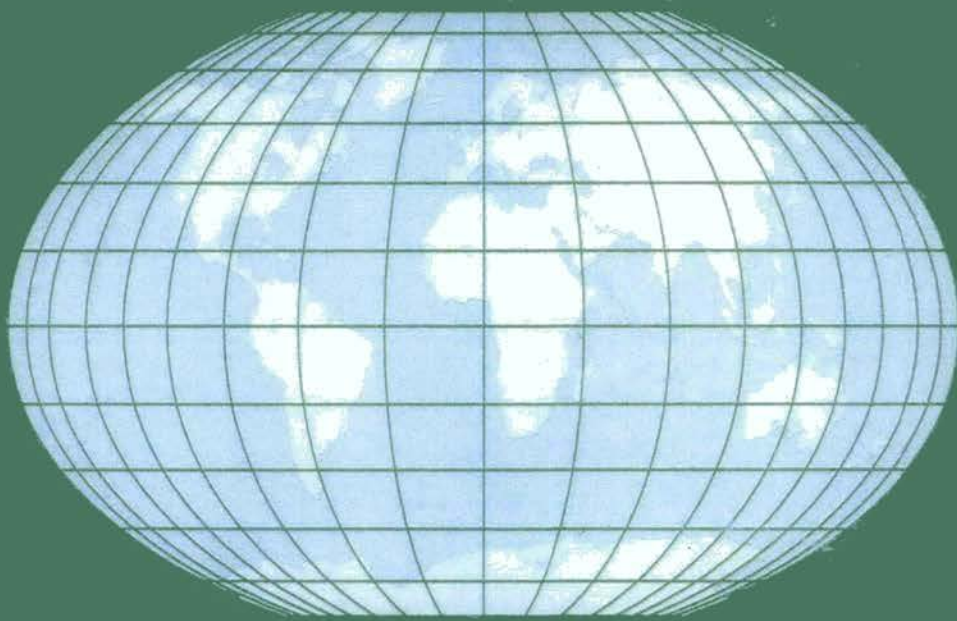


Fourth Global Training Programme in Environmental Law



UNEP

United Nations Environment Programme

Fourth Global Training Programme
in
Environmental Law

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PREFACE

The Fourth Global Training Programme on Environmental Law and Policy was held between 15th November-3rd December 1999 at the UNEP Headquarters in Nairobi. Like its predecessors, the fourth training programme provided a unique forum for government officials working in the field of environmental management to come together, learn and share experiences in the field of environmental law and policy. For the first time there were participants from some developed countries.

The objectives of the training programme were:- to inform participants about legal and institutional developments in the field of environmental law both at the international and national levels; to promote a greater interest and commitment to using environmental law as an instrument for translating sustainable development policies into action; and to enable the participants to take initiatives on a more informed basis in their respective home countries in the development and implementation of environmental law.

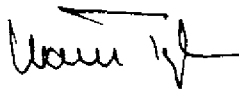
Essentially, the focus of the programme, was national action for the implementation of environmental law, including major environmental conventions, through appropriate national legislative and institutional measures. It is our hope that the training course will enhance the capacity of the participants to contribute on a more informed basis towards the efforts being made by their respective countries. It should further assist them to develop and implement national policies and programmes, in conjunction with prevailing State practice,

including legislative and institutional measures, aimed at realizing the goals of sustainable development.

The programme laid the foundation for better addressing the needs of developing countries and countries with economies in transition to evaluate and address the crucial questions relating to the integration of environment and development including those related to policy choices, options and modes of implementation. Vast amounts of material were provided as working tools back home.

Over fifty experts and resource persons gave briefings on new developments in the field of environmental law and placing particular emphasis throughout the programme on the effective national implementation of environmental rules and regulations. I sincerely thank all those who contributed in the preparation and organization of, as well as taking an active part in the Global Training Programme sharing their expertise, experience and knowledge in different fields of the environment a success. In particular, I would like to appreciate the support and cooperation of the United Nations Centre for Human Settlement (Habitat), FAO, Secretariats of major environmental conventions, ACTS, ELCI and IUCN.

We look forward to strengthening our association and furthering the efforts in the area of capacity building at national level to meet the challenge of translating sustainable development policies into action through environmental law.



Klaus Töpfer
Executive Director

United Nations Environment Programme

INTRODUCTION

UNEP's global training programmes in environmental law and policy began in 1993 and have been conducted once every two years. The 1999 training programme was the fourth in the series held at the UNEP Headquarters in Nairobi. The programme was organized by the UNEP's Division of Environmental Policy Development and Law and coordinated by Legal, Economic and Other Instruments Unit in collaboration with the UNEP's Division of Environmental Policy Implementation.

The training programmes aim at responding to the needs of developing countries and countries with economies in transition to develop capacity in the field of environmental law and policy both at international and national levels. Gauging from the number of applications received as and when the course is announced, the programme continues to gain popularity with governments. For the fourth training programme, a total of 144 nominations were received from 93 countries: 57 from Africa; 32 from Asia and the Pacific; 23 from Central and Eastern Europe; 4 from Western Europe and others; 1 from North America; 20 from Latin America and the Caribbean; and 7 from West Asia. UNEP was able to accommodate only 51 participants. Finally, 48 participants from 47 countries participated in the three weeks training course and two, though unable to attend, sent in their country papers. The names and addresses of participants appear as Annex I of the publication. Compared to only 32 participants who participated in the last training programme two years previously, the fourth training programme was the most encompassing of them all.

The fourth training programme was a unique one. It included, for the first time, participants from some developed countries to enrich the exchange and future participation in negotiations at regional and global levels. The programme provided a unique opportunity for each one of them to learn from each other, and share experiences and difficulties perceived on the front line of environmental protection in dealing with common but diverse environmental challenges.

The agenda for the course captured the diverse interests of participants, as expressed by them, and lessons learnt and assimilated from past courses. The course looked at environmental law and policy in an integrated fashion, focussed at the global, regional and national level, and approached from different dimensions: atmospheric, terrestrial and marine. 43 participants out of

the 48 who attended the course prepared ahead of the training country reports addressing environmental issues that arise in the course of daily work in their home countries. Some of the reports were orally presented and discussed in plenary sessions. Would-be participants from China and Pakistan, though unable to attend the course, also prepared and submitted reports in the publication.

