municipal Wastes (Management and Handling) Rules, 2000, have been promulgated to enable municipalities to dispose municipal solid waste in a scientific manner.

- The Batteries Management and Handling Rules, 2001, were notified in May 2001, to regulate the collection, channelization, and recycling as well as import of used lead acid batteries in the country. These Rules inter-alia make it mandatory for consumers to return used batteries. All manufacturers/assemblers/reconditioners/importers of lead acid batteries are responsible for collecting used batteries against new ones sold as per a schedule defined in the Rules. Such used lead acid batteries can be auctioned/sold only to recyclers registered with the Ministry on the basis of their possessing environmentally sound facilities for recycling/recovery.

Apart from these rules, there are various Acts dealing directly or indirectly with hazardous substance and pesticides. The major responsibility for implementing these rules is with the Central Pollution Control Board and State Pollution Control Board/Pollution Committees and also with the State Departments of Environment. Some of them are listed below:

- The Factories Act, 1948, as amended upto 1987

This Act was amended in the wake of the Bhopal tragedy and the Supreme Court of India’s judgment in the *Sriram Gas Leak Case* to add special provisions dealing with hazardous industrial activities. The 1987 amendment empowers the states to appoint site appraisal committees to advise on the initial location of factories using hazardous processes. This Act prescribes the duty of an occupier of any hazardous unit to disclose to her workers, the Factory Inspector, and the local authority all particulars regarding health hazards at the factory and the preventive measures taken. The permissible limits of exposure to toxic substances are prescribed in the Second Schedule to the Act.
• The Atomic Energy Act, 1962

This Act governs the regulation of nuclear energy and radioactive substances in India. The Act empowers the Central Government to prevent radiation hazards, guarantee public safety and the safety of workers handling radioactive substances, and ensure the disposal of radioactive wastes.

• The Insecticides Act, 1968

The Act establishes a Central Insecticides Board to advise the Centre and the States on technical aspects of the Act. A committee of this Board registers insecticides after examining their formulas and verifying their claims regarding their safety and efficacy. The manufacture and distribution of insecticides is regulated through licensing. The Central and State governments are vested with emergency powers to prohibit the sale, distribution, and use of dangerous insecticides. However, lately it has been observed that the Act has certain lacunas. It does not completely disfavour the use of organo-chlorine pesticides. The use of biological and integrated pest control in India has hardly been dealt with in any significant measure. The implementation of the provisions of this Act for monitoring pesticide residues in the environment is totally inadequate.\textsuperscript{347} The Insecticides Rules, 1971, prescribe the procedures for licensing, packaging, labeling, and transporting insecticides. They also provide for safety of workers during the manufacture and handling of insecticides through protective clothing, respiratory devices, and medical facilities.

• The Public Liability Insurance Act, 1991

This law was enacted to provide immediate relief to the victims of an accident involving a hazardous substance. To achieve this object, the Act imposes ‘no-fault’ liability upon the owner of the hazardous substance and requires the owner to compensate the victims irrespective of any neglect or default on her part. The Act stipulates a maximum compensation for injury or death at Rs. 25,000/- and limits compensation in respect of damage to private property to Rs.6,000/-. The right of a victim to claim additional relief under any other law is expressly reserved. There is a liability on the owner to take out an insurance policy covering potential liability from an accident. Apart from this policy, every owner must make a contribution to the Environment Relief Fund established by the Central Government to provide relief to the victims of an accident.

• The National Environment Tribunal Act, 1995

This Act builds the foundation laid in the Public Liability Insurance Act and substantially alters the law of torts relating to toxic substances in India.\textsuperscript{348} It applies in cases where death or injury to any person or damage to any property is

\textsuperscript{347} Tiwari Committee Report; September 1980.
\textsuperscript{348} Diwan, Shyam, and Rosencraz, Armin, \textit{Environmental Law and Policy in India}. 
caused by an accident during handling of any hazardous substance. It empowers the Centre to establish a National Tribunal at New Delhi with power to entertain applications for compensation, hold an inquiry into each such claim, and make an award determining the compensation to be paid.

- The National Environment Appellate Authority Act, 1995

This Act provides for the establishment of a National Environment Appellate Authority to hear appeals with respect to restriction of areas in which any industry operation or process or class of industries, operations, or processes cannot be carried out or would be allowed to be carried out subject to certain safeguards under the Environment (Protection) Act, 1986.

Apart from the above mentioned Acts and Rules, there is an EXIM Policy of India which codifies and categorizes the wastes. There has been a case in the Supreme Court of India by an organization, Research Foundation for Science, Technology and Natural Resource Policy against the Union of India for the proper implementation of the Basel Convention in India. In response to this petition, the Supreme Court issued an order in 1997 completely banning imports of hazardous wastes covered by the Basel Convention, and those banned by the Central Government or by any court order. Irrespective of the fact that India had not ratified the ban amendment of the Basel Convention, the order has been interpreted by the Indian government, industry, and NGOs as giving effect to the ban amendment of the Basel Convention, which covers hazardous wastes intended for recycling as well as disposal.349 An inquiry committee has been set up by the Supreme Court in the above mentioned case to verify the inventory of hazardous wastes such as waste oil, lead acid batteries, and other non-ferrous metal wastes lying in various ports and inland container depots of the country.350

9.6 Conclusion

The above three conventions developed under the auspices of the UNEP together provide an international framework governing the environmentally sound management of hazardous chemicals throughout their lifecycles. Together, the Basel, Rotterdam, and Stockholm Conventions cover key elements of ‘cradle-to-grave’ management of hazardous chemicals most comprehensively in the case of POPs, which are covered by all three treaties. The three conventions provide for amendments in the usual manner of international treaties. All three conventions address the technical assistance needs of developing countries.

In the course of deliberations by the UNEP Intergovernmental Group on International Environmental Governance, support was expressed for the concept of programmatic clustering of related Multilateral Environmental Agreements. In November 2001, at the

350 Annual Report, 2002-03, MoEF.
request of the Group, the secretariats of the Basel, Rotterdam, and Stockholm Conventions prepared an issues paper outlining current cooperation and the potential for closer cooperation in future. The paper covered the areas of capacity building, science and technology, legal affairs, institutional matters, monitoring and reporting, information and awareness-raising, and programme support services. The Group’s final report adopted by UNEP Governing Council in February 2002, supported more consideration of clustering measures and the undertaking of pilot projects. Such clustering may facilitate an integrated life-cycle approach to management of the substances covered by the three conventions.
Atmosphere and Environment

10.1 Introduction

Atmospheric trace gases which are the minor constituents of the atmosphere with atmospheric concentrations in the range of parts per million by volume (ppmv) to parts per trillion by volume (pptv) are also the greenhouse gases and have profound influence on the atmosphere. The natural greenhouse gases are water vapour, carbon dioxide, methane, nitrous oxide, and ozone in the atmosphere. The natural greenhouse effect keeps the Earth warmer by 33°C (from -18°C to +15°C) by absorbing longwave radiation emitted by the warm surface of the Earth and then re-emitting it towards the Earth’s surface as well as towards other directions. This natural greenhouse effect has made it possible for the Earth to be habitable. For thousands of years prior to the industrial revolution, concentrations of greenhouse gases in the atmosphere were constant. However, as the world’s population increased, agriculture developed, and industrialization progressed, the abundance of the greenhouse gases increased remarkably causing enhanced greenhouse effect. Such human activities are:

- energy production from fossil fuels
- industrial activities (production and use of CFCs and Halons)
- transportation
- constructional activities (bricks, cement, steel, etc.)
- landuse change

The trace gases responsible for global warming have a very long atmospheric lifetime and are very stable in the lower atmosphere. But some of these gases are transported upwards by atmospheric processes to the stratosphere (15-50 km above the Earth’s surface) and break up by the interaction with ozone molecules and deplete the ozone layer. Both global warming and depletion of the ozone layer are due to the same source gases and have many adverse effects on human health and environment.\footnote{Figure 1.}

Impact of Increased UV-B Reaching the Earth’s Surface

Depletion of the ozone layer results in increased UV-B reaching the Earth’s surface, causing adverse impacts on:

- human eye and immune system
- skin cancer
- agriculture
- aquatic life
Global warming and climate change are also projected to have many adverse impacts on:

- polar ice-cap
- glaciers and freshwater systems
- desertification
- sea level rise
- agriculture
- hydrology and rainfall distribution
- fisheries
- human health

**Ozone Layer**

Life on Earth is possible because of the composition of our atmosphere. This atmosphere has evolved over geological time into a mixture to approximately 78.08% Nitrogen, 20.94% oxygen, 0.94% argon and 0.035% carbon dioxide. It also contains many other trace gases at concentrations ranging from parts per million to parts per trillion (10^{12}). The biochemical, geochemical, and geophysical importance of these trace gases is much greater than their relatively low concentrations would suggest. This is particularly true of ozone and a number of trace gases (also known as source gases) which control the abundance of ozone and are responsible for greenhouse warming and predicted climate change.

**Source Gases**

Source gases are defined as those gases which influence levels of stratospheric ozone (O_3) by transporting species containing halogen, hydrogen, and nitrogen to the stratosphere that are important in O_3 destruction. Examples are the chlorofluorocarbons (CFCs) and methane (CH_4 and nitrous oxide (N_2O). Other source gases that also come under consideration in an atmospheric O_3 concentration are those that are involved in O_3 and hydroxyl (OH) radical chemistry of the troposphere. They are carbon monoxide (CO) and non-methane hydrocarbons (NMHC) in addition to methane.

Atmospheric ozone plays an important duel role in affecting climate. The stratospheric ozone layer surrounds the Earth like a shield and protects it from biologically-harmful ultraviolet radiation, yet lets through visible light to support the various life forms on Earth. O_3 is also of primary importance in determining the thermal structure in the stratosphere. Most of the source gases, along with CO_2 and water vapour (H_2O), are climatically significant and thus affect stratospheric O_3 levels by their influence on stratospheric temperatures.

Ozone is an important absorber of infrared radiation and is thus a greenhouse gas. Ozone is also toxic, and when formed near the Earth’s surface, affects human health, quality of air, vegetation, and food production.
Ultraviolet Radiation

The sun emits radiation over a broad range of wavelengths, to which the human eye responds in the region from approximately 400-700 nm. Wavelengths from 320-400 nm are known as UV-A; wavelengths from 280-320 nm are known as UV-B; and wavelengths from 200-280 nm are known as UV-C.

Ozone in the atmosphere absorbs virtually all UV-C and is expected to continue to do so under all foreseeable circumstances. On the other hand, UV-A is not absorbed at all by ozone. UV-B is partially absorbed by ozone.

The solar UV-B radiation has great natural variability and has been measured in a number of ways by ground-based techniques and more recently by instruments with high wavelengths resolution, providing spectral data. UV-B radiation has also been derived for a particular geographical location from ozone measurements in the absence of direct UV-B measurements.

A large increase in surface ultraviolet radiation has been observed in Antarctica during periods of low ozone. Under clear sky conditions, these increases are consistent with theoretical predictions. Furthermore, an erythemal radiative amplification factor of 1.25 \(\pm\) 0.20 has been deduced from simultaneous measurements of column ozone and surface ultraviolet radiative at a clear air site, which is in agreement with a model calculated value of 1.1.

Recent laboratory research and reinterpretation of field measurements over Antarctica have strengthened the evidence that the Antarctic ozone hole is primarily due to chlorine/bromine-containing chemicals. In addition, the weight of evidence suggests that the observed middle and high latitude ozone losses are also largely due to chlorine and bromine containing chemicals (CFCs and halons).

Effects of Ozone Layer Depletion

If stratospheric ozone concentration decreased by as little as one per cent, the biologically active UV-B radiation can be expected to increase by 2 per cent. The direct effects of such a reduction in ozone concentration on human beings would be a marked increase in the incidence of skin cancer, in particular amongst the white population. In addition, global incidence of severe eye diseases (e.g. cataracts) can be expected to go up. Furthermore, there is scientific evidence suggesting that UV-B radiation also affects the human immune system and its defense powers. However, leading scientists feel that risks involved for plants and micro-organisms are much more serious than the direct effects on human health. The yields of many agricultural plants are adversely affected by UV-B. A yield reduction caused by increased UV-B might have serious consequences for the world food supply.

Chronology of Ozone Issue: Montreal Protocol

The present global problem of ozone depletion and the appearance of an ozone hole over Antarctica is mainly due to very large emissions of CFCs and Halons by the industrialized countries. In fact, the developed world, whose population is roughly 25% of the Earth's population, is responsible for creating more than 90% of the
present global ozone problem due to its disproportionate and excessive consumption of these chemicals and other environmental assets.

But considering the urgent need to save environmental assets that provide irreplaceable life support functions like the ozone layer, the developed countries came forward to strengthen the international measures to protect the ozone layer.

1977: Coordinating Committee on Ozone Layer (CCOL)

In response to international concern about the ozone layer, the United Nations Environment Programme (UNEP) established in 1977 a Coordinating Committee on the Ozone Layer (CCOL) to review research and give forecasts of ozone layer depletion.

1978: Action to Limit Emissions of CFC at National and Regional Level

The United States banned ‘non-essential’ uses of CFCs such as aerosol propellants. Canada, Norway, and Sweden also banned non-essential uses of CFCs in aerosols.

1980: The EC agreed to limit production of CFC-11 and CFC-12 and reduce their use in aerosols by 30 per cent.

1985: Vienna Convention for the Protocol of the Ozone Layer

Following scientific assessments of the problem by UNEP, 49 countries met and agreed on the Vienna Convention for the Protection of the Ozone Layer. Although agreeing to the need for action, the countries failed at the time to agree on strategies. Some countries favoured a total ban on the non-essential use of chloro-fluorocarbons; others preferred to limit production.

1987: Montreal Protocol on Substances that Deplete the Ozone Layer

In September 1987, a Protocol to the Vienna Convention was agreed upon. The Montreal Protocol on Substances that Deplete the Ozone Layer made provision for the control not only of CFCs but also of halons, and by the end of 1988, had been signed by over 40 countries and ratified by some 30 of them as well as the European Community.