As desired and proposed by the third global training programme, the course included topical issues such as enforcement and compliance with environmental obligations in different instruments, participation by the public and access to justice in environmental conservation.

The main objectives of the three weeks programme were:

- (a) To inform participants about legal and institutional developments in the fields of environmental law at the international and a national levels;
- (b) To promote a greater interest in and commitment to using environmental law as an instrument for translating sustainable development policies into action; and
- (c) To enable participants to share experiences and information and take initiative on a more informed basis in their home countries in the development and implementation of environmental law.

The programme agenda for the course embraced wide ranging issues dealing with environmental policy. It included a general introduction to the current state of the environment, an overview of environmental policy and law and a detailed examination of recent trends in national, regional and international environmental laws. Scientific, technical, management, policy and legal issues on numerous subjects such as biodiversity, chemical/waste management, climate change, environmental economics, atmosphere protection, land management, sustainable forest management, freshwater and marine resources and pollution control were analyzed and discussed. Other issues included environmental institutions, environmental dispute avoidance and settlement, environmental law information, public participation, enforcement of and compliance with multilateral environmental agreements, financial environmental management, to mention but a few. In short, a total of 61 subjects or topics, attached as Annex III, were presented and dis-

cussed by 56 experts and resources persons, listed in Annex II, during the training programme.

The lecture presentations were interspersed with occasional presentations, and round table discussions to get each one of them involved, to share experiences and to learn from one another. The country presentations that they had submitted were reviewed and distributed to each participant in an effort recognize both similarities and contrasting concerns of environmental issues specific to each country.

The training programme enabled a wide variety of persons from a large number of countries to come together and discuss common problems and propose solutions for action. The course helped to further develop participants' skills to formulate national legislation and institutional regimes for environmental management for sustainable development and effective implementation and enforcement of legislation not to mention giving them proper base which in future will enable them to negotiate matters at regional and global levels.

A voluminous set of reference materials were provided to each participant to use during the course and to take back home to use and share with colleagues. A list of materials distributed to participants is included as Annex IV to this

publication. A detailed evaluation form was distributed to each participant to fill at the end of each week and an overall evaluation was filled at the end of the course. This was followed by an oral evaluation at the end of the course. The inclusion of the field trips in the training programme gave the participants an opportunity to experience first hand some of the environmental problems that were discussed during the course.

There was a general consensus from the participants that the course had succeeded in its efforts to inform them about the new and emerging environmental concepts and to develop skills to translate environmental conventions and regulations into sound and effective national legislation. They found the areas covered in the course responsive to their needs and presented in a refreshing and stimulating manner, thus generating more interest in the subjects.

Considering that the participants came from all over the globe with differing linguistic backgrounds, there was a call for translation facilities in the future training programmes.

At the end of the course successful candidates were awarded certificates.

CHAPTER 1:
PROGRAMME IN ENVIRONMENTAL LAW AND POLICY

I. OPENING OF THE GLOBAL WORKSHOP

Mr. Donald Kaniaru, Acting Director, Division of Environmental Policy Implementation, UNEP, and Chief, Legal, Economic and Other Instruments Branch, officially opened the session at 11:35 a.m. on 15 November 1999.

A. OPENING REMARKS

- 1 Mr. Shafqat Kakakhel, Deputy Executive Director, UNEP, Ms. Sara Wakeham, Coordinator, Urban Governance Unit, United Nations Centre for Human Settlements (UNCHS) (Habitat), and Mr. Donald Kaniaru, as Chair of the programme, made welcoming remarks to the participants.
- 2 Mr. Kakakhel, speaking on behalf of Mr. Klaus Töpfer, Executive Director, UNEP, expressed his delight at having participants from 50 countries along with representatives of the United Nations and other agencies, including (UNCJIS) (Habitat), secretariats of environmental conventions, the World Conservation Union (IUCN), the Environment Liaison Centre International (ELCI) and the African Centre for Technology Studies (ACTS). He pointed out that, although Governments had been encouraging UNEP to organize the training programme annually, it had only managed to hold it once every two years. In addition to this programme, however, UNEP had also been conducting short-term courses, seminars and workshops lasting one or two weeks on specific environmental issues at the regional or country level tailored to the specific needs of the countries involved.
- 3 He said that Agenda 21 had added impetus to UNEP activities by acknowledging the role that UNEP played as a global environmental voice, and as a shaper of environmental policy and law. Its chapter 38 emphasized that UNEP should play a major role in the further development of international environmental law and had been given concrete expression in the UNEP Programme for the Development and Periodic Review of Environmental Law - the "Montevideo Programme", the first phase of which had been adopted in 1981 for a ten-year period. Subsequently, the Montevideo II Programme for the 1990s had been developed during 1991-1992 and adopted by the Governing Council in 1993. He noted that UNEP was still working to carry out Montevideo II, and that an important part of its current mandate was to enhance the capacity of States to effectively participate in the development of environmental law, to ensure the implementation of international environmental instruments and to promote public awareness of international environmental issues through education and information.
- 4 Mr. Kakakhel described four major UNEP achievements in environmental law. First, the organization had developed at least eight soft law instruments that included principles, goals, guidelines and codes of conduct calculated to assist Governments in environmental management for sustainable development. Second, it had initiated, catalyzed and participated in intergovernmental processes for the development of important global and regional environmental law instruments. It had also spearheaded no less than forty binding regional instruments. Third, it had fostered regional cooperation for the protection of the coastal and marine environment through the development of regional seas action plans and conventions. Finally, it had assisted over ninety developing countries in the development and/or strengthening of their national environmental laws and institutional regimes, which included capacity-building for environmental management.
- 5 He concluded by recognizing the presence of a number of friends and colleagues from the Permanent Missions in Nairobi, and underlined the importance that UNEP attached to the training programme as a concrete example of the promotion of legal and institutional capacity-building at the national level. He observed that the current session was unique in that for the first time, there were four participants from developed countries, and he wished the participants success in their future endeavours for environmental management.
- 6 Ms. Wakeham noted that the involvement of UNCHS (Habitat) in the training programme had become a tradition and welcomed the opportunity to share with the participants the Centre's experiences with regard to the issues they considered to be of immediate concern to human settlements development and its legal framework. She noted that the challenge facing UNCHS (Habitat) was to oversee the effective implementation of the Global Plan of Action in an increasingly urbanizing world, adding that during the last part of the twentieth century an unprecedented demographic shift had been taking place and that by the year 2020, some 4.4 billion people, nearly 60 per cent of the world's population, would live in cities. She observed that explosive growth had been accompanied by the massive urbanization of poverty, and that an increasing proportion of the poor lived in urban areas, an increasing number of whom were women. In response to those problems UNCHS (Habitat) was launching two global campaigns. The first was the Global Campaign for Good Urban Governance, the

goal of which was to improve the quality of life in cities, especially for the poor and otherwise marginalized, by improving the way cities were governed and managed. The second was the Campaign for Secure Tenure, which constituted the single most important catalyst for the mobilization of individual investment in housing.