The Protocol came into force on 1 January 1989. The condition that it had to be ratified by at least 11 countries representing at least two-thirds of global consumption of CFCs and halons in 1986 had been fulfilled the previous month. To date, 187 countries have ratified the Montreal Protocol.

The Protocol freezes production and consumption of five CFCs (CFCs, -11, -12, -113, -114, and -115) at 1986 levels by 1990, reduces them to 80 per cent of 1986 levels by 1994, and to 50 per cent of these levels by 1999.

Production and consumption of halons will be frozen at 1986 levels from 1992.
While drafting the Protocol it was recognized that unless developing countries were willing to accept controls, their increasing use of CFCs could offset reductions made by other countries. The result was Article 5, which allows developing countries to delay compliance with the control measures and promises them financial assistance. Article 5.1 permits any developing country with a per capita annual consumption of controlled substances of less than 0.3 kg to delay compliance with the control measures by 10 years.

An important feature of the Protocol is that it requires the scope and stringency of the controls to be reviewed at least once every four years, beginning in 1990, based on available scientific, environmental, technical, and economic information.

**Control Measures**<sup>352</sup>

As the heart of the Protocol, Article 2 discusses the control measures, the stringency and timing of controls, and formulae used to achieve the needed emission reductions. It was also defined that consumption equals production, plus imports minus exports.

**Calculation of Control Levels**<sup>353</sup>

Parties are to determine their calculated level of production by multiplying their annual production levels for each chemical by the chemical ODP (Ozone Depleting Potential). A party’s consumption, import, and export levels from controlled substances are also calculated in the same manner. Article 3 provides the parties with flexibility in meeting the Protocol's control schedules for the two groups of chemicals, while achieving the same environmental objective (e.g. a party may find it economically more desirable to achieve the bulk of required reduction through controls on CFC-11 and CFC-12, which are now used in aerosols).

**Control of Trade with Non-Parties**<sup>354</sup>

The protocol requires, as of 1 January 1990, that each party shall ban the import of the controlled substances in Annex A from any state not party to this Protocol.

Also, as of 1 January 1993, each party shall ban the export of any controlled substances in Annex A to any state not party to this Protocol; discourage the export to non-parties of technologies for producing or using controlled chemicals; and refrain from providing non-parties with new subsidies, aid, credits, equipment, plants, or technologies for producing controlled chemicals.

**Assessment and Review of Control Measures**<sup>355</sup>

Article 6 requires the Protocol to be continually re-evaluated, beginning in 1990 and at least once every four years thereafter, on the basis of the latest scientific, environmental, technical, and economic information. Parties are required to report with data the production, imports, and exports within three months of becoming a

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<sup>352</sup> Article 2 of the Protocol.
<sup>353</sup> Article 3.
<sup>354</sup> Article 4.
<sup>355</sup> Article 6.
party to the Protocol Secretariat.\(^{356}\) Procedure/mechanism has been laid down for determining non-compliance by parties with the provision of the Protocol, and for treatment of parties found to be in non-compliance.\(^{357}\)

Article 9 deals with promoting research, development and exchange of information on the best technologies, particularly on improving the containment, recovery, recycling, and destruction of controlled and transitional substances or otherwise reducing their emissions; possible alternatives to controlled substances; and costs and benefits of relevant control strategies.\(^{358}\)

Article 10 deals with ‘Financial Mechanisms’ for the purpose of providing financial and technical co-operation, including the transfer of technologies to parties under Article 5 of the Protocol.

10.2 The Multilateral Fund of the Montreal Protocol

The parties to the Protocol recognized the special situation of developing countries and undertook to facilitate their access to environmentally-safe alternative substances and technology, and to assist them in making expeditious use of such alternatives. Consequently, a special fund (The Multilateral Fund) was set up to provide concessional financing and outright grants additional to those available from existing aid programme. The Fund is jointly administered by the World Bank, UNEP, and UNDP, with the Bank handling the project financing arrangements. Grant financing is to be made available to eligible countries (i.e. developing countries who are parties to the Protocol and who consume less than 0.3 kg of ODS per capita per year). The items for which expenditures are reimbursable were determined by the Parties in June 1990, in an agreement known as ‘The London Agreement’. This list includes things such as incremental costs of production (e.g. to reconfigure a plant to produce substitutes), equipment manufacture (e.g. to retool refrigerator manufacturing to use alternatives to ODS), recycling, technical assistance. and training.

The scope/terms and conditions of the Multilateral Fund created under the Protocol should be enlarged to cover environmental costs to developing countries due to impacts of ozone depletion, global warming, and increased tropospheric ozone, on health (human and animal), agriculture (food security), plants and forests, aquatic life, materials, air quality, in addition to the ‘incremental costs’ already provided for. This is justified because these developing countries, through no fault of their own, will be the primary victims of the impacts due to increase in the solar UV-B radiation reaching the Earth’s surface and sea level rise and other associated impacts of global warming.

1987: The Antarctic Ozone Hole

With the discovery of the ozone hole over Antarctica, it had become clear that the Protocol provisions were already inadequate. The ozone problem had proved to be more serious than was thought at the time that the Protocol was signed in 1987. Since

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\(^{356}\) Article 7.
\(^{357}\) Article 8.
\(^{358}\) Article 9 and 10.
then, a scientific consensus had developed that the newly-discovered ozone hole was caused mainly by CFCs and other anthropogenic ozone-depleting substances.

1989: Helsinki Declaration on the Protection of the Ozone Layer

Consequently, international discussions began on the complete phasing-out of CFCs and other non-essential halons, and on restriction on other compounds containing chlorine. In May 1989, the parties to the Montreal Protocol which met in Helsinki made a declaration known as the ‘Helsinki Declaration on the Protection of Ozone Layer’ to phase out the production and consumption of CFCs as soon as possible and in any case no later than the year 2000; to phase out halons; to control and reduce ODSs; and to take various other steps to develop alternatives.

Amended Protocol

1990: London Conference

The second meeting of the parties to the Montreal Protocol was held in June 1990 in London. This meeting produced an agreement to phase out CFC consumption completely in the developed countries by the year 2000 and in the developing countries by the year 2010. Also, the control substances were expanded to include methyl chloroform, carbon tetra chloride, and most fully halogenated CFCs. The parties declared their intent to phase out HCFCs at some future date (transitional substances: Table 1).

London Amendment and Adjustments

Delegates to Meeting of Parties (MOP)-2, which took place in London in 1990, tightened control schedules and agreed to add ten more CFCs to the list of ODS, as well as carbon tetrachloride (CTC) and methyl chloroform. To date, 173 Parties have ratified the London amendment. In addition, MOP2 established the Multilateral Fund for the Implementation of the Montreal Protocol’s control measures and finances clearing-house functions, including technical assistance, information, training, and costs of the fund’s Secretariat. The Fund is replenished every three years, and has disbursed over US$1.3 billion since its establishment.

Copenhagen Amendment and Adjustments

At Meeting of Parties (MOP)-4, held in Copenhagen in 1992, delegates tightened existing control schedules and added controls on methyl bromide, hydrobromofluorocarbons (HBFCs), and hydrochlorofluorocarbons (HCFCs). MOP4 also agreed to enact non-compliance procedures, including the establishment of an Implementation Committee. The Implementation Committee examines cases of possible non-compliance by parties and the circumstances surrounding these, and makes recommendations to the MOP aimed at bringing about full compliance. To date, 161 Parties have ratified the Copenhagen Amendment.
Montreal Amendment and Adjustments

At Meeting of Parties (MOP)-9, held in Montreal in 1997, in addition to further tightening the existing control schedules, delegates agreed to a new licensing system for the import and export of ODS. They also agreed to a ban on trade in methyl bromide with non-Parties to the Copenhagen Amendment. To date, 118 Parties have ratified the Montreal Amendment.

Beijing Amendment and Adjustments

At Meeting of Parties (MOP)-11, held in Beijing in 1999 together with COP5 of the Vienna Convention, delegates agreed to controls on HCFC production and bromochloromethane (BCM), and to reporting on methyl bromide for quarantine and pre-shipment applications. To date, 77 Parties have ratified the Beijing Amendment.

Sectoral Uses and World Consumption of CFCs

<table>
<thead>
<tr>
<th>ODS</th>
<th>Metric Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFC-11</td>
<td>411,000</td>
</tr>
<tr>
<td>CFC-12</td>
<td>487,000</td>
</tr>
<tr>
<td>CFC-113</td>
<td>182,000</td>
</tr>
<tr>
<td>CFC-114</td>
<td>15,000</td>
</tr>
<tr>
<td>CFC-115</td>
<td>15,000</td>
</tr>
<tr>
<td>Halon 1211</td>
<td>18,000</td>
</tr>
<tr>
<td>Halon 1301</td>
<td>11,000</td>
</tr>
<tr>
<td>Halon 2402</td>
<td>1,000</td>
</tr>
<tr>
<td>Total</td>
<td>1,140,000</td>
</tr>
<tr>
<td>ODP Weighted</td>
<td>1,232,000</td>
</tr>
<tr>
<td>HCFC-22</td>
<td>140,000</td>
</tr>
<tr>
<td>CH₃CCl₃</td>
<td>609,000</td>
</tr>
<tr>
<td>CCl₄</td>
<td>1,116,000</td>
</tr>
</tbody>
</table>


10.3 Economic Implications of the Montreal Protocol

Depletion of the stratospheric ozone layer is an unintended consequence of the release of CFCs and halons. Halting these releases while providing substitute products and services will impose economic costs, but protecting the ozone layer will realize economic and environmental benefits. Benefit-cost analysis for protection of the stratospheric ozone layer must take into account the fact that economists cannot place
a quantitative value on some of the external diseconomies. In particular, the technical and economic processes determining the cost and pace of dissemination of substitutes for ozone-depleting substances are dynamic in nature. This implies that policy design must reach beyond calculation of the costs of replacement of CFCs and halons at any particular moment of time; truly cost-effective policies for stratospheric ozone protection must provide incentives for rapid development of cheaper and better substitutes for ozone depleting substances, and for the adoption of those substitutes worldwide. Compliance with the Montreal Protocol on substances that Deplete the Ozone Layer by halting CFC emissions and providing ozone friendly substitutes and services, will impose economic costs on both developed and developing countries. The economic impacts on developing countries will be considerable due to resource constraints.

Table 10.4 (a)

Control Measures for Phase Out of Production and Consumption of Ozone Depleting Substances (ODS) in Article – 5 Parties (Developing countries)

<table>
<thead>
<tr>
<th>Name of ODS</th>
<th>Base level (Average of years)</th>
<th>Date of Freeze</th>
<th>50% Reduction</th>
<th>85% Reduction</th>
<th>100% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl Chloroform</td>
<td>1998-2000</td>
<td>1-1-2003</td>
<td>1-1-2005 (30%)</td>
<td>1-1-2010 (70%)</td>
<td>1-1-2015</td>
</tr>
<tr>
<td>CTC</td>
<td>1998-2000</td>
<td>-</td>
<td>-</td>
<td>1-1-2005</td>
<td>1-1-2010</td>
</tr>
<tr>
<td>HCFCs</td>
<td>2015</td>
<td>1-1-2016</td>
<td>-</td>
<td>-</td>
<td>1-1-2040</td>
</tr>
</tbody>
</table>

Table 10.4 (b)

Control Measures for Phase Out of Production and Consumption of Ozone Depleting Substances (ODS) in Article – 2 Parties (Developed countries)

<table>
<thead>
<tr>
<th>Name of ODS</th>
<th>Base level (Avg yrs)</th>
<th>Date of Freeze</th>
<th>20% Reduction</th>
<th>50% Reduction</th>
<th>75% Reduction</th>
<th>100% Reduction</th>
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<tbody>
<tr>
<td>CFCs</td>
<td>1986</td>
<td>1-7-1989</td>
<td>-</td>
<td>-</td>
<td>1-1-1994</td>
<td>1-1-1996</td>
</tr>
<tr>
<td>Other CFCs</td>
<td>1989</td>
<td>-</td>
<td>1-1-1993</td>
<td>-</td>
<td>1-1-1994</td>
<td>1-1-1996</td>
</tr>
<tr>
<td>CTC</td>
<td>1989</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1-1-1995 (85%)</td>
<td>1-1-1996</td>
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<tr>
<td>HBFCs</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1-1-1996</td>
</tr>
<tr>
<td>Bromochloromethane</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1-1-2002</td>
</tr>
<tr>
<td>HCFCs</td>
<td>1989</td>
<td>1996</td>
<td>1-1-2004 (35%)</td>
<td>1-1-2010 (65%)</td>
<td>1-1-2015 (90%)</td>
<td>1-1-2020 (99.5%)</td>
</tr>
</tbody>
</table>
**Global Climate Change and the UNFCC**

Earth is subjected to many human induced and natural pressures collectively referred to as global change. These pressures are:

(1) increased demand for natural resources such as water
(2) selective exploitation or destruction of species of the biodiversity through increased human activities
(3) land use and land use change
(4) air and water pollution
(5) urbanization and industrialization
(6) depletion of the Earth’s ozone layer and increased UV-B radiation on the Earth’s surface causing adverse effects on human health, food production, aquatic life, and forestry.
(7) increased emissions of greenhouse gases such as carbon dioxide (CO$_2$), nitrous oxide (N$_2$O), methane (CH$_4$), perfluorocarbon (PFCs), hydrofluorocarbon (HFCs) and sulphur hexafluoride (SF$_6$) from human activities into the Earth’s atmosphere leading to global warming and climate change. All these put additional stresses on the Earth’s ecosystems and biodiversity.

**10.4 Climate Change**

During the period 1750 to 2000, the atmospheric concentrations of CO$_2$ increased from 280 ppm to 360 ppm (Fig. 10.5) equivalent to 1.46 WM$^{-2}$ primarily due to energy production from fossil fuels, land use, land-use change, industrial activities, transport particularly automobiles, construction activities, agriculture, and rapid population growth. Cumulative emissions of CO$_2$ between 1950 and 1995 and atmospheric concentration of CO$_2$, N$_2$O, and CH$_4$ are given in (Fig. 10.6) and Table-10.7 respectively. Over the 20th century, there has been a consistent, large scale warming of both the land and ocean surface and it is likely that most of the observed warming over the last 50 years has been due to the increase in greenhouse gas concentrations from human activities. The global mean surface temperature has increased by 0.6°C (0.4 - 0.8°C) over the last 100 years with 1998 being the warmest year and the 1990s very likely being the warmest decade (Fig. 10.8). As per the latest projection, the Earth’s average surface temperature is projected to rise by 1.4°C to 5.8°C by 2100 (IPCC 2002), with differentiation among the geographic regions. Such a human induced climate change in future will also include changes in precipitation, sea level rise, increased frequency and intensity of some extreme climatic variability.
Fig. 10.5: Global Atmospheric Concentration of the Principal Well-mixed Anthropogenic Greenhouse Gases

![Graph showing carbon dioxide concentration over time.](image1)

Fig. 10.6: 1950 - 1995: Cumulative Emissions of CO₂
Global Total: 183 Billion Tonnes Carbon

![Pie chart showing cumulative emissions from 1950 to 1995.](image2)

Table 10.7: Atmospheric Concentration of CO₂, N₂O, CH₄

<table>
<thead>
<tr>
<th></th>
<th>Carbon Dioxide</th>
<th>Methane</th>
<th>CFC-11</th>
<th>CFC-12</th>
<th>Nitrous Oxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric concentration</td>
<td>ppmv</td>
<td>ppmv</td>
<td>pptv</td>
<td>pptv</td>
<td>ppbv</td>
</tr>
<tr>
<td>Pre-industrial (1750-1800)</td>
<td>280</td>
<td>0.8</td>
<td>0</td>
<td>0</td>
<td>288</td>
</tr>
<tr>
<td>Present Day (1990)</td>
<td>353</td>
<td>1.72</td>
<td>280</td>
<td>484</td>
<td>310</td>
</tr>
<tr>
<td>Current rate of change per year</td>
<td>1.8 (0.5%)</td>
<td>0.015 (0.9%)</td>
<td>9.5 (4%)</td>
<td>17 (4%)</td>
<td>0.8 (0.25%)</td>
</tr>
<tr>
<td>Atmospheric lifetime (years)</td>
<td>(50-200)*</td>
<td>10</td>
<td>6.5</td>
<td>130</td>
<td>150</td>
</tr>
</tbody>
</table>

ppmv = parts per million by volume  
ppbv = parts per billion (thousand million) by volume  
pptv = parts per trillion (million) by volume  
* The way in which CO2 is absorbed by the oceans and biosphere is not simple and a single value cannot be given; refer to the main report for further discussion.
10.5 Projected Impacts of Climate Change on Biodiversity

Human activities have led to changes in ecosystems and attendant loss of biodiversity in many regions (IPCC 2002). Available observational evidence indicates that regional changes in climate, particularly increases in temperature, have affected a diverse set of physical and biological systems in many parts of the world. Examples of observed changes include shrinkage of glaciers, earlier break up of ice on rivers and lakes, lengthening of mid to high latitude growing seasons, poleward and altitudinal shifts of plant and animal, declines of some plant and animal population, and earlier flowering of trees, emergence of insects and egg-laying of birds. In fact, from the collective evidence, there is high confidence that recent regional changes in temperature have had discernible impacts of many physical and biological systems.
Water Resources

Approximately 1.7 billion people, one third of the world’s population, presently live in countries that are water stressed (defined as using more than 20% of their renewable water supply, a commonly used indicator for water stress).

Demand of water is generally increasing due to population growth and economic development. Climate change may substantially affect irrigation withdrawals, which depend on how increases in evaporation is offset by changes in precipitation. Higher temperatures, hence higher crop evaporative demand, mean that the general tendency would be towards an increase in irrigation demands. Water quality generally would be degraded by higher temperature. The combined effects of climate change, e.g. temperature and precipitation and changes to watersheds are projected to affect hydrological processes of many freshwater ecosystems. The largest effects of changes in hydrological processes on productivity in streams and rivers will result from reduction of stream flows projected in some regions, and water quality could worsen with expanded oxygen deficit. Climate change will have its most pronounced effect on wetlands affecting seasonal migration of birds and biodiversity.

Marine and Coastal Systems

Marine and coastal systems are affected by many human activities, e.g. coastal development, tourism, land clearance, pollution leading particularly to the degradation of coral reefs, mangroves, seagrass, coastal wetlands, and beach ecosystems. Climate will affect the physical, biological, and biogeochemical characteristics of the oceans and coasts at different time and space scales, modifying their ecological structure and functions. This in turn could exert feedbacks on the climate systems. Coral bleaching is likely to become widespread by the year 2100 as sea surface temperature is projected to increase by at least 1-2°C. Globally about 20% of coastal wetlands could be lost by the year 2030 due to sea level rise, with significant regional variation. Such losses would reinforce other adverse trends of wetland loss resulting primarily from other human activities.

Mangroves

Mangrove forests are unique ecosystems. They offer significant and unique habitat to birds, mammals, and fish populations by establishing a complex marine food chain, creating a breeding habitat for the aquatic system (Fig. 10.9). In addition, the anchoring root system of mangroves contribute to improved water quality by filtering and assimilating pollutants, stabilizing bottom sediments, and protecting the shoreline from erosion. During the October 1999 Orissa Super Cyclone, studies revealed that mangroves also serve as protection against storm surge and acted as wind breakers, protecting the life of people, their habitat, and agricultural lands, etc.
Fig. 10.9: Rich And Fragile : The Mangrove Ecosystem

**Microbial decomposers and herbivores**
1. Leaves
2. Algae
3. Fungi, protozoa, bacteria
4. Sesarmid and graspid crabs

**Detrivores**
5. Shrimp
6. Insect larvae
7. Mullet
8. Fiddler crabs
9. Worms
10. Amphipods
11. Bivalve molluscs

**Small carnivores**
12. Crunters
13. Emperors
14. Pony fishes

**Large carnivores**
15. Sawlish
16. Trevalies
17. Sea eagle

**Tools and Techniques for Addressing Climate Change**

Broadly the two tools to address to climate change are:
- mitigation and
- adaptation

**10.6 Mitigation Options in India**

Mitigation is defined as a human intervention to reduce net greenhouse gas emissions or increase sequestration of CO₂, through sinks such as forests that would lessen the pressure on natural and human systems from climate change. India conducted a study under an ADB programme to come out with a least cost greenhouse gas abatement strategy (ALGAS-India) and brought out potential sectors for GHG abatement. The focus of the abatement strategy is CO₂ emissions reductions in the energy and forestry
sectors and methane (CH\textsubscript{4}) emissions reductions in the agriculture sector. Mitigation options in the energy sector identified are: improvements in energy efficiency through upgrading currently employed technologies, introduction of advanced technologies that are more efficient, and use of renewable energy sources wherever feasible to bring down carbon content of the grid. The recent declared ‘Energy Policy’ of the Government of India aims at a minimum 10 per cent share from renewable energy (at least 10,000 megawatts) by 2012 in the national grid. India has considerable renewable energy potential and much of it is to be exploited yet as depicted in the Table below.

**Table 10.10: Renewable Energy Potential in India**

<table>
<thead>
<tr>
<th>Source/Technology</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biogas Plants</td>
<td>12 million</td>
</tr>
<tr>
<td>Biomass Based Power</td>
<td>17,000 MW</td>
</tr>
<tr>
<td>Efficient Woodstoves</td>
<td>120 million</td>
</tr>
<tr>
<td>Solar Energy</td>
<td>5 x 1015 Whr/yr</td>
</tr>
<tr>
<td>Small Hydro</td>
<td>10,000 MW</td>
</tr>
<tr>
<td>Wind Energy</td>
<td>20,000 MW</td>
</tr>
<tr>
<td>Ocean Thermal</td>
<td>50,000 MW</td>
</tr>
<tr>
<td>Sea Wave Power</td>
<td>20,000 MW</td>
</tr>
<tr>
<td>Tidal Power</td>
<td>9,000 MW</td>
</tr>
</tbody>
</table>

**Source:** Ministry of Non-conventional Energy Resources (MNES).

**Initiatives Taken in India—Government, Business Sector, and NGOs—for Making CDM Operational in the Country**

The designated national authority (DNA) on CDM has already been set up by the Government of India for formalizing CDM approval processes, and as required by the Marrakesh Accord (COP7). In addition, industrial associations and NGOs such as CII, Development Alternatives and other institutions like IIM-Ahmedabad, TERI, and Winrock are taking keen interest and during the last couple of years, a number of CDM projects have been developed in close collaboration with the Indian business sector.

**Adaptation as a Tool to Supplement Mitigation Measures**

The IPCC Third Assessment Report (IPCC 2002) on Climate Change has clearly brought out that adaptation is a necessary strategy at all scales to complement climate change mitigation efforts. To strengthen the framework of adaptation, the world community has to work unitedly to eradicate poverty as articulated in the United Nations Millennium Development Goals which is fundamental in developing coping capacity and resilience among the vulnerable communities in the developing countries.
Different Tools for Adaptation to Climate Change

Tools for adaptation to climate change that are considered suitable for the developing countries such as India are:

- empowering communities to reduce their vulnerability
- education, training and public awareness
- sustainable livelihood practices
  - need of rural development
  - providing electricity through renewable energy technologies using local resources
- cooperative/participatory effects such as Cooperative Banks
- insurance against floods, drought, cyclone, crop damages, etc.
- transfer of latest environmentally friendly technologies
- operational research on adaptation to increase resilience and coping capacity of the vulnerable communities.

Measuring Success of the Adaptation Tools

Measuring success of the various tools developed can be monitored through indicators such as:

(i) percentage of poverty reduction
(ii) percentage improvement in public awareness such as introducing curriculum on climate change in the middle and high school
(iii) per capita emission of CO$_2$ per year
(iv) GDP per unit of energy use
(v) yearly incidences of malaria/dengue fever
(vi) percentage of people having access to clean water and sanitation.

10.7 Climate Change Convention and Kyoto Protocol

The landmark Conference on Human Environment in Stockholm in 1972 was the first international effort to focus on the human impact on environment and the need to protect it. But it took 20 years for the international community to concretize actions in the form of a Convention on Climate Change at the United Nations Conference on Environment and Development (UNCED) held in June 1992 in Rio de Janeiro, popularly known as the Rio Earth Summit.

At the Rio Earth Summit, delegates from over 154 countries signed a multilateral environmental treaty that provides a Framework Convention on Climate Change. The United Nation Framework Convention on Climate Change (UNFCCC) came into force on March 21, 1994. Supported by the first Scientific Assessment of the Intergovernmental Panel on Climate Change (IPCC 1990), the UNFCCC set the objective of the Convention to stabilize greenhouse gas concentrations in the atmosphere at levels that would prevent dangerous anthropogenic interference with the climate system. Such a level was to be achieved within a time frame sufficient to allow the ecosystem to adapt naturally to climate change and to ensure that food
production is not threatened and economic development proceeds in a sustainable manner.

**Objectives of the UNFCCC**

- To achieve stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system
- Such a level should be achieved within a time-frame to:
  - ensure food production is not threatened, and
  - enable economic development to proceed in a sustainable manner

**Basic Principle Agreed Upon in UNFCCC**

- Protecting the climate system
  - for the benefit of present and future generations of human kind
    - on the basis of equity, and
    - in accordance with their common but differentiated responsibilities and respective capabilities.
- Developed country Parties agreed to take the lead in combating climate change and adverse effects thereof

All Parties (developed and developing) to the Convention also undertook commitments taking into account their common but differentiated responsibilities and their specific national and regional development objectives and circumstances, to periodically update, publish and make available national inventories of anthropogenic emissions by sources and the removal by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies, etc. The industrialized (Annex I) country parties, in addition, aimed to bring down their greenhouse gases emissions to their 1990 levels by the year 2000.

As per the Convention (Article 7.3), the first Conference of the Parties (COP1) was convened by the Climate Change Secretariat during 28 March–7 April 1995 in Berlin. By the time the COP1 met, it had become very clear that most of the developed countries had not initiated measures to achieve their current aim of returning greenhouse gas emissions to 1990 levels by the year 2000. In fact, a number of highly industrialized countries had increased their greenhouse gas emissions by 10-15 per cent from 1990 levels.

The Global NGO Meet in Berlin in March 1995 very aptly decided that ‘Rio is not enough’ and called for higher commitments by the developed countries. The Convention had been silent on measures and actions for stabilization of concentrations of greenhouse gases beyond 2000. The issue of emission cuts beyond 2000 by the developed countries during the COP1 became the main issue. Besides, national communications from the Annex I countries, describing their efforts to implement the Convention, institutional arrangements and rules of procedure, the most important agenda for the COP1 in Berlin was the ‘Adequacy of Commitment of the Annex-I country Parties, and their additional commitments’. This was reflected in the Berlin Mandate. An Adhoc Group on the Berlin Mandate (AGBM) was established by COP1 to begin a process to enable it to take appropriate action for the
period beyond 2000 through adoption of a protocol or another legal instrument, including strengthening the commitments of Annex I Parties in Article 4.2 (a) and (b) and continuing to advance the implementation of the existing Article 4.1 of the Convention. The AGBM met eight times during the course of two and a half years. Many issues remained unresolved, particularly the issue of strengthening the commitments of Annex I countries, and quantified emission limitation and reduction objectives (QELROs), for decisions to be taken in the COP3 in Kyoto, Japan, during 1-10 December 1997. Developing countries had no commitment under the Berlin Mandate.

**Kyoto Protocol**

*The Negotiating Debate*

The central theme of the COP3 negotiations was the quantified emission limitation and reduction objectives (QELROs), a clear binding and verifiable commitment by the industrialized countries to reduce their emission below 1990 levels by early next century. In total, 70 proposals from over 30 developed and developing country parties were received subsequent to COP2 in Geneva in 1996 by the FCCC Secretariat. The Adhoc Group on the Berlin Mandate (AGBM) prepared a negotiating text for a protocol or another legal instrument, and also a chairman’s text which was the focus of discussion at the eighth and final session of the AGBM in Bonn in October 1997.