- 7 The campaigns were designed to mobilize strategic partnerships with national and local governments, non-governmental organizations, civil society organizations, the private sector, parliamentarians, trade unions, training institutions, professional associations, multi and bilateral donors and other United Nations agencies. The role of UNCHS (Habitat) would be to coordinate those efforts, to strengthen its advocacy role at the global level and to strengthen its operational activities at the national and local levels.
- 8 She stressed that the right to housing, which first appeared in the Declaration of Human Rights in 1948, did not mean that Governments were expected to build houses for the people. It meant, however, that Governments had an obligation to promote, protect and ensure the realization of the right to adequate housing. This implied that they must assist, through legal means and policy, the efforts of their people to achieve better housing. She pointed out that the UNCHS (Habitat) Campaign for Good Governance would focus on issues such as safe built environments and secure tenure to land and property. Habitat's experience was that inclusive, participatory decision-making was at the heart of good urban governance, and many of its programmes were already developing inclusive decision-making processes as a practical strategy for making local government more accessible and more responsive to ordinary people. In conclusion, she observed that in a rapidly urbanizing world, the natural and built environments were inextricably linked.
- 9 Mr. Kaniaru summarized the background, purpose and structure of the training programme. The current session was the fourth one of the programme, previous sessions having been held in 1993, 1995 and 1997. The popularity of the programme had increased over time, and 140 applications had been submitted for the current session. Unfortunately, due to funding constraints, only 51 applications could be accepted. It was hoped that with an increase in the programme's funding, which had come entirely from voluntary sources, access to the programme could be expanded by increasing the number of participants, by conducting the pro-

gramme in other languages in addition to English and by holding it every year.

- 10 The purpose of the programme was to provide the participants - who included lawyers, diplomats, scientists, and ministers - with information and skills to assist them in addressing environmental law issues arising in the course of their work in their home countries. To achieve that purpose, the programme would seek to inform the participants about legal and institutional developments at both the national and international level; to promote greater use of environmental law as an instrument for achieving sustainable development; and to enable the participants to benefit from one another's experiences and thereby to act on a more informed basis in their home countries.
- 11 The programme would include an overview of the current state of the environment, an overview of environmental policy and law and a detailed examination of various specific topics. Additionally, certain participants would make presentations pertinent to their home countries, and those and the other presentations would be the subject of free discussion. The participants would also have the opportunity to participate in field trips and would receive written materials that would be of great utility when they returned to their home countries.

B Organizational Matters

1. ATTENDANCE

- 12 A list of participants attending the session is appended as annex I to the present publication and a list of resource persons attending the session, including representatives of various United Nations Secretariat units, specialized agencies and convention secretariats, is attached as annex II

2. OFFICERS

- 13 Mr. Donald Kaniaru acted as Chair of the session. During his occasional absence, Mr. Alexandre Timoshenko, Deputy Chief, Legal, Economic and Other Instruments and Mr. Charles O. Okidi, Task Manager, UNEP/UNDP/Netherlands Joint Project on Environmental Law and Institutions in Africa, performed the duties of the chair.

3. PROGRAMME OF WORK

- 14 The session was concluded in accordance with the programme of work, but proceeded according to the programme of work attached as annex III.

II. PRESENTATIONS AND DISCUSSION

A. BRIEFING ON GEO 2000

1. Presentation

- 15 Mr. Daniel Claasen, Acting Director, Division of Environmental Information, Assessment and Early Warning, UNEP, reported on the recently released GEO 2000, a detailed report on the state of the world environment that had been compiled by UNEP over the course of some two-and-a-half years with the input of more than 850 individuals and organizations around the world.
- 16 Observing that progress on environmental problems was possible, he listed several examples of such progress set out in the report, including: increased support in Africa for environmental education as a means of increasing support for environmental policies; the increased respect being accorded indigenous knowledge; the successful reduction of carbon dioxide emissions in Thailand; the cleanup of polluted rivers in Europe; the reduction in the rate of deforestation in Costa Rica; the success of voluntary pollution reduction programmes in the United States of America and Canada; and an increase in the number of protected areas in West Asia.
- 17 He warned, however, that the report also revealed that such successes were being rapidly outpaced by serious environmental problems, both well-known and recently discovered. Examples of the former included: runaway population growth among the poorer peoples of the earth; rapid urbanization; huge increases in the number of motor vehicles and transport related pollution, including greenhouse gases; a reduction in the availability and fertility of cropland; a rapid increase in the rate of depletion of the world's fisheries; severe and worsening water shortages; rapid deforestation; and species loss. More recently considered problems discussed in the report included: the increasing frequency and severity of natural disasters; the environmental impact of refugee populations; a growing and serious imbalance in the global nitrogen cycle; and the environmental implications of bad governance.
- 18 The problems facing the world made it clear that immediate action was crucial, and UNEP recommended it focus on four key areas: filling knowledge gaps, as there could be no effective action in the face of ignorance; tackling root causes, both consumption and production; taking an integrated approach that placed environmental considerations

at the centre of public and private consciousness; and mobilizing action from all sectors of society, since policies enjoying the full participation of all concerned are more likely to succeed.

- 19 He said that UNEP would play its part, and that it would focus its work in the immediate future on promoting environmental information, assessment and research; enhancing coordination of environmental conventions and development of environmental policy instruments; enhancing the availability of safe fresh water; promoting industrial and technology transfer; supporting Africa; and, together with Habitat, promoting sustainable urbanization.