The Kyoto Conference had a wide range of proposals on targets and timetables for legally binding reduction for the developed nations over the next two or three decades. The main proposals negotiated are given in the Table-10.11 below.

<table>
<thead>
<tr>
<th>Table 10.11</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Inclusion of CO2, CH4, N2O in one basket and treating the other three Fluoride gases, viz., HFCs, PFCs, and SF6 in a separate basket or all the six gases to be included in one basket and in the COP3 itself</td>
</tr>
<tr>
<td>(ii) Methodologies to be used to estimate emissions by sources and removals by sinks in the new instrument</td>
</tr>
<tr>
<td>(iii) Treatment of sinks in the new instrument</td>
</tr>
<tr>
<td>(iv) Emission trading</td>
</tr>
<tr>
<td>(v) Joint implementation</td>
</tr>
<tr>
<td>(vi) Clean development fund</td>
</tr>
<tr>
<td>(vii) Evolution issues</td>
</tr>
<tr>
<td>(viii) Policies and measures</td>
</tr>
<tr>
<td>(ix) Continuing to advance the implementation of Article 4.1 of the Convention</td>
</tr>
<tr>
<td>(x) A strong compliance mechanism and closing of all loopholes</td>
</tr>
</tbody>
</table>

The underlying essence of the entire negotiation in Kyoto was the need for a political will to reach an understanding and agreement on commitments that will lead the process towards achieving the objective of the Convention: stabilization of
greenhouse gas concentrations in the atmosphere at a level that would prevent
dangerous anthropogenic interference with the climate system.

The G-77 and China, at every opportunity of the 10-day debate, totally rejected the
idea of developing countries accepting any form of greenhouse gas reduction targets
until and unless these countries’ main agenda, poverty eradication, was fully
addressed and met. In support of the developing countries stand, Chairman Raul
Estrada (AGBM and Committee of the Whole of COP3) made a powerful plea on
various occasions that between 1987 and 1993, non-Annex 1 parties as a group
recorded a greater average reduction in energy intensity per unit GDP than did Annex
1 parties. At the same time, the biggest economy in the world had a growth in
emission equal to their growth in GDP during 1996.

Main Features of the Kyoto Protocol to the UNFCCC

The final Kyoto Protocol is the outcome of eight AGBM meetings during the two and
half year period and the 10 days (1-10 December 1997) of day and night negotiations
in the COP3 at Kyoto, Japan, among the signatory nations to the UNFCCC adopted in
1992. The protocol adds a new legal obligation to meet targets and deadlines for the
reduction of greenhouse gas emissions by the industrialized countries.

The main features of the protocol signed at Kyoto on 10 December 1997 are:

- Complete absence of any compliance mechanism
- Average global emission cuts by 38 developed country parties and countries in
transition by at least 5 per cent below 1990 levels, particularly
  - 8 per cent by EU,
  - 7 per cent by USA, and
  - 6 per cent by Japan,

over their 1990 greenhouse gas emissions.

- Cuts to apply to all the six gases viz.,
  CO2, CH4, N2O, HFCs, PFCs, and SF6.
- Inclusion among the cuts of net changes in greenhouse gas emissions from
  sources and removals by sinks resulting from direct human induced land use
  change and forestry activities, limited to afforestation, reforestation, and
  deforestation since 1990, measured as verifiable changes in stocks.
- The commitment period will be 2008 to 2012.
- Each party included in Annex I shall by 2005 have made demonstrable
  progress in achieving its commitments made in the protocol.
- Acceptance of emission trading, joint implementation, and the Clean
  Development Mechanism (CMD).

10.8 Clean Development Mechanism (CDM)

The Kyoto Protocol established a Clean Development Mechanism to assist developing
country parties in achieving sustainable development and in contributing to the
ultimate objective of the Convention and to assist Annex I parties in achieving compliance with their quantified emission limitation and reduction commitments under Article 3 of the protocol.

**Complete Absence of a Strong Compliance Mechanism in the Protocol**

The total non-compliance by industrialized countries to the aims of the Convention to reduce greenhouse gas emissions to 1990 levels by 2000 leaves a question mark on their compliance of the provisions of the Kyoto Protocol. More so, because of the complete absence of a strong compliance mechanism in the protocol.

Some aspects of the Kyoto Protocol which are of special interest to developing countries like India are:

1. Article 2.3 states that the parties included in Annex I shall strive to implement policies and measures under Article 2 in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social and environmental and economic impacts on the parties, especially developing country parties. Similarly, Article 3.14 states that each party included in Annex I shall strive to achieve the commitments in such a way as to minimize adverse social, environmental, and economic impacts on developing country parties.

These aspects need careful monitoring and study by India and other developing countries. In case any adverse impacts are anticipated, corrective actions through the future meetings of the parties should be initiated without loss of time.

2. Article 3.3 on sinks states that net changes in greenhouse gas emissions from sources and removals by sinks resulting from direct human-induced land use change and forestry activities, is limited to afforestation, reforestation, and deforestation since 1990. The article is silent on the question of natural regeneration through better management in the forestry sector. This needs clarification.

3. Article 5.2 states that the methodologies for estimating anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol shall be those accepted by the IPCC and agreed upon by the COP3. Such methodologies need to be circulated by the FCCC to all the Parties and other observers including NGOs for their scrutiny and comments before finally adopting for compliance.

4. Article 6.1(d) states that the acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of commitments under Article 3. The protocol is silent on what percentages of the total commitments will be through domestic actions and through actions which are supplemental.

5. Article 10 of the Kyoto Protocol states that all parties, taking into account their common but differentiated responsibilities and their specific national and regional developmental priorities, objectives, and circumstances, without introducing any new commitments for parties not included in Annex 1, but reaffirming existing commitments in Article 4.1 of the FCCC, shall formulate where relevant and, to the extent possible, cost-effective national and (where appropriate) regional programme to improve the quality of local emission factors, activity data and/or models which reflect the socio-economic conditions
of such a party for the preparation and periodic updating of national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol using comparable methodologies. Further Article 10(b) (i and ii) states that all parties shall formulate, implement, publish, and regularly update national and (where appropriate) regional programme containing measures to mitigate climate change and measures to facilitate adequate adaptation to climate change; such programme would inter alia concern the energy, transport, and industry sectors as well as agriculture, forestry, and waste management.

**Issues Confronting Developing Countries and the Eighth Conference of the Parties (COP8) to the UNFCCC**

Most of the developing counties in the post-independent era concentrated their efforts on economic development to address poverty eradication and provide a better quality of life, education, and basic health facilities to people. The developing countries are already under pressure from forces such as population growth, large population (like India’s), resource depletion, and poverty. These countries need massive financial aid, technological support, and capacity building to address to their social development, economic development, environmental protection, and technological development to address their main agenda of development, i.e. poverty eradication.

Many in these developing countries live not only without safe drinking water, sanitation, and medical care, but also without homes. Sustainable livelihoods need to be created in millions. Added to this, education facilities need to be provided to all children. Lack of education of such a large percentage of the population makes the situation still worse.

**Climate Change Funds**

During COP7 at Marrakesh there was an effort for the creation of different funds to help developing countries in addressing climate change. A collective contribution of some of the industrialized countries to the tune of US $ 401 million annually by 2005 was promised. This fund as a token of good gesture from some of the affluent countries was however a drop in the ocean. Developing countries have waited patiently for too long. At least few trillion-dollar fund may be able to raise the developing countries from the present miserable state of affairs to survival level and provide a future for them for a better quality of life. Poverty and equity in fact received only marginal attention so far. COP8 presented an unique opportunity to integrate such policies in the Convention.

Policies that lessen pressure on resources, improve management of environmental risk, and increase the welfare of the poorest and downtrodden members of the society can simultaneously advance sustainable development and equity, and enhance adaptation. In fact, the adaptation process complements the process of mitigation of climate change.
G-77 needs, in consultation with other stakeholders in a participatory process, to formulate a strategy for demanding massive economic aid like the Marshall Plan for Europe. Combating poverty on a priority basis is the surest way of addressing the global climate change, sustainable development, and equity. This may be the surest way of achieving the millennium development goals as well.

10.9 Developing Countries and UNFCCC Provisions

The Parties (countries) to the Convention should protect the climate system for the benefits of present and future generations of mankind on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities and as such, the developed countries should take the lead in combating climate change and adverse effects thereof.

- The Convention affirmed that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impact on economic development, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty.
- The Convention recognized that developing countries need access to resources required to achieve sustainable social and economic development. In order to progress towards that goal, energy consumption will need to grow taking into account the possibilities for achieving greater efficiency through application of new technologies for the economic and social benefit.
- The developed counties further committed in the Convention to provide new and additional financial resources including for the transfer of technology to the developing countries for implementing different measures as required to promote, facilitate, and finance as appropriate, the transfer of or access to environmentally sound technologies and know-how to developing countries to enable them to implement the Convention provision. The developed countries should also support the development and enhancement of endogenous capacities.
- The highly industrialized countries (Annex II of the Convention) should also assist developing countries vulnerable to climate change in meeting the costs of adaptation to those adverse effects.

COP8 provided the best opportunity to mobilize these provisions in the Convention to the fullest advantage for social, economic, and technological development and protection to the environment of the developing countries.

Status of Implementation of these Provisions

The Convention provisions of transfer of financial and technological resources to the developing countries have received only marginal response from the industrialized countries so far. Future COPs must go for a major debate, deliberation, and decision on the fulfillment of commitments and total compliance by the industrialized countries in Rio.
A Wake-Up Call to the Annexure-I Countries

NGOs, civil society, and all other stakeholders including the G-77 must give a ‘wake up’ call to the developed countries to not only fulfill their commitments made in the Convention for social and economic development and poverty eradication in the developing countries as the most appropriate and powerful response to address the abatement of global climate change, but for the good of the present and future generations of mankind.

So far, little concern has been shown for the vital issues of economic and social development and poverty eradication in developing countries, which constitute 75% of the global population. For the first time, these aspects were deliberated in COP8 and the Delhi Declaration reaffirmed that economic and social development and poverty eradication are the first and overriding priorities of developing countries.

The Third Assessment Report from the Intergovernmental Panel on Climate Change (IPCC) has brought out very clearly that developing countries are vulnerable to climate change due to a lack of capacity resource constraint, poverty, and large populations.

In his COP8 address, Indian Prime Minister Atal Behari Vajpayee highlighted the lack of capacity in developing countries to tackle the adverse impacts of climate change and strongly urged that the UNFCCC convention pay more attention to the aspects of vulnerability and adaptation and stressed the need of adaptation in the areas of water, energy, health, agriculture, and biodiversity. He also referred to the UN Millennium goal of reducing global poverty by half by 2015 and further referred to the World Summit on Sustainable Development, which recognized that poverty eradication, changing consumption and production patterns, and protecting and managing the natural resource base for economic and social development are essential requirements for sustainable development.

The Delhi Declaration (COP8) called for policies and measures to protect the climate system against human induced changes and integrate these with national development programme, while taking into account that economic development is essential for adopting measures to control climate change. National sustainable development strategies should fully integrate climate change objectives in key areas such as water, energy, health, agriculture, and biodiversity.

From the perspective of developing countries, Future COPs should therefore have the following thrust areas:

- Capacity building in the areas of vulnerability assessment, adaptation, and the clean development mechanism (CDM)
- Massive transfer of financial resources from North to South as well as the transfer of environmentally sound technologies for rapid economic development in the developing countries to address to their main agenda of poverty eradication and improvement of the quality of life
- Creation of a large adaptation fund for the developing countries to take up research and measures for implementation on adaptation particularly for the communities and areas vulnerable to climate change.
In addition, an enabling environment at the international and national levels should be created through the COP process for effective participation of the developing countries in the CDM of the Kyoto Protocol.

10.10 Capacity Building in Developing Countries

COP8 highlighted the concerns of the developing countries over their lack of adequate capacity to respond to the adverse impacts of climate change. Adequate capacity building in developing countries therefore is one of the key areas to deliberate; future COPs should come out with a concrete and time bound programme on capacity building in developing countries. Capacity building in developing countries can also contribute to national economic development goals to address poverty eradication and reduction in the growth rate of greenhouse gases.

Developing countries also need capacity building in the area of CDM in order to effectively participate nationally and internationally. However, an enabling environment needs to be in place both at the host country government level as well as in the CDM Executive Board (EB) level. Although lax rules will endanger the environmental integrity of projects, if the CDM EB applies rigorous rules and scrutiny, initiatives taken by developing countries will be nipped in the bud and this may prove to be a negative approach.

Key target audiences for capacity building are middle and senior level decision makers, policy analysts, and implementers in the government, the private sector and NGOs, as well as the academic sector. Tools and modalities for building capacity in developing countries are activities such as workshops, stakeholder dialogues, human resource development, the provision of technical assistance, and institution capacity building.

A few indicators may be developed by each of the developing countries to monitor the level of success of capacity building efforts undertaken nationally, regionally, and internationally.

Need for Transfer of Financial Resources from North to South

Massive transfer of financial resources as well as transfer of environmentally sound technologies (ESTs) from North to South is another key area that needs to be deliberated and decided in future COPs. This is in accordance with Article 4.5 under the Convention, which states that the developed country parties and other developed parties included in Annex II of the Convention shall take all practical steps to promote, facilitate, and finance as appropriate, the transfer of or access to environmentally sound technologies and know-how to other parties, particularly developing country parties, to enable them to implement the provision of the Convention. This provision was further strengthened in the COP8 Delhi Declaration, which states that the Annex I parties should further implement their commitments under the Convention, particularly those relating to the provision of financial resources, technology transfer, and capacity building.
10.11 Adaptation to Climate Change and Developing Countries

The road map clearly demonstrates that the developing countries with more than 75% of the world population were used as a tool to fulfill the agenda of the North. The COP1 at Berlin was more concerned with the Convention provisions on the commitment of the developed countries of bringing their emissions of CO₂ and other greenhouse gases individually or jointly to their 1990 levels by 2000. This debate resulted in the adoption of the Berlin Mandate on the adequacy of commitment of the developed countries to reduce their emissions of greenhouse gases. The next landmark decision was taken at the Kyoto, Japan (COP3) which adopted the Kyoto Protocol to the Convention of Climate Change. The developed country parties were required to bring down their emissions of CO₂ and other greenhouse gas by 5.2% in aggregate below their 1990 levels. For stabilization of the atmospheric concentration of greenhouse gases, the world considered this measure at least a ‘step forward’ and welcomed the decision. The COP6 Part II at Bonn (during July 2001) and COP7 at Marrakesh provided modalities and procedures for implementation of the provisions of the Kyoto Protocol and Convention.

COP8 and COP9 provided another opportunity to the Annex I countries who are yet to become a party to the Kyoto Protocol so that the Protocol comes into force latest by 2004. The flexibility mechanism such as the Clean Development Mechanism (CDM) has great potential to assist developing countries in achieving sustainable development, and the industrialized countries to achieve compliance with their quantified emission limitation and reduction commitments (QELRCs). In addition, CDM will help developing countries in the transfer of financial resources and technologies and provide capacity building and accelerate economic development.

One of most important decisions taken during COP8 and reflected in the Delhi Declaration is in the area of adaptation to climate change. It stated that adaptation to the adverse effects of climate change is of high priority particularly for the developing countries which are most vulnerable to climate change. The developing countries with more than 75% of the world’s population will be worst affected by climate change. The developing countries have very little capacity to adapt and cope with climate change due to various factors such as low levels of wealth, technologies, education, information skills, infrastructure, and access to resources.

It is widely accepted that enhancing adaptive capacity involves national efforts similar to the principles of sustainable development, such as social development, economic development, environmental protection and conservation, and technological innovation and development. COP8 decided that effective and result-based measures should be supported for the development of approaches at all levels on adaptation and capacity building for the integration of adaptation concerns into sustainable development strategies.

Future COPs may formalize an adaptation policy and measures for developing countries. To decide which adaptation opportunities will have the greatest value, emphasis must be given to characteristics such as resilience, critical thresholds, and coping ranges. These attributes are highly dependent on regions even among developing countries. Lessons learned from past experiences and traditional
adaptation practices by communities can provide a useful understanding of the processes of adaptation to climate change.

Round-Table Discussions among Ministers and the Heads of Delegations during the Ninth Conference of the Parties to the UNFCCC (COP9) at Milan, Italy, at its 18th Session, recommended organizing round-table discussions to serve as a vehicle for the Ministers and Heads of Delegations to exchange views in COP9.

COP9 decided to have three round-table discussions on the following themes:

- Climate Change adaptation, mitigation, and sustainable development, on 10 December 2003,
- Technology, including technology use and development and transfer of technologies, on 11 December 2003, and
- Assessment of progress at the national, regional, and international levels to fulfill the promise and objectives enshrined in the Climate Change agreements, including scientific policy and financial aspects, on 11 December 2003.

**Some Interesting Conclusions in the Round Table**

**Round Table I: Adaptation, Mitigation and Sustainable Development**

- Climate Change remains the most important global challenge for humanity.
- Adverse effects of climate change are a reality in all parts of the world.
- Urgent and coordinated action is needed by all nations taking into account their special circumstances and common but differentiated responsibilities.
- The implementation of mitigation and adaptation measures in the context of national policies for sustainable development involves the realization of synergy and complementarity between economic growth, poverty alleviation, and environmental protection.
- The importance of the clean development mechanism as an instrument for capacity building was clearly brought out.
- A coherent mitigation strategy over time would require measures to improve energy efficiency, application of renewable energy technologies, and development of new technologies for the next decade.
- Importance of capacity of local communities to cope with adverse effects of climate change.
- Scarcity of resources in developing countries is placing severe restrictions/limitations on the implementation of adaptation and mitigation measures.
- Developing countries need more funding from developed countries to develop capacity and incentives to successfully implement the Convention and its Protocol.
- Special Climate Change Fund (SCCF) must be operational at the earliest with priority for Adaptation.
Round Table II: Technology, Technology Development, and Technology Transfer

- The Round Table highlighted the need for sustainable economic growth to alleviate poverty and promote social development.
- Developed countries were asked to provide precise information on the technologies being transferred to developing countries to build an inventory of technologies and the need for focus on areas such as agriculture, water, coastal zones, and public health.
- Technology transfer, development and cooperation cannot be left only to the dynamics of the private sector.
- Expert Group on TT (EGTT) needs to be actively involved in analysis, success and failures in TT in order to replicate success stories.

Round Table III: Fulfilling the Promise and Objectives Enshrined in the Climate Change Agreements

- Much more needs to be done in order to stabilize atmospheric concentrations of GHGs at a level that would prevent dangerous anthropogenic interference with the climate system.
- We (all nations) need to develop a road map to achieve this.
- Policies and measures to decouple economic growth and growth in emissions in addition to achieving social and environmental benefits.
- More financial assistance is required by developing countries to support their efforts to address climate change.
- There is still a huge gap between what is needed and what is available, particularly in the areas of adaptation.

National Communication from Parties: Some Highlights

Analysis of the national communications from Annex I Parties showed the aggregate GHG emissions of the Annex I Parties in 2000 were below their 1990 levels largely because of the decrease in emissions from countries with economies in transition. Further, the analysis showed that in the absence of additional measures, the aggregate emissions from these countries (including emissions from countries with economies in transition) are expected to increase in the period 2000-10.

Forests and Clean Development Mechanism (CDM)

An important decision taken in COP9 was to include carbon sequestration through afforestation and reforestation as CDM project activity and non-Annex I Parties may host such a CDM project if it has been selected and reported to the CDM Executive Board. Such small scale project activities are those that are expected to result in net GHG removals by sink of less than 8 Kt of CO₂ per year and are developed and implemented by low-income communities and individuals as determined by host Parties and excess removals will not be eligible for the issue of tCER (temporary
CER). Such tCERs expire at the end of the commitment period following the one during which it was issued.

COP9 also decided that SBSTA will prepare a draft on simplified modality and procedures for small scale afforestation and reforestation project activity for consideration of COP10 for the first commitment period of the Protocol (2008-12). Project boundary geographically delineates the afforestation or reforestation project activity under control of the project participants; it may contain more than one discrete areas of land. For such CDM projects, baseline net GHG removals by sinks is the sum of the verifiable changes in carbon stock in the carbon pool (above ground biomass, below ground biomass, litter, etc.) within the project boundary that would have occurred in the absence of project activity. In such CDM project activity, long term CER (lCER) is issued which expires at the end of the crediting period of the afforestation or reforestation project activity for which it was issued.

10.12 Recent Developments and India’s position in Global Negotiation on Climate Change

India is one of the major developing nations which has taken very pro-active stands in the process of international negotiation on climate change. India has also ratified the Kyoto Protocol and intends to participate in the market mechanism like Clean Development Mechanism (CDM). The various stakeholders, like the project developers, the financial institutions, and the ministries (MoEF, MNES, etc.) are already putting the system in place for effective participation.

Prior to the recently concluded COP12 at Nairobi, the understanding of the global community was that India would accept no substantial review under Article 9 until after the Article 3.9 negotiations were completed. Moreover, there were no linkages between the various negotiating tracks, and no discussion of any form of commitments for India beyond its current involvement either, under the Kyoto Protocol and the Convention (namely the Clean Development Mechanism) in the post-2012 period. The per capita emissions and the expected trajectory of its emissions would still keep India way below the world average for per capita emission till much beyond the second commitment period.

There are some indications that India’s positions on key issues in the post-2012 negotiations have moved forward during the Nairobi COP. The bi-lateral brainstorming session held under Chatham House rules with the Indian negotiators was a very satisfactory meeting. In general, the option of undertaking domestic Sustainable Development Policies and Measures (SDPAMs) instead of other options like voluntary commitments, etc. in the next commitment period by India was looked upon favorably. The issue of graduation of countries to Annex B from within the Non-Annex 1 countries was considered and some of the criteria that could be considered for such an action could be per capita GDP and per capita emissions.

But whatever the subsequent positions of the Indian government, there appears to be a new openness to meaningful dialogue as a result of recent developments, as well as an increasing degree of interest on the part of other government departments in the issue of climate change, and especially for the Ministry of Environment and Forests (the
nodal agency in India), which has assumed a more proactive role in the domestic arena on this issue.

There is clear articulation from within larger developing countries including India that to meet development needs they will have no choice but to grow responsibly. The rising fuel prices, need for energy supply security, and the threat from global warming together reinforce this need. ‘The “fuelish” path of growth is not for us!’, as was stated by an Indian negotiator.

At Nairobi, Germanwatch and CAN-Europe released the 2007 Climate Change Performance Index report, which compared the climate protection efforts of 56 industrialized and rapidly industrializing countries that together make up more than 90% of global carbon dioxide emissions. Out of these, the Top 10 positions have three Non-Annex 1 countries Argentina, Brazil, and India. What it essentially indicates is that the opportunity to engage with India in ensuring that it has a benign growth path exists.

The concerns that could potentially prevent a much deeper and wider involvement by India in future negotiations will be:

- A Lack of inspirational leadership both from within the European Union and other Annex 1 countries on the issue of deeper commitments in the second commitment period.
- Unclear signals for the continuity and deepening of the carbon markets and also newer avenues for engagement for developing countries beyond the first commitment period.
- Recognition of the urgent need for an assessment of the funds required for Adaptation needs of the poorer and developing states and a positive approach towards exploring options for meeting these costs.

Achieving this will require a clear and meaningful engagement from the Annex 1 countries on several fronts, namely, technology transfer, FDI inflows, bilateral agreements, easier availability of best available technology, and support in R&D projects. Further, capacity building is critical in varying degrees within the South Asian countries to be able to absorb flows of this nature and to be able to undertake activities related to both the adaptation and mitigation fronts.

There is a strong need for a political decision in the developed countries which will be a key driver. For example, the letter on the need for stronger recognition of the threat of global warming and subsequent impacts of climate change, released at the same time as the COPMOP2 session by several US Senators was a positive push in this direction.
10.13 Conclusion

Rapid economic growth and development is the prime agenda for all the developing countries to address poverty eradication. Signals of climate change are already becoming visible and may pose a threat to our development until and unless developing countries gear up now and unite to put forward their voice to the world about their needs to mitigate as well as to adapt to minimize the adverse effects of climate change.
XI

Trade and Environment

'The need to ensure that trade and environment policies are mutually supportive is more pressing today than ever before. However, successful integration of these policies can only be achieved through a constructive dialogue based on far broader awareness and understanding of the complex inter-linkages between trade and our environment.'\(^\text{359}\)

Dr. Klaus Topfer
Executive Director, UNEP

11.1 Introduction

Since the 1972 Stockholm conference on Human Environment, efforts have been made to investigate the link between international trade and environment. The attention increased considerably in the 1990s. In the last decade or so the debate on trade liberalization and its impact on environment has intensified in different fora. The linkages between trade and environmental measures have been a matter of concern for the developing countries especially in the context of the World Trade Organization (WTO). Moreover, mutually supportive trade and environment policies are essential to achieve sustainable development as defined and discussed in Agenda 21. This would include the focus on differentiated responsibility for developing countries and recognition that international environmental obligation undertaken by the developing countries are subject to the provision of adequate multilateral assistance.\(^\text{360}\)

The Uruguay Round (UR) led to the establishment of WTO in 1995. It had also coincided with the emergence of a series of multilateral agreements designed to address global environmental problems. In this context, developed countries introduced stringent environmental standards and other measures on which many have adversely affected trade prospects of developing countries. Prior to this, the influential groups in developed countries believed that it was highly unfair and ecologically inconsistent to trade with countries having very low environmental standards.\(^\text{361}\) On the other hand, developing countries argue that countries at different stages of the development usually possess different levels of environmental standards and most of the developed countries had very low standards when they had been at similar stages of development as many of the developing countries are today. Many developing countries fear that since they have financial and technical constraints, their ability to comply with such standards is limited. Moreover, the migration of polluting industries


to their territories would maximize local environmental problems including health hazards to their citizens.362

Keeping all these issues and developing countries’ concerns in focus, this chapter is alienated principally in seven sections. Following this introduction, the next section gives a brief account of intersection of trade and environment policy debate. The third and fourth sections describe, in brief, the common international principles and environmental management through Multilateral Environmental Agreements (MEAs) and describe some of the relevant provisions of trade and environment in WTO/GATT. The fifth section is devoted to conceptual and legal issues and two specific items which concern developing countries the most: (i) Products and PPM standards and (ii) Eco-labeling.

The sixth and seventh sections of the chapter are meant to highlight the impact of enhancing environmental standards from the developing countries’ perspective with special reference to some case studies on the environmentally sensitive sectors in India.

11.2 Trade and Environmental Regulations: The Policy Debate

The principle of free trade suggests that unhindered commerce will have welfare raising effects at both national and international levels. This will enhance the capacity of countries to tackle the potential environmental problems that may arise due to increased trade. This supports the view that trade and environment are complementary and theoretically there is no inherent conflict between trade and environment.363 In this context, it is important to notice environmental determinants of trade; environmental effects of trade and effects of environmental policy on trade. However, the environmental effect associated with trade was one strong argument against free trade. Trade liberalization leads to an increase in the scale of economic activities that in turn put tremendous pressure on the limited resources leading to pollution and environment degradation.364 On the other hand, there will be more investment on environment-friendly technologies, particularly in developed countries and this could be argued as a positive effect on environment. Still, many developing countries are lacking appropriate environment friendly technologies due to financial and technical constraints.365 This causes a negative effect on environment. Liberalization may benefit countries having low environmental standards in certain

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specific sectors. But, such economic gains will not lead to sustainable development since such countries have to bear substantial environmental damages in the long run.