2. Discussion

- 20 In the ensuing discussion, the participants identified a number of issues of particular concern to them. Several participants noted the importance of good governance. It was observed that neither governments nor populations always placed a premium on environmental matters, particularly in developing countries or countries with economies in transition, where economic issues were often extremely pressing. It was agreed that it was necessary to convince both governments and populations that they must take a long-term approach to both economic and environmental issues, and that they must see the two issues as intertwined. In particular, it was pointed out that the costs of environmental harms, which were often hidden and not taken into account in assessing economic issues, had to be highlighted when environmental and economic policies were being decided.
- 21 Other participants noted the importance of preserving traditional knowledge in the effort to fight environmental degradation. Mr. Claasen observed in this regard that the loss of traditional cultures and languages might entail the loss of information that could be valuable in, e.g., preserving biodiversity, not just in developing countries, but in highly industrialized countries as well. It was agreed that efforts should be made to raise the profile of this issue.
- 22 In response to a question from the floor, Mr. Claasen expressed the view that it was not possible to identify the principal cause of environmental problems or the principal impediment to their resolution, unless it could be said to be ignorance. He noted the highly interrelated nature of such causes and impediments, and stressed that building the knowledge base was crucial to successful environmental

policies, both in terms of elaborating scientifically sound policies and in terms of educating the public and governments of their necessity.

- 23 Several participants noted the unique situation of small island developing States and noted that they were particularly in need of assistance in the environmental arena. One participant suggested that, while small island developing States did not contribute significantly to sea-level rise, they were disproportionately affected by it, and observed that this was a major issue for them. It was also noted that small island developing States were adversely affected by the negative environmental consequences of tourism.

- 24 Mr. Claasen recognized the special position of small island developing States with respect to environmental problems, and noted that UNEP had attempted to meet their needs in part through the production of environmental handbooks geared toward such States in the Pacific, the Caribbean and Latin American regions. He also observed that the matter of tourism-related environmental harm was a clear instance of ill-considered short-term economic goals taking precedence over rational long-term planning. He said that governments must be made to see that the economic benefits of tourism would prove to be short-lived if the integrity of the environment on which it was based was lost due to poor planning and environmental degradation.

B. OVERVIEW OF ENVIRONMENTAL POLICY

1. Presentation

- 25 Mr. Bakary Kante, Director, Division of Environmental Policy Development and Law, UNEP, gave an overview of environmental policy. Pointing out that law was the most important tool of environmental policy, he noted that UNEP had adopted a functional rather than a sectoral approach. He gave the example of his division, which had recently changed from a sectoral to a functional set-up. There were now five main units within Division of Environmental Policy Development and Law, which were as follows:

- 25.1 Policy Review, Analysis and Development;
- 25.2 Legal, Economic and Other Instruments;
- 25.3 Civil Society and Major Groups;
- 25.4 Policy Coordination and Inter-Agency Affairs; and
- 26.5 Resource Mobilization.

- 26 He noted further that UNEP was working in close collaboration with Habitat and was committed to the promotion of international cooperation in the

field of the environment and to the provision of general guidance for the implementation of environmental policies. It was interested in looking at the sources of environmental problems and in policies that prevented environmental degradation. He informed the participants that UNEP was pursuing policies that took into account all stakeholders. In this connection, it tried to involve all sectors and actors in the development and implementation of policies.

2. Discussion

- 27 In the brief discussion that followed Mr. Kante's presentation, one participant expressed the concern that, given that policies were made by politicians, lawyers were not always sure when to intervene in the implementation of policies. In response to that concern, Mr. Kante agreed that policy-making was the domain of politicians but observed that policy was developed before the formulation of strategies. He added that lawyers had done substantial work in connection with the United Nations Framework Convention on Climate Change that had many implications for other sectors such as tourism, agriculture and transport. He advised lawyers to consult the law in order to see how they could help politicians to develop better policies. He also clarified that UNEP could not intervene in the implementation of policies because it was not an implementing agency.

C. DEVELOPMENTS IN ENVIRONMENTAL LAW

1. The development of environmental law and the role of UNEP therein

(a) Presentation

- 28 Mr. Alexandre Timoshenko presented a paper on the progressive development of environmental law and the role of UNEP therein. He outlined the critical role of the concept of sustainable development, which had become a new and defining context for the growth of environmental law principles, as articulated early on in the United Nations Conference on Environment and Development and later elsewhere. The centrality of sustainable development highlighted the cross-sectoral nature of environmental law, i.e., the way in which it overlapped and had to be harmonized with other concerns such as economics, including world trade, human settlements, human rights and other areas.

- 29 He discussed the central role of international conventions, which had been the principal vehicle for the development of international law and had grown rapidly both in numbers and in the substantive scope of their coverage. He noted that whatever their

source, environmental law principles did not remain static, but rather evolved, with the general pattern being that over time a loose framework regime of general legal principles generated specific rules and regulations.

30 He also noted that new environmental principles frequently came into being, and that among the most significant of those that had recently emerged were the "precautionary approach" and the concept of "common but differentiated responsibilities." He discussed trends in the negotiation and implementation of environmental law, including international conventions. Those included the increasing role played by non-governmental organizations and technical experts in all major international or regional negotiations. He noted that the latter posed a problem for developing countries, which might not have the resources to ensure that governments are represented by such experts in all major international or regional negotiations, and he outlined certain steps those countries might take to avert such difficulties.

31 In discussing the role of UNEP in the field of environmental law, he identified as particularly significant Agenda 21, which expressly mandated that UNEP play a major role in the development and implementation of international environmental law, including conventions, and that it play a coordinating role among the secretariats of the various conventions. The role of UNEP in this regard had been recently reinforced by its Governing Council, which at its twentieth session in 1999 had decided that UNEP should make efforts to identify and facilitate interlinkages among environmental conventions.

32 He characterized the UNEP approach to the development of environmental law as a programmatic one mandated by its Governing Council in accordance with the Montevideo principles, under which UNEP activities were pursued according to ten year plans. The first of those plans was begun in 1982, the second in 1993, and the third, to cover environmental law activities beyond the year 2000, was in its initial stages of elaboration.