The linkages between trade and environment are also very significant especially from the developing perspective as trade and environment policies can affect each other in terms of (i) product effects, related to the commercial exchange of goods and services; (ii) scale effects, related to the expansion of markets and economic activity; and (iii) structural effects, related to the distribution and intensity of production and consumption. These effects will be negative unless suitable policies are adopted. The efforts to integrate trade and environmental policies have created tensions between trading nations, since there is a widespread fear of ‘green protectionism’ hidden behind environment-related trade measures.\(^\text{366}\)

11.3 **Common International Customary Principles and Environmental Management**

The structure of international environmental regimes must reflect the structure of the problem being addressed. A regime that protects biodiversity needs to use different mechanisms, and have different institutional arrangements than one that protects the oceans from oil pollution, or one that manages international trade in endangered species. Yet, most environmental regimes have come to respect several existing customary international environmental principles and to articulate them through their institutions. Many of these principles were laid out in the Rio Declaration on Environment and Development.\(^\text{367}\) Some of these well established key principles of customary international law are mentioned in brief here below:

(a) **Absolute Obligation of Prevention**

It is generally expensive, difficult, or impossible to repair environmental damage once it has occurred, so it is better to avoid such damage in the first place. This apparently self-evident fact has significant practical implications, since it requires action before there is any damage; that is, it requires action based on the possibility of damage.

(b) **Precautionary Principle**

The rule that states must not cause or permit serious or significant harm to other states is now necessary primarily an obligation of diligent prevention and control. In this sense, it can be said that international law already adopts a ‘precautionary approach’.\(^\text{368}\) As articulated in the Rio Declaration, the precautionary principle states:

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‘Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation’.

Moreover, calculating the possibility of damage is a difficult task, because our knowledge of ecological and environmental processes is frequently rudimentary at best, and is based on an evolving foundation of scientific research. unfortunately, science does not always provide clear guidance on the measures that may be needed, so we are often faced with the task of making policy in the face of uncertainty.

The precautionary principle has recently been cited in several international legal instruments. Once an obligation in international law, it would influence the regime of state responsibility by representing a primary obligation of states that, in the case of its infringement, could lead to the payment of damages.

Nevertheless, it is well established now that the precautionary principle is part of the body of international environmental law. In this way, where the precautionary principle is part of a Treaty such as UNFCCC, it is binding on the parties that sign and ratify the treaty. It is in writing in MEAs, but in order to judge whether the principle is relevant to another international agreement, and especially on trade and environment inter-face, one must look at the WTO agreements with other sources of international law.

(c) **Common but Differentiated Responsibility**

Many environmental regimes require the participation of numerous countries, both rich and poor. But not all countries carry an equal responsibility for past environmental damage, and different countries have different resources at their disposal. So while the parties to environmental regimes all acknowledge common responsibility for the environment, they also work to develop differentiated responsibilities for addressing environmental problems.\(^{369}\)

A common but differentiated responsibility is an important principle in international environmental law to conserve, protect, and restore the health and integrity of the Earth’s ecosystem for developed and developing countries. With regard to the word ‘differentiated’, Principle 7 of the Rio Declaration instructs developed countries to take the lead in the pursuit of sustainable development, in view of the pressures their societies place on the global environment and of the technologies and financial resources they command. This principle is, for example, incorporated in the Climate Change Convention where developed countries have been committed to take the lead in addressing climate change.\(^{370}\)


These differentiated responsibilities between the developed and developing countries have far-reaching consequences, especially in the area of trade and environment. It means nothing less than that the developed nations attribute a relatively larger part of the so-called global ‘environmental utilization space’ in favour of the less developed nations. Thus, a genuine reconciliation of trade and environment implies that the notion of differentiated responsibilities is taken seriously by both the developing and developed countries. The latter should then afford to the less developed countries relatively lower environmental standards and longer adjustment periods to comply with international environmental standards, without curtailing their access to northern markets. There are some examples like the Montreal Protocol, we have already witnessed in this regard.

(d) Polluter-Pays Principle

The polluter-pays principle was first propounded by the OECD in 1972. At that time it simply said that polluters should have to bear the full cost of meeting environmental regulations and standards. No subsidies should be given to help in this process. It has since evolved to become a broader principle of cost internalization—polluters should pay the full cost of the environmental damage that their activities produce. Of course, much of that cost will be passed along to consumers in the price of the goods involved, but this then discourages consumption of more pollution-intensive goods.\(^{371}\)

In customary international environmental law these principles are put into practice through a variety of means, and of great relevance to the environment-trade interface. There are several other related principles, and many are incorporated in one way or other in a number of guidelines. One of the arguments in favour of incorporating these principles in an international trade agreement is that it will lead to the contracting parties abiding by them through implementation and enforcement of high standards, without running in a race to the bottom.

At the international level all these above mentioned principles are put into practice through a variety of means, including the following:

- Species and habitat conservation measures
- Environmental taxes and charges
- Negotiated voluntary agreements (like MEAs, etc.)
- Restrictions on certain goods and practices

The fundamental of these measures, and its relevance to the environment-trade interface, are environmental standards, particularly those imposed on traded goods. There are different types of environmental standards in a product life-cycle from extracting raw materials through manufacture, transport, trade, sale, use, and disposal. They can be grouped under five broad headings.

Environmental quality standards seek to describe the state of the environment. Environmental standards can be concentrations of certain substances in the air, water, or soil. They can be population standards requiring the protection of certain species that have become threatened or endangered.

Emission standards identify the amount of certain substances a facility may emit. Emission standards can have a significant impact on production processes that are regulated, since it is generally better to avoid producing pollutants than to capture them at the end of the production process, creating a waste stream that must in turn be managed.

Product standards specify certain characteristics that are deemed necessary to avoid environmental harm from the use or disposal of products. For example, the chlorofluorocarbons have been banned from use in aerosols because they destroy the stratospheric ozone layer. Product standards are frequently used to protect human health.

Process and Production Methods (PPMs) specify how products are to be produced and what kinds of impact they may have on the environment. Standards based on process and production methods take on significance in international trade that they completely lack at the domestic level. Applied to traded goods, they amount to the regulating country setting standards on economic activities in the country of production.  

Performance Standards require certain actions, such as environmental assessment, which are expected to improve environmental management.

The overall effect of all these standards is to force producers, traders, and consumers to consider the environmental impact of the economic decisions they take. It is possible to achieve the same goal by using market-based instruments such as taxes, charges, tradable permits, or subsidies. It is important to recognize, however, that all of these measures, both regulatory and market-based, result in structural economic change as environmentally desirable activities are favoured and environmentally undesirable ones disadvantaged.  

This large number and variety of standards usually used in combination rather than alone, create an extensive management structure in which each standard complements the other, and few if any are effective just by themselves. They all have economic implications, creating potential problems for the trading system, which has thus far dealt mostly with product standards.

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372 See Section V of this Chapter for detailed discussion on the product PPMs.
11.4 GATT/WTO Basic Provisions on Environment

There was no agreement on the environment until the establishment of WTO (1995) in GATT. The environment had not been considered as an agenda to be discussed in any of the GATT processes, including the Uruguay Round. However, certain provisions of GATT/WTO have environmental implications. Many developed countries, particularly the European Union, are keen to modify the provisions of WTO to accommodate environment concerns. However, this is severely opposed by developing countries.

The environment issues for the first time came up in 1971 when a request was received from the UN Secretary General to provide inputs for the 1972 Stockholm Conference. A background paper was produced and a working group on environmental measures and international trade had been constituted. Interestingly, the Working Group had no work plan and was never convened until 1991. This 20-year gap is significant because the members of GATT kept environment away from their major deliberations. But this changed when a number of trade and environment cases, particularly the tuna-dolphin case between the US and Mexico, were brought into GATT. In addition to this, there was an increased awareness of the consequences of environment degradation in the context of Rio Earth Summit. The Rio declarations influenced the remaining period of UR considerably and this is well reflected in the Final Act of UR signed at the Marrakesh Ministerial Meeting in 1994. The establishment of WTO under the Marrakesh Agreement and a decision to set up a committee on Trade and Environment (CTE) within the WTO was the result of such compulsion.

The preamble to the Agreement establishing the WTO, states that the members have recognized that ‘relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world’s resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development’.

Thus, the concept of sustainable development has now emerged as a principle to guide the interpretation of the WTO Agreements. In the 1998 Appellate Body ruling in the so-called shrimp-turtle case, it was made clear that the interpretation of WTO law should reflect the Uruguay Round’s deliberate inclusion of the language and concept of sustainable development. This ruling may have moved the WTO towards requiring the legal provisions of its agreements to be interpreted and applied in light of the principles and legal standards of sustainable development. How the WTO will use

sustainable development as a principle of interpretation in the future remains, of course, to be seen. But it is clear that elevating ‘sustainable development’ to this role would be a major step in making trade policy and sustainable development objectives mutually supporting. 376

The Committee on Trade and Environment (CTE) under the WTO as a result of its work over the past few years has succeeded in bringing environment and sustainable development issues into the mainstream of WTO work. 377 Article XX of GATT 1994, which is one of the agreements in the WTO framework, enables WTO members to take measures ‘necessary to protect human, animal, or plant life or health [Article XX (b)]; and measures ‘relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption’ [Article XX (g)]. The only condition prescribed is that such measures should not lead to arbitrary or unjustifiable discrimination between countries where similar conditions prevail and should not cause disguised restriction on international trade. 378 Some other agreements in the WTO framework also containing provisions on environment are discussed below.

The Agreement on Technical Barriers to Trade (TBT Agreement) 379

The TBT Agreement gives each country the right to set product and industrial regulation requirements (technical regulations) on the exporting countries, for the protection of public health or safety, animal or plant life, health or environment, national security requirements, and for the prevention of deceptive practices. These technical standards are subject to the requirements of the most favoured nation (MFN) and national treatments and should be non-discriminatory, non-arbitrary, and least trade-restrictive. In cases where international standards exist, members shall use them as a basis of their technical regulation unless such international standards are ineffective to fulfill the legitimate objective, due to some reasons such as climatic or geographical factors or technological problems. 381

The Agreement on Sanitary and Phytosanitary Measures (SPS Agreement)

Subject to such requirements as risk assessment, non-discrimination, and transparency, the SPS Agreement permits governments to set and maintain desirable levels of health and hygiene standards to ensure that food is free from risks arising out of additives, contaminants, toxins or disease-causing organisms in order to prevent the

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378 Ibid., at p. 106.
379 The detailed legal text of all these agreements are available at WTO website: http://wto.org/wto/legal/legal.htm.
380 These include measures for pollution abatement, waste management, energy conservation; standards and labeling (including eco-labels); handling requirements; measures for the preservation of natural resources, and measures taken for the implementation of multilateral environmental agreements.
spread of plant, animal or other disease-causing organisms and to prevent or control pests. The agreement encourages members to adapt their SPS measures to the areas that supply their imports. Like the TBT Agreement, governments are expected to harmonize their SPS requirements, i.e. to base them on international standards set by international organizations, such as FAO/WHO.\(^{382}\) Governments are also permitted to set more stringent national standards in case the relevant international norms do not suit their needs. Such SPS measures must be based on a scientific justification or on an assessment of the risks to human, animal or plant life or health. The Agreement in the absence of scientific evidence recognizes the right of governments to take precautionary provisional measures while seeking information.

As far as international standards (which found mention in both TBT and SPS Agreements) are concerned, developing countries argue that environmental standards differ from country to country and hence the solution lies in mutual recognition of only product-related standards rather than harmonization of environmental standards. Although the Agreements do not compulsorily mandate the use of international standards, in practice these standards are becoming a *de facto* requirement in international trade.

**The General Agreement on Trade in Services (GATS)**

Article 14 of GATS contains general exceptions provisions similar to the ones that are given under GATT Article XX. The chapeau of that provision is basically identical to that of GATT Article XX and environmental concerns are addressed in paragraph (b) which is similar to paragraph (b) of Article XX. Under this, policies affecting trade in services for protecting human, animal, or plant life or health are exempt from normal GATS discipline.

The existing WTO provisions and Agreements allow countries sufficient flexibility to raise their domestic environmental standards and impose certain trade restrictions in cases where its own environment is adversely affected provided it does not lead to discrimination and trade barriers. It does not cover the process-related requirements in the exporting countries unless it contains any environmentally harmful effect within the product itself that is harmful to the importing country. This aspect has been sought to be included by most developed countries (along with the environmental lobby), particularly the EU through eco-labelling, etc., but at the moment it is not part of the existing WTO provisions. Some process-related trade requirements and the use of unilateral trade measures in cases of global commons/global shared resources are however getting legitimized through the dispute settlement body of the WTO and has transformed the debate on mainstreaming environment into the WTO. This has been discussed later, especially in the context of the environmental standards and its impact on the developing countries export in the following section.

**Conceptual and Legal Issues in Trade and Environment Linkages**

The key issues in the discussion over how best to reconcile the objectives of trade and environmental linkages turn around the inter-relationship between the WTO on the one hand, and MEAs containing trade provisions on the other. This Section

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summarizes the conceptual and legal issues at stake in the trade and environment linkages.

11.5 Trade Provisions in Multilateral Environmental Agreements (MEAs)

Since the UN Stockholm Conference on Human Environment in 1972, the world community has placed major emphasis on MEAs to deal with international environmental problems. MEAs are defined as those agreements with more than two parties, i.e. multilateral agreements. The structure of these MEAs draws on customary international law and a range of practices and principles that have become widely accepted.\(^{383}\)

In the last couple of decades, more than 200 MEAs have been concluded, of which at least 20 contain trade provisions. Very few MEAs actually regulate trade or contain trade provisions. Of the 20 or so that do, even fewer are of notable significance to the environment-trade relationship.\(^{384}\)

Among these most important MEAs, those that are particularly most relevant to trade regimes include: Montreal Protocol on Substances that Deplete the Stratospheric Ozone Layer (1987), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal (1992). Various other MEAs such as Climate Change Convention and Kyoto are currently under discussion for further negotiation and will form an important part of the international agenda and may well contain trade measures.