(b) *Discussion*

33 Mr. Timoshenko's presentation prompted several comments and questions by the participants. One participant wished to know whether UNEP had any plans for elaborating a convention on civil liability for environmental harm. Mr. Timoshenko responded that such a project was beyond the current UNEP mandate. He also noted that UNEP member governments tended to take a sectoral approach to the question of civil liability, i.e., to address it through liability provisions in individual conventions.

34 In response to questions regarding the interplay between international trade conventions and international environmental conventions, Mr. Timoshenko suggested that there existed a potential jurisdictional conflict, which as of yet had not manifested itself. Thus, actions required under a convention in one area might violate the provisions of a convention in the other. He stated the view that it was necessary to harmonize conventions in the two areas, by clarifying areas of priority for each. He also noted that to the extent disputes would arise, it was necessary to strengthen the dispute resolution mechanisms of environmental conventions, which, by comparison with those in trade conventions, were weak.

35 When queried about the UNEP approach to identifying linkages among environmental conventions, he reiterated that identifying linkages was a UNEP mandate, and described the first issue of a bulletin put out by the UNEP unit devoted to the issue. He hoped that the bulletin, "Synergies", would be a helpful tool in enhancing convention effectiveness.

36 When asked whether UNEP contemplated developing the power to impose sanctions, as the International Maritime Organization enjoyed in the trade sphere, he responded that UNEP simply did not have such power under its mandate. He added that in environmental law, sanctions were seen as a last resort, and it was believed that the most effective approach was one that facilitated compliance rather than one that punished non-compliance, especially in the case of developing countries, for which compliance was often financially difficult.

37 One participant noted the difficulties developing countries faced in participating in the negotiation of international conventions. Mr. Timoshenko observed that this was a problem that UNEP was charged to address in its second ten year plan. He pointed out that UNEP provided funding for developing countries to attend all convention negotiations that UNEP sponsored, and also sought to alleviate the problem by providing training programmes and through national capacity building efforts. Mr. Kaniaru agreed that the issue was a significant one, and noted that UNEP also put together regional preparation meetings through which developing countries were enabled to collectively prepare themselves to participate in convention conferences of the parties.

38 Another participant observed that it was difficult for developing countries to engage in best environmental practices, giving as an example DDT. He noted that halting the use of DDT in the absence of affordable alternatives might lead to many deaths due to malaria, and suggested that this would

be an appropriate area for subsidies from wealthier countries. Mr. Timoshenko acknowledged the problem, and observed that this was an area where the principle of common but differentiated responsibility could apply. Under the proposed convention on persistent organic pollutants, for example, countries without adequate funds would have additional time to phase out the use of proscribed pollutants.

2. Recent trends in national legislation

39 Mr. Manjit Iqbal, Legal Officer, Legal, Economic and other Instruments gave a presentation on recent trends in national legislation. By way of introduction, he briefly discussed the evolution of environmental protection and the central role today of the concept of sustainable development. He also noted the role of UNEP in the development of environmental law, as envisaged by the Rio Earth Summit.

40 He listed some illustrative trends in environmental law at the national level, and then described what he said was the most significant development, i.e., the move from fragmented sectoral legislation to the passage of framework laws, which had been enacted by over 80 countries. Framework laws represented an integrated, ecosystem oriented approach and provided a broad and flexible legal framework for addressing environmental issues.

41 He then used the structure of a framework law as a context within which to discuss the major issues that must be addressed in national environmental legislation, discussing with respect to each of those issues relevant recent trends. He described 17 principal provisions found in a typical framework law, including provisions: setting out preliminary matters; stating relevant general legal principles; establishing institutional arrangements; requiring environmental planning; providing for the role of environmental impact assessments; requiring environmental monitoring; establishing environmental quality standards; requiring environmental management; regulating pollution; providing for environmental restoration orders; providing for inspection and record-keeping; governing participation in international conventions; providing for public education; regulating financial matters, including funding as well as financial incentives and disincentives; establishing dispute resolution mechanisms; setting out offenses and penalties; and empowering the relevant government authorities to make regulations.

3. Recent trends in environmental policy and law in Latin America and the Caribbean

(a) *Presentation*

42 Ms. Isabel Martinez, Legal Officer, UNEP Regional Office for Latin America and the Caribbean (ROLAC) discussed recent environmental law and policy trends in Latin America and the Caribbean. She briefly outlined the socio-economic and environmental context of the two regions, noting that both were characterized by a number of distinct groups speaking different languages and had significant populations of people living in poverty. She also discussed the current institutional and legislative situation, in particular the question of what type of environmental government agencies were utilized in the regions and the incidence of sectoral legislation and/or framework laws. She noted certain trends in environmental law, giving examples of each. Those trends included a turn away from exclusive reliance on direct regulation toward the additional use of economic instruments, such as incentives, subsidies and fees; a high level of international convention ratification and implementation; and the implementation of legislative requirements for increased public participation in environmental decision-making. For the future of the region, she saw continued and increasing use of economic instruments in connection with direct regulation, an increased effort to promote synergy among the numerous international conventions to which the regions' countries were parties, and increased public demands for participation in environmental issues.

(b) *Discussion*

43 Several participants expressed frustration about the low priority accorded by some of their Governments to environmental concerns, noting that, while they had become party to various conventions, they had failed in many cases to implement them effectively. Those participants asked whether there was some pressure UNEP could apply to convince such Governments to act. It was explained that the fundamental role of UNEP was to facilitate communication and provide information, which it did through such measures as regional conferences and conventions. However, it was up to the countries to take advantage of such resources, and UNEP had no coercive tools at its disposal.

44 In response to another comment about the burden of complying with the reporting requirements of multiple conventions, Ms. Martinez reported that UNEP had prepared a handbook, which was available to the participants, on complying with reporting requirements.

45 Responding to a question about the utility of land use planning, she noted that several countries in the region had elaborated land use plans on the national, state and local level, but few had implemented them. Such plans had thus shown themselves to be of limited utility.