The trade provisions provided in these MEAs have four major objectives:

- To restrict markets for environmentally hazardous products or goods produced unsustainably;
- To increase the coverage of the agreement’s provisions by encouraging governments to join and/or comply with the MEA;
- To prevent free-riding (where non-participants enjoy the advantages of the MEA without incurring its costs) by encouraging governments to join and/or comply with the MEA; and
- To ensure the MEAs’ effectiveness by preventing leakage—the situation where non-participants increase their emissions, or other unsustainable behavior, as a result of the control measures taken by signatories.

The important question in trade and environment-interface are why do MEAs incorporate trade measures? Trade experts\(^{385}\) argue that this will vary according to the circumstances of the agreement. But there are at least four reasons why trade measures are sometimes considered necessary in MEAs.\(^{386}\)

\(^{383}\) Supra, note 359 at p. 12.


\(^{386}\) Supra, note 359 at p. 16.
1. **Regulatory frameworks.** Participants in a market need to be confident that all others face comparable regulatory constraints—and that these are being implemented properly.

2. **Containment.** Occasionally, the practical requirements of administering environmental market disciplines impose a need to maintain certain borders. For example, hazardous wastes or toxic substances, both of which become increasingly difficult to control the further they are transported.

3. **Controlling markets.** Some products may have high demand but meeting that demand may destroy the resources on which they are based. Under these circumstances an international structure of market control is required. This is the logic behind CITES and plays a significant role in the CBD.

4. **Ensuring compliance.** The threat of imposing limits on trade with non-parties can be an effective tool for securing greater compliance with MEAs than might otherwise be so. This was done effectively in the Montreal Protocol.

In a brief and comprehensive review of the leading MEAs undertaken in a report by the OECD,\(^387\) questions were also raised about the effectiveness of the trade measures in the MEAs. The conclusions of the report included the following:

- the trade and environmental impact of trade measures should be assessed before being included in MEAs;
- trade measures in existing MEAs should be adjusted and made more flexible where appropriate; and
- there should be coordination among trade and environment officials when negotiating MEAs.

However, international experts in the debate on trade and environment in UNCTAD and the OECD\(^388\) have respectively assessed the trade provisions as ineffective in protecting the environment and requiring amendment. According to them, trade sanctions in several multilateral environment agreements are not the key to improving the environment in developing countries. Rather, other positive measures in the agreements that aim to improve national standards were crucial to raising environmental standards in developing countries.

### 11.6 Principal Concerns Regarding Mainstreaming Environment into the WTO

The Doha Development Agenda (DDA) has further intensified the trade and environment debate, and it specifically calls for examination of the relationship...

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between the existing WTO rules and specific trade obligations set out in the MEAs. Still, the debate on the linkage between trade and environment in the WTO context is comprehensive and is currently dominated by some major issues, such as market access, competitiveness, and legitimacy of unilateral action for achieving environmental objectives and finally, the compatibility of trade provisions in the multilateral environmental agreements (MEAs) with the WTO provisions on free trade rules. Some of these issues are highlighted in brief below:

**Market Access, Competitiveness, and Unilateralism**

In the trade and environment interface, the developing countries’ main concern is that of market access. They regard unilateral trade measures for environmental purposes as another form of conditionality and as a means to raise protective barriers and restrict their market access. According to them, unilateral action for achieving environmental objectives contains an inherent danger of protectionism as environment can be a convenient alibi in the hands of domestic industry (faced with higher costs on account of environmental concerns) to impose import restrictions. They fear that legitimizing unilateral action for environmental purposes in international trade will be detrimental to the market access and may also act as a non-tariff barrier.

The developing countries also fear that environmental pretexts may be used to impose certain environmental standards and force them to raise their domestic environmental standards, which may not be possible for them due to various socio-economic reasons and in effect amount to exporting/imposing environmental values.

The developed countries, on the other hand, feel that the countries with lower environmental standards have a competitive advantage since due to lax environment standards, production costs are lower in those countries and hence, exports are subsidized at the cost of environment. It is claimed that competitive concerns (such as high pollution abatement costs, etc.) may also act as a deterrent for pursuing environmental objectives. Besides, due to absence or low environmental costs in

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389 Beatrice C., and Mathias W., (1997), ‘Participation and Priorities: An Assessment of Developing Countries Concerns in the Trade/Environment Interface’, *RECIEL*, Vol. 6, Issue 2, at p. 158. Other issues of concern are the relationship between the multilateral trading system and environmental policies with trade impacts (such as charges and taxes for environmental purposes; and other requirements relating to products, including standards and technical regulations, packaging, labeling, and recycling); transparency of trade measures used for environmental purposes and environmental measures with significant trade effects; the issue of exports of domestically prohibited goods; relationship between TRIPS Agreement and trade in services. Trade restrictions on account of precautionary principle also are becoming a subject of intense debate.

390 UNCTAD (1996) *Asian and Pacific Developing Economies and the First WTO Ministerial Conference: Issues of Concern* (New York: United Nations) at pp. 193–4. During my research on the topic, I have found that emerging environmental requirements in developed countries do have some effect on market access and competitiveness. A number of product requirements such as the use of specific chemicals (dyes) and eco-labeling apply to these sectors which serve as a non-tariff barrier and also involve additional costs. The small and medium enterprises (SMEs) face more formidable compliance cost. Also, see CTE (2000) ‘The Study of the Effects of Environmental Measures on Market Access: Communication from India’, WT/CTE/W/177 can be obtained from the WTO website: http://www.wto.org.


developing countries, polluting industries may actually migrate to developing countries. 393

**Environmental Measures Vs. Protectionism**

As far as specific member countries are concerned, the opinion on mainstreaming environment into the WTO is a divided one. India and many other developing countries do not want any change or expansion in the WTO mandate on environment. Speaking at the Doha Ministerial in November 2001, the Commerce Minister of India stated ‘on environment we are strongly opposed to the use of environmental measures for protectionist purposes and to imposition of unilateral trade restrictive measures. We are convinced that the existing WTO rules are adequate to deal with all legitimate environmental concerns. We should firmly resist negotiations in this area which are not desirable, now or later. We consider them as Trojan horses of protectionism.’ 394

Echoing a similar viewpoint, Brazil noted that ‘legitimate concerns, as also are those related to measures to protect health, the environment, or national security, cannot be allowed to serve as pretexts for the imposition of disguised, discriminatory, or arbitrary restrictions on trade.’ 395 Similarly, South Africa, while agreeing that ‘there are linkages between trade, development, and environment’ feels that ‘the linkages are complex, the implications of negotiating rules in this area are not fully understood, and, in many ways, the issues that arise go beyond the WTO’s competence. Hence, we require time for deeper reflection and dialogue on these issues and their implication for the trading system. . . An unwise insertion of these matters into the work programme will be counterproductive.’ 396 Hong Kong, likewise, while supporting the vital objectives of sustainable development, points out that progress towards meeting this objective must not be undermined by covert protectionism. 397

Similar to the developing countries’ contention, the US believes that no changes are required in the existing WTO provisions as current WTO rules permit member countries to establish and pursue environmental protection and give countries the right to establish the levels of environmental protection that they deem appropriate. On the eve of Seattle Ministerial, the US declared, ‘we must continue to recognize the right of Members to take science-based measures to achieve those levels of health, safety, and environmental protection that they deem appropriate—even when such levels of protection are higher than those provided by international standards.’ 398 Unlike the developing countries, however, the US propagates legitimacy of unilateral action for environmental purposes. After the latest favourable ruling in its favour in the shrimp-turtle case, the US Trade Representative, Robert B. Zoellick, declared that the

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393 Ibid.
394 WTO Ministerial Conference (2001), Statement by the Honourable Murasoli Maran, Minister of Commerce and Industry, India, WT/MIN(01)/ST/10, (Fourth Session: Doha).
395 WTO Ministerial Conference (2001), Statement by H.E. Mr. Celso Lafer, Minister of Foreign Relations, Brazil, WT/MIN(01)/ST/12, (Fourth Session: Doha).
396 WTO Ministerial Conference (2001), Statement by H.E. Mr. Alexander Erwin, MP, Minister of Trade and Industry, South Africa, WT/MIN(01)/ST/7, (Fourth Session: Doha).
decision shows that ‘the WTO as an institution recognizes the legitimate environmental concerns of its Members’.\textsuperscript{399} Given the fact that the US has been able to take unilateral action within the existing rules, it does not see any need for change, unlike developing countries that perceive any change as detrimental to their interest.

The EU on the other hand has the most ambitious policy on mainstreaming environment into the WTO. Its key agenda includes: clarifying the relationship between WTO trade rules and trade measures in the environmental agreements to give due recognition to trade-related environment measures agreed multilaterally and outlining a clear definition of MEAs. It also calls for greater clarity regarding the legal uses of precaution clause provided for in the SPS Agreement and to reinforce and enhance the legitimacy of the ‘eco-labeling growth industry’.\textsuperscript{400}

According to France, an important EU member, ‘the WTO must also be an instrument at the service of sustainable development’.\textsuperscript{401} Similarly, Germany called for a broad agenda to include new issues such as trade and environment in order to ‘strengthen the WTO and to adapt the world trading system to new challenges’.\textsuperscript{402} Canada too concurs with the broad objectives of the EU policies and supports strengthening of the WTO provisions on eco-labeling, certification, and standards issues to take into account the increasing use of voluntary international standards based on life cycle considerations.\textsuperscript{403}

11.7 WTO-MEA Relationship

One of the important and contentious issues in the debate on mainstreaming environment into the WTO is the relationship between trade measures in the MEAs and the WTO rules. The debate is over the right of a WTO Member and right of the Member of an MEA in question. There is no contradiction in cases where a country that has signed an MEA with trade provisions is also a WTO Member. Problems may occur where environmental agreements provide for trade sanctions against non-parties. The questions raised in this context are: does such trade prohibition amount to violation of WTO free trade rules? Can such a country take a member country of an MEA to the dispute settlement mechanism of the WTO on grounds of violating its rights under the WTO regime? For example, the Montreal Protocol prohibits trade in controlled substances with non-parties and hence, can theoretically be challenged on the grounds of being discriminatory by a WTO member country which is not a party

\textsuperscript{403} Canadian Department of Foreign Affairs and International Trade, http://www.dfait-maeci.gc.ca/
to the Protocol. Although, none of these MEAs have been challenged in the WTO, there has been concern on the potential of conflict with the WTO principles.  

As far as relationship between MEAs with trade provisions and WTO rules are concerned, proposals put forth by member countries can be classified into four broad approaches. These range from maintaining the *status quo* to clarification of the WTO rules on MEAs to case by case waiver and amending Article XX.

### 11.8 Environmental Standards and Process and Production Methods (PPMs)

In the context of trade and environment relationship, process and production methods (PPMs) have become one of the most debated sets of words in trade law history. In my view, this debate lies at the heart of the trade and environment relationship. A process and production method is the way in which a product is made. Many products go through a number of stages, and therefore a number of PPMs, before they are ready for market. For example, making paper requires trees to be grown and harvested, the wood to be processed, the pulp often to be bleached, and so on. The various processes will have different sorts of environmental impacts—on biodiversity, on forest-based streams and wildlife, on human health from chemical pollution of waterways, or in terms of air pollution and energy use.

Traditionally, attention has been focused on the product standards issues, but now PPM standards are being addressed increasingly. From the environmental viewpoint both product standards as well as PPM standards are important because many a time, environmental problems are associated with the production process than with the product itself.

#### Product and Non-Product Related PPMs

An important technical distinction is the difference between a product-related PPM and a non-product related PPM. The distinction between product-related PPMs and non-product-related PPMs may seem critical, but it is important to understand, since the two are treated entirely differently under trade law. The distinction rests on how the PPM affects the final product. Consider two products—say two rolls of newsprint. One is produced using 50 per cent recycled content, and the other is produced from 100 per cent virgin fibre. These are two very different PPMs.

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404 Brack D., (1997), ‘Reconciling the GATT and MEAs with Trade Provisions: The Latest Debate’, *RECIEL*, Vol. 6, Issue 2, at pp 112–20. Factually speaking, some of the MEAs deal with transboundary and global health and environmental problems caused by international trade and other economic activities. MEAs also address the environmental impact of cross-border economic activities, such as trade and investment. For example, the Basel Convention on Transboundary Movement of Hazardous Wastes seeks to prevent damage to health and environment caused by transboundary shipments of hazardous waste. The Convention on Prior Informed Consent for Trade in Dangerous Chemicals aims at mitigating the dangers posed by international trade in chemicals. Some of the other important MEAs with trade provisions are the Montreal Protocol on Substances that Deplete the Ozone Layer, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Kyoto Protocol on Climate Change, and Cartagena Protocol on Biosafety, and some of them have already been discussed above.

But the key question is whether the final product has different qualities that would cause it to be treated differently in its use, handling, or disposal. If the recycled newsprint performs in every sense the same as the virgin-content product, then the recycled-content process is a non-product related PPM, since it has a negligible impact on the final product. Take, for another example, two apples—one produced organically and one produced with the use of pesticides, some of which are still left on the product as a residue. Again we have two very different PPMs. But in this case, the difference will cause us to have to handle and use (but probably not dispose of) the products differently. Some people might want to peel the chemically treated apple, and border authorities will inspect the levels of pesticide residue to see that they meet health regulations. The organic apple may be subject to tighter border checks aimed at preventing the spread of invasive pests. The different PPMs in this case make a difference to the final product, and they would thus be treated as product-related PPMs.

**PPMs as Non-Tariff Trade Barriers**

Many developing countries are worried about the possibility of PPMs becoming non-tariff trade barriers. Exporters of developing countries are apprehensive that their products may be denied access or they may have to incur high adjustment costs in order to maintain access to overseas markets. Allowing PPM based trade practices would give many countries greater opportunity to protect their industries unfairly against foreign competition. Under the pretext of environmental concerns, some countries might penalize other countries which do not import certain goods from their domestic industry by enacting new regulations.406

In this regard the US shrimp-turtle case is of great significance for internationally traded products, which like shrimp, might be subject to environmental standards.407 The WTO Appellate Body report in the case represents a significant advance in the WTO’s examination of the interaction between WTO trade rules and domestic trade measures taken on environmental grounds. The implications of the case studies have been briefly discussed in Section VII of this Chapter.