4. Recent trends in environmental law in Asia and the Pacific

(a) Presentation

1 Mr. Lal Kurukulasuriya, Chief, UNEP Regional Office for Asia and the Pacific (ROAP), presented a paper on recent trends in environmental law in Asia and the Pacific. He observed that the situation of former colonies in Asia was in many respects similar to that of African countries, adding that a large population in Asia was a threat to the implementation of environmental laws. Rapid industrialization was putting a great strain on energy and this had led to over-exploitation of forests. One fortunate thing about Asian countries was that agricultural pesticides were hardly used; they were used only in one country.

47 He indicated that new institutions involved in environmental management were ministries of environment, environmental agencies, inter-ministerial committees and provincial state level agencies. However, decentralization had been given very little attention in Asian countries. Mr. Kurukulasuriya further noted that a number of countries had in the last fifteen years introduced in their constitutions provisions to protect the environment. New legislation in many Asian countries included constitutional law, framework legislation, sectoral legislation (for example, agriculture and forests) and sanctions for environmental damage.

(b) Discussion

48 In the ensuing discussion, one participant sought to know at what level the public could be made to participate in environmental impact assessments (EIAs) in countries where the literacy level was low. Mr. Kurukulasuriya said that this should be done right from the beginning. However, he noted, many people did not participate because they were not aware of what was being planned. He emphasized that awareness creation should take place before the design of an EIA.

49 A representative of one small island State pointed out that small countries were not keen to ratify some international conventions because of fear of being dictated to by more powerful countries. In response to this concern, a representative of UNEP informed the participants that there was a project

within UNEP that catered to small countries, adding that each country was free to ratify or not to ratify an international convention. He noted that this was a question of diplomacy rather than law, and that conventions should be adopted after careful consideration of geopolitics.

5. South Africa's environmental framework law

50 Mr. Johan G. Nel, Director, Environmental Management Unit, Potchefstroom University, South Africa, presented a detailed presentation on South Africa's environmental framework law, the National Environmental Management Act of 1998, which he described as a truly radical departure from South Africa's status quo. He listed the main principles that are expressed in the Act, which were elements of the overall goal of integrating policy and law and increasing civil participation in environmental regulation. He described a massive information campaign, stretching from 1995 through 1998, that was necessary to win support for the law from the public and the business community. He then detailed the law's principal mechanisms, which were aimed at moving away from a fragmented purely command and control regulatory environment to one characterized by extensive cooperation among government agencies, a high degree of civil society participation and the extensive use of fiscal and other innovative instruments in addition to, and to a considerable extent in place of, a coercive and punitive approach. The presentation included two interactive sessions in which the participants were asked to review certain provisions of the Act and to write their reactions and comments on index cards so that they could be shared with the other participants.

6. Status of multilateral environmental agreements in Europe

(a) Presentation

51 Ms. Sabine Hoefnagel, Associate Legal Expert, UNEP Regional Office for Europe (ROE), spoke about the status of multilateral environmental agreements (MEAs) in Europe, with an emphasis on Central and Eastern Europe. She began by noting some general characteristics of the region, including the fact that while Europe had been active in responding to environmental problems, it had also been a major contributor to those problems, that the transition of Eastern Europe from a controlled economy to a market economy had had a major impact on MEAs, and that much attention in Central Europe was then focused on accession to the European Union.

52 She then went on to discuss both global and regional MEAs, considering, with respect to each,

trends and level of development, impact and effectiveness, barriers to implementation and items for policy action. She noted a high level of ratification of MEAs, as well as a high level of formal mechanisms for implementation, but pointed out a number of impediments to practical implementation and effectiveness. The principal impediments common to both global and regional MEAs were inadequate financial resources, a lack of effective institutions (as, for example, in the case of government agencies with overlapping mandates), overlapping or over-broad MEAs and, perhaps most fundamentally, a need for change in patterns of production and consumption. Regional MEAs were also hampered in some cases by difficult relations between neighbouring countries.

- 53 She characterized the effectiveness of most types of MEA as mixed, and noted areas for policy action necessary to improve them. Regarding global MEAs, those included the need to enhance enforcement and mechanisms to address non-compliance, the need to enhance cross-sectoral coordination between and within Governments, and the need to enhance public participation in environmental matters. Regional MEAs could be improved by extending their reach from large point sources (e.g., large factories in the case of air pollution) to smaller and more diffuse sources, and by enhancing enforcement mechanisms, which in some cases might entail the criminalization of MEA violations.

(b) *Discussion*

- 54 One participant asked Ms. Hoefnagel to describe the prevailing approach in Europe to ratification of the Kyoto Protocol to the Framework Convention on Climate Change. She observed that there was considerable variation by sub-region, but expressed the view that generally Europe strongly supported the Protocol and had already effected significant reductions in ozone depleting emissions and greenhouse gases. However, no agreement had yet been reached on target reduction levels.
- 55 In response to a participant question, Ms. Hoefnagel explained that regional MEAs generally were intended to supplement global MEAs and tailor them to local conditions, and that she did not know of any instances of significant conflict between the two.
- 54 One participant noted that he would have liked to hear more in the presentation about sources of assistance to Central and Eastern Europe for MEA implementation. He said that such assistance was available from various sources, including the conventions themselves and bilateral sources.

7. Recent trends in environmental law in Africa

(a) *Presentation*

- 57 Mr. Charles O. Okidi presented a paper entitled "Recent trends in environmental law in Africa". He noted that environmental law in Africa had evolved in four stages: Stage I: Colonial laws syndrome; Stage II: Advanced colonial laws syndrome; Stage III: Advent of framework environmental laws; and Stage IV: Sophisticated framework and sectoral laws.
- 58 He observed that some 24 African countries had adopted a framework environmental law, adding that agencies formed by a framework law had interventionist powers. He suggested that environmental law should be incorporated into the national law. He submitted that EIAs were a public process and should therefore be conducted openly. Assessment led to the adoption of remedial measures. He lamented the fact that very little had been done to educate industries on environmental issues, adding that the public should be constantly alerted to environmental issues. Only eight African countries had adopted EIA regulations.
- 59 Mr. Okidi informed the participants that there were three broad categories of financing for environmental projects: first, environmental funds set up by Governments; second, environmental exploration funds, that acted as insurance; and, third, environmental trust funds set up with gifts and endowments.