Although trade law does not question the right of countries to discriminate based on product-related PPMs, there are rules about the process of discrimination, of course—the SPS Agreement, for example, has a preference for international standards when setting restrictions on pesticide residue levels—but the principle of discrimination is accepted. However, WTO law does not allow countries to discriminate among like products, whatever their different environmental impacts. Yet, this prohibition makes little environmental sense.


But there are two major fears from the developing countries’ perspective regarding PPMs.\textsuperscript{408} The first is that the standards thus imposed might be environmentally inappropriate for some foreign competitors. For example, a country where water scarcity is a major issue might enact laws discriminating against products produced in ways that waste water. But this would force exporters in water-rich countries to follow standards that are not relevant to their local environmental conditions.

The second is a related argument from some developing countries that argue that their social priorities differ from those of developed countries. They may, for example, be more concerned about clean water as an environmental issue than with global warming. Or they may be more concerned about infrastructure, education, and health care than about any environmental issue. If so, the argument goes, it is unfair for developed countries to discriminate against their exports based on environmental issues that are not high on their agendas, forcing them to either adopt rich country environmental priorities or suffer a loss of wealth-creating exports. Many developing countries worry that if the WTO allows PPM-based discrimination on environmental grounds, it will also be forced to allow it on social grounds, such as human rights, labour standards, and so on, increasing the scope of the threat to their exports.

Another part of this argument is that the now-rich countries became wealthy by burning a lot of fossil fuels, cutting down most of their forests, destroying the ozone layer and otherwise cashing in on national and global environmental resources. Now that the wealth they have gained allows them to maintain high environmental standards, it is hypocritical to forbid developing countries to follow the same path. At a minimum, such demands should be accompanied by technical and financial assistance to help bring about environmental improvements, and other forms of capacity building.\textsuperscript{409}

Finally, there is a sovereignty argument\textsuperscript{410} regarding the environmental damage in question being purely local, then it is really the purview of the exporting, not the importing, government. This argument weakens, however, if the environmental damage in question is not purely local—if it involves polluting shared waters or airstreams, depleting populations of species that migrate across borders, or damaging the atmosphere. Here, the need for international cooperation is obvious.

However, being an environmental lawyer, I must support that environmental degradation should be avoided at all stages in the life cycle of a product. For this purpose, environmentally based PPM measures can become helpful provided they are used as a means to set high standards and are supplemented with financial and technical assistance to developing countries. However using PPM measures as trade barriers would never be an effective or appropriate move in dealing with environmental problems.

\begin{itemize}
\item \textsuperscript{408} Ibid.
\item \textsuperscript{409} Supra, note 406.
\end{itemize}
**Eco-Labeling**

Ecolabels tell us about the environmental impacts from producing or using a product. Eco-labeling denotes attaching a label in the product which signifies that the labeled product is environmentally friendly. There are two types of eco-labeling. One is mandatory and the other, voluntary. Mandatory eco-labeling programme require producers to attach an eco-label to products in order to bring the product onto the market. Such an eco-label is only granted if the product fulfils certain environmental standards. Products which are not considered to be environmentally friendly are, therefore, *de jure* excluded from the market.\(^{411}\)

Voluntary eco-labeling programme, however, are not based on a *de jure* exclusion of non-environmentally friendly products from the market, but merely offer producers the possibility of applying for an eco-labeling programme around the globe based on this voluntary concept, because it is a *de facto* exclusion of goods from the market.\(^{412}\) GATT Article XX (b) and (g), Articles 2.2, 5, 7, 8, and 14.1 of the Agreement on Technical Barrier of Trade, Article 2 of the Agreement on Sanitary and Phytosanitary Measures, etc. are relevant in this regard.\(^{413}\)

While the EU under the mandate of Article 130 of the Treaty on the European Economic Community, decided on 23 March 1992, to adopt the eco-label scheme, it created an acute problem in exportable capacity of developing countries. Yet, the gravity of the problem lies in whether the scheme of EU is congenial to the WTO scheme or not.\(^{414}\)

The argument of whether eco-labeling discourages free flow of international trade or not, has not yet been fully endorsed, though, with my limited reading on this issue, it is certain that the developing countries who export their products to the EU and other developed countries certainly face eco-labeling as trade-barriers.\(^{415}\) However, a clear cut decision on the inappropriateness of these voluntary programme with the WTO/GATT system is not possible. Charles Band argues that the voluntary eco-labeling shares the interpretative problems that arise under the WTO/GATT system with regard to all non-tariff trade barriers.\(^{416}\) Therefore, the WTO, considering the interest of developing countries, is furthering its work on eco-labelling through CTE.

### 11.9 Enhancing Impact of Environmental Standards: A Dilemma for Developing Countries

The use of trade measures to enforce environmental standards is viewed with serious alarm by many developing countries. In this brief section, I have analysed the various

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\(^{411}\) Supra, note 359 at p. 47.
\(^{413}\) Ibid.
\(^{415}\) As Germany banned certain textile because of use of Azo (chemical) dyes, it has huge negative impact on the Indian textile industry.
constraints facing by the developing countries in managing problems associated with environmental standards. It is imperative to highlight those concerns that affect the exports of these countries (especially India) related to environmental standards. In this context, problems relating to the implementation of obligation under the TBT and SPS agreement rank high among developing country concerns.

The environmental standards in developed countries are very high and these countries are very keen in effectively implementing such measures. People in these countries do not normally want to lower their standards for any kind of harmonization. On the other hand, these environment standards can be used as a protectionist measure which weakens the principle of liberal trade. Stringent environment standards can adversely affect the market access of others having relatively low environmental standards.\(^\text{417}\)

Another effect is the possible relocation of industries into ‘pollution havens’ where environmental measures are lower or weak.

On the other hand, developing countries are more vulnerable due to the stringent environmental standards and incidence of negative effects of environmental policy on trade. Indeed, there are many difficulties to overcome such negative effects. First, the lack of appropriate environmentally sound technologies (EST) to compete with others in the global market.\(^\text{418}\) Developed countries have committed transfer of ESTs to developing countries, but it has not been fulfilled at the desired level. Another difficulty is the increasing financial constraints to meet the cost of ESTs. Many export oriented sectors in developing countries are dominated by small and medium scale enterprises (SMEs) and they have specific problems to meet the emerging environmental problems related to trade. For instance, they can’t simply afford most of the pollution abatement expenditure. Similarly, many of them are not fully aware of the changing environment requirements.\(^\text{419}\)

Further, the stringent environmental standards put forward by the developed countries are seen as non-tariff barriers by the developing countries against trade with developed countries’ markets. Some developing countries have experienced losses in exports because of difficulties to comply with certain Sanitary and Phyto-Sanitary (SPS) measures in the import markets. Though WTO Agreements on SPS measures and TBT aim to ensure that these standards and regulations do not cause adverse impacts on trade, but in practice, it has actually happened the other way, that is, trade of developing countries has been affected. Enhancing understanding of constraints faced by the developing countries in meeting the standards set by the developed countries is of key importance in the context of SPS and TBT measures.\(^\text{420}\)

Another issue of concern is that the distinction between environmental, health, and quality standards is gradually becoming very blurred. For instance, in the food sector, what may be described as quality standard for food may also fall in the category of

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environmental standards. It is now widely believed that these technical measures impede trade of the developing countries, either implicitly or explicitly. The trade impacts of SPS measures can be grouped into three categories. First, they can prohibit trade by imposing a trade ban on the product or on the inputs used for its production. Second, they can divert trade from one trading partner to another by laying down regulations that discriminate across potential supplies. Third, they can reduce overall trade flows by increasing costs or raising barriers for all potential suppliers. In certain cases, stricter SPS measures are applied to imports than domestic supplies. Hence, the exports from developing countries lose their competitiveness due to the higher costs they face.\(^{421}\)

A number of agricultural products of India are facing SPS related problems. In case of products like milk, the EC requires that inspection be done at the level of primary production and lays down norms for animal care, types of feed, and the like, as well as monitoring standards. In India, with its large population, a dairy holding may have just one or two draft animals, and milk from a number of such holdings is pooled before it is processed. So, this is just impractical as it is not possible to monitor each animal. Under this situation, the quality is again determined at the entry point of the processing unit, where milk should be appropriately treated to ensure destruction of any pathogens. What should matter is the quality of the final product, which may be attained through a flexible systems approach; it is neither feasible nor desirable to standardize a specific systems approach.\(^{422}\)

Other than that, even the quarantine restrictions for fresh fruits and vegetables imposed by many countries are not based on scientific justification. Some of the countries are not even acknowledging the statistics in terms of pest and disease prevalence in various parts of the world, submitted by international organizations. This happened in the case of India when China imposed a ban on grapes for a Mediterranean fruit fly that does not exist in India.

**Impact of Environmental Standards on Selected Indian Export Sectors: Some Case Studies**

The following case studies are examples of the environmental standards related trade measures perceived as non-tariff barriers towards market access, which adversely affected many Indian export sectors.

**Export of ‘Egg Powder’ to EU:**\(^{423}\) The case study of Egg Powder export is an example of how the SPS Agreement implementation issues have been addressed when associated activities in respect of the Doha mandate attained progress. An Indian consignment of Egg Powder was rejected in the EU because the destination market included an additional element known as MRPL or ‘minimum required performance

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limit’ in May 2003. The rejection based on this additional criteria, MRPL, was not known to the Indian establishment. Obviously, here the questions of time frame and reasonable time interval between the announcement and the adoption/coming into force do arise. The additional element formed part of the foundational EC directive 96/23/EC on measures to monitor certain substances and residues thereof in live animals and animal products and it was for the first time that the egg powder consignment was subjected to such an examination. The issue of transitional period and reasonable time interval also was circumvented on the ground that the Commission Decision 2002/657/EC of August 2002 was in fact, implementing the Council Directive 96/23/EC. Thus, establishing criteria and procedures for the validation of analytical methods to ensure the quality and comparability of analytical results generated by official laboratories came into practice for the first time. In March 2003, this Decision for establishing minimum required performance limits (MRPL) of analytical methods to be used for substances for which no permitted limit has been established was amended by Decision 2003/181/EC setting MRPLs for certain residues in foods of animal origin. The establishments whose consignment was rejected had a valid equivalence issued by the EU. And yet there was a ‘Rapid Alert’ issued in EC as a routine that went to all importing countries. However, when the consignment was declared to be meeting the additional element of MRPL, the ‘Rapid Alert’ was neither withdrawn nor importing countries de-alerted. The loss of reputation and increases in costs both implicit and explicit in this whole episode is going to take a long time to recover.

**Aflatoxin in Peanuts:** In 1999, the European Commission imposed new tolerance limits for aflatoxin contamination in peanuts. The EC has introduced a high level of protection by reducing the maximum level of presence of aflatoxin in peanuts. The level of protection proposed by EU is substantially higher than that provided under Codex recommendations. In the case of peanuts, the EU argument has been that the risk involved is of persons contracting cancer in a population of one billion. This is extremely unreasonable because the EU population is less than one third of a billion. So the level of SPS protection is not in relation to the extent of risk involved.424

**Leather Products:** Leather is one of the most seriously hit sectors among Indian exports. Besides stipulations on dyes, several other regulations inhibit its performance on the international market. Germany in particular, has banned the use of PCP and also limits the use of formaldehyde. The use of environmentally friendly chemicals has become mandatory, restricting the process by which leather may be manufactured.425

Presently, most of the tanneries are resorting to the use of an imported substitute, BUSAN 30, which is acceptable to the external market. On average, the price of this substitute is ten times higher than the price of PCP. Even though all chemical inputs together account for about 10 per cent of costs, complying with the eco-regulation is likely to affect the competitiveness of Indian leather. Overall, the cost of replacing all chemicals with eco-friendly ones raised total costs by 10 to 15 per cent and still it

424 Supra, note 420 at p. 20.
would not necessarily guarantee entry in the more stringently regulated OECD markets.\textsuperscript{426}

Hence, like many developing countries, India also faces a dilemma. Complying with the environmental standards set by developed nations has been difficult because of the cost involved. On the other hand, changes to accommodate eco-friendly chemicals/raw materials and technology were found to affect the price of the final product. Because most Indian exports compete on the basis of low price, such a price hike has already hampered their competitiveness.

\textbf{11.10 Conclusion}

The main goal of this Chapter is to make the complex relationship between the environment and international trade more understandable from the developing countries’ perspective. The Chapter also aims to dispel the idea that the relationship between trade and environment can easily be described as either negative or positive. It is extremely complex and varies from country to country. There are both threats and opportunities in this relationship for developing countries pursuing economic development and environmental protection.

The conclusions that can be drawn from this Chapter from the developing countries’ perspective is to exploit the opportunities and reduce the threats, and in so doing, to maximize the net positive contribution that trade can make to sustainable development. A broader and clearer understanding of the linkages between trade, environment, and development is a prerequisite for seizing those opportunities and reducing those threats.

On the other hand, environmental requirements however, may be used for protectionist purposes and may operate as a non-tariff barrier. In future, there is a likelihood of more trade embargos in the name of environment, especially in cases where countries fail to comply with certain environmental standard requirements. Thus, the outcome of the various case studies has the potential for strengthening the hand of protectionist lobbies, in the name of conservation and protection of the environment.

Finally, the threat of embargo can also be used to make countries adhere to certain environmental policies and regulations, which they would otherwise not adopt due to various socio-economic compulsions. Moreover, these environmental friendly policies demand the attention and cooperation of international institutions such as the World Bank as well as NGOs and other grassroots environmental groups. Protecting the environment is a luxury good, often only afforded to the wealthy countries. Therefore, these policies should be coupled with ones that encourage the transfer and exchange of environmentally friendly technologies and the build up of industries oriented to sustainable development.

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