(b) *Discussion*

- 60 One participant sought to know at what stage of EIAs the public should be involved. The public should be involved from the beginning stage throughout to implementation and monitoring he responded. Mr. Okidi observed that the capacity of local communities to handle environmental matters was a fundamental issue and that awareness creation regarding the environment was crucial because the environment was part of development. To this end, UNEP was in the process of developing a project on awareness creation at the grassroots level.
- 61 Another participant wondered how all the framework laws could be implemented in Africa, noting that the environment was not considered to be a priority issue in many African countries. Mr. Okidi noted that traditionally there had been sectoral laws, but in 1968 or 1969, it had become clear that there was need for framework laws on the environment to take care of neglected areas.

- 62 Responding to a query on what mechanism was being put in place to encourage countries to pay more attention to the environment, especially in countries at war where the main preoccupation was security, Mr. Okidi informed the participants that UNEP had initiated dialogue with such countries, for example Liberia.
- 63 With regard to a query on whether environmental law was a concern for lawyers only, Mr. Okidi said that it was too important an issue to be left to lawyers alone; lawyers might not be able to interpret areas of the law that needed action. On the issue of who qualified to take legal action in the event of damage to the environment, he indicated that any concerned citizen could go to court. This had, for example, happened in Uganda.
- 64 One participant sought clarification on environmental trust funds. Mr. Okidi informed the participants that environmental trust funds were intended to support activities concerning the environment. The funds could be used to repair environmental damage in cases where the person responsible for the damage was unknown.
- 65 With regard to the implications of the introduction of a new law on the traditional practices of the citizens, Mr. Okidi cautioned that law makers should pay special attention to areas touching on the people's cultural practices. He stressed that it was the rich, rather than the poor, who contributed to environmental degradation and that it was possible to have a law that protected the local community and punished the rich who degraded the environment.

8. Developments in civil environmental litigation

(a) Presentation

- 66 Dr. Albert Mumma, Lecturer, Faculty of Law, University of Nairobi, spoke about developments enhancing judicial action in environmental matters. Preliminarily, he said that civil environmental litigation was important for at least two reasons. First, it served as the forum of last resort for disputes when all other efforts at resolution had failed, and thus served a corrective function. Second, and perhaps more important, because judicial decisions were public and formed part of the developing law, litigation also played a preventive function affecting future action.
- 67 He described two important developments in environmental litigation: the evolution of the concept of "standing" and the rise of the "public trust" doctrine. Standing, or "locus standi", was a requirement that, in order to bring a lawsuit, a person had

to have a legally sufficient interest in the subject matter of the suit. Historically, the required interest had to be a direct and personal one. In the environmental arena that requirement had caused problems, because often persons bringing suit had no more than the general interest in the issue that any citizen might have had. The problem had been addressed both by legislatures and courts. The former had responded with statutes expressly granting citizen standing in environmental cases. The latter had responded by expanding the concept of the interest required to confer standing, in effect moving away from the requirement of a purely personal interest and recognizing the validity of a citizen's interest in environmental matters. Standing, while still a hurdle, was thus less of an impediment than it had been historically.

- 68 The evolution of the public trust doctrine had been important in cases seeking judicial review of certain kinds of government action, such as the disposition of public lands. Historically, the only question in such cases had been whether the government officer whose conduct was at issue had the formal power to make the disposition. If he had, and if his conduct was not expressly prohibited by statute, his conduct was beyond judicial review, even if, for example, he had received a pay-off in exchange for his official acts. In response to this problem, courts had developed the public trust doctrine, which had stated simply that government officials held certain public resources in trust for the public and that any diversion of such resources was inherently wrong and susceptible to judicial correction. Initially, the doctrine had applied only to the sea, but it had been expanded by courts to apply to all waterways, as well as to forests and other lands.

(b) Discussion

- 69 Mr. Kurukulasuriya observed that Mr. Mumma's presentation highlighted the importance of sensitizing judges to developments in the law. He noted several cases from around the world that had been adversely affected by judges' lack of ready access to recent legal developments. He noted that UNEP had tried to address the problem through judicial symposia on environmental law. Those had been held in Asia and South-east Asia, and another would be held in Mexico in the year 2000. He also noted another instance of expanded judicial action in the environmental arena, describing several cases in which courts in India and Pakistan, in the absence of a complaining party, had invoked their own jurisdiction in order to prevent imminent environmental harms.
- 70 Ms. Martinez noted that in Latin America and the Caribbean, the judiciary had not been active in en-

vironmental matters. In Latin America, only Columbia, Peru, Brazil and Argentina had mechanisms for individuals to sue on environmental matters of public concern.

9. Experience in developing and harmonizing subregional legislation in East Africa

(a) *Presentation*

71 Mr. Robert A. Wabunoha, Senior Legal Officer, National Environment Management Authority, Uganda, presented a paper on the experience of three East African countries, Kenya, Uganda and the United Republic of Tanzania, in the development and harmonization of environmental legislation.

72 The harmonization project was a pilot project benefitting from the financial assistance of the UNEP/UNDP/Netherlands Joint Project on Environmental Law and Institutions in Africa, East African Subregional Project. The project had already been adjudged successful and its achievements were beyond expectations. Within the framework of this project, the three countries were building common areas of cooperation. The idea behind the project was not to have the same laws and standards, but to have laws and standards that were comparable. The countries shared a similar historical and legal heritage and environmental issues and faced similar challenges. They also had a number of shared environmental resources.

73 Thanks to the project, the following key areas had already been harmonized:

- 73.1 EIA regulations;
- 73.2 Hazardous and non-hazardous waste regulations;
- 73.3 Development of methodologies for environmental standards;
- 73.4 Forestry laws;
- 73.5 Wildlife laws;
- 73.6 Toxic and hazardous chemicals and materials;
- 73.7 Legal aspects for the Lake Victoria environment.

(b) *Discussion*

74 Responding to a query regarding the anticipated problems and the envisaged measures for their solution, Mr. Wabunoha observed that the three countries were at different levels of environmental management. Uganda, for example, had already passed a framework law while in Kenya and Tanzania are only in draft form. The countries had different administrative systems. While Uganda was

administered by district, Kenya and the United Republic of Tanzania were administered by region. Consultation at the administrative level was therefore difficult because of differences of hierarchy.

10. Implementation of legal aspects of environmental conventions in Uganda

(a) *Presentation*

75 Mr. Wabunoha also presented a country report on the implementation of legal aspects of environmental conventions in Uganda. He noted that Uganda had a wealth of biodiversity ranging from game parks, natural beauty and terrain, and, water resources. About 20 per cent of the country's total land area was covered by water and wetlands. Due to the heavy reliance on environmental resources, Uganda had taken a lot of interest in conventions and agreements that protect the natural resource base. It was for this reason that the Ministry of Environment Protection had been established in 1998.

76 He observed that many countries such as Uganda entered into conventions without fully analyzing the implications of becoming a party to a given convention. This meant that such countries became aware of the implications only at the implementation level when translation of the agreed options into national legislative norms and prescriptions was already turning out to be difficult or impossible. He further noted that most conventions did not have compliance time limits, which had implications at the implementation level as some countries tended to relax.

(b) *Discussion*

77 One participant sought to know whether owners of wetlands were compensated when the use of the wetlands was restricted by the authorities. In response to this query, Mr. Wabunoha said that there were land planning laws and no citizen could put land into use in contravention of the laws. The law stated that no one could own wetlands. Anyone who wanted to use wetlands had to obtain a permit and permits were not issued automatically. The Government was looking for funds to compensate owners of wetlands so as to appropriate all wetlands. Another participant asked whether the workshops Mr. Wabunoha had referred to in his presentation were part of an awareness raising campaign. Mr. Wabunoha explained that the workshops had been aimed at awareness creation among government officials. For the purpose of awareness creation among the public, the mass media were used.

D. ENFORCEMENT OF AND COMPLIANCE WITH MULTI-LATERAL AGREEMENTS

1. Multilateral environmental agreements: trends in compliance and enforcement

- 78 Ms. Elizabeth Mrema, Legal Officer, LEOI, discussed the state of enforcement of and compliance with multilateral environmental agreements, using three conventions, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Montreal Protocol on Substances that Deplete the Ozone Layer and the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), to illustrate. At the outset, she noted that the proliferation of MEAs in the last three decades had created an entirely new regulatory regime, and consequently an entirely new body of criminal offenses that needed policing. Further, the failure of countries party to MEAs to enact implementing legislation had led to a situation in which conduct banned by such MEAs did not necessarily constitute a crime in the national sphere.
- 79 Using a participative question and answer format, she considered certain key definitions and discussed the causes of environmental crime, mentioning such principal examples as trade liberalisation and deregulation and the rise of organized crime, coupled, in the case of developing countries or countries with economies in transition, with inadequate penalties and lack of resources to implement enforcement measures. She then went on to survey the state of affairs with respect to the three sample conventions, considering for each the incidence of criminal activity, the sources and methods of illegal trade in goods regulated under the conventions, and possible methods of controlling such trade through measures aimed at demand, supply and the illegal activities themselves.
- 80 She noted that the three conventions did have provisions to address non-compliance by party States. She also described efforts by international bodies to improve MEA enforcement, such as the establishment, under the International Criminal Police Organization (INTERPOL), of the Working Party on Environmental Crime and the 1994 Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Flora and Fauna. She concluded, however, that efforts thus far had been largely inadequate, and suggested a number of possible measures to improve the situation, of which perhaps the principal one was strengthening of the political will among Governments to devote the necessary resources to solving the problem.

2. Proposed guidelines on MEA enforcement and compliance

(a) Presentation

- 81 Ms. Iwona Rummel-Bulska, Chief, Enforcement and Compliance Unit, Division of Environmental Policy Development and Law, informed participants about proposed MEAs compliance and enforcement guidelines. She described the genesis of the proposed guidelines, explaining that they were needed due to the relatively recent growth in conventions containing control provisions in addition to normative standards, of which CITES was the earliest example. Prior conventions had had no compliance or enforcement mechanisms, but even with respect to those, parties had come to understand that some means of verifying compliance was needed. Ultimately, a workshop on enforcement of and compliance with MEAs had been convened under the auspices of UNEP. It met from 12 to 14 July 1999, when it agreed on the need for the elaboration of a set of guidelines.
- 82 She then briefly outlined the features of the proposed guidelines, which contained separate provisions for compliance and enforcement. The compliance section set out guidelines for monitoring and reporting; participation by the private sector and non-governmental organizations; education; compliance incentives; exclusion of non-parties and other sanctions; financial assistance to facilitate compliance and participation in treaty negotiations; regional implementation efforts; and capacity building in the area of compliance. The enforcement section set out suggested topics for national enforcement legislation and regulations, which included areas of criminal activity, e.g., traffic in endangered species; penalties; cross-border cooperation; inter-agency cooperation at the national level; and public education.

(b) Discussion

- 83 Several participants noted that, while many countries had ratified multiple conventions, they had not always given sufficient consideration to the question of what kind of implementation would be required. They noted in this regard that the reporting requirements of the conventions constituted a significant burden to small or developing countries. Even where money was available, there was simply not enough time to attend all the meetings of the conventions and subsidiary bodies. Ms. Rummel-Bulska acknowledged the problem of convention overload for many countries. Regarding re-

porting, she said that steps must be taken to streamline reporting requirements, with perhaps a single reporting form being utilized for multiple conventions. As to the other demands on countries with fewer resources, she said that, of necessity, countries would simply have to prioritize their time and attend only those meetings they deemed most important.

- 84 Another participant asked what the nature of the guidelines was, and how they would be enforced. It was explained that while the guidelines had the "look" of a convention, they were in fact soft law. They were, therefore, only hortatory, and as such could not be enforced. Instead, it was hoped that they would have a strong influence on the shape of national compliance and enforcement legislation.

E. WATER ISSUES

1. Water policy and activities at UNEP and other United Nations and International Agencies

- 85 Mr. Halifa Drammeh, Deputy Director, DPDL, gave a brief report on water policy and related activities at UNEP and other United Nations agencies. He noted the sources of the UNEP mandate for addressing water issues, including Agenda 21, Governing Council decisions and General Assembly resolutions, and went on to list the major focus areas of UNEP policy and strategy, namely, assessment, management and coordination. He listed major UNEP water programmes for the years 2000-2001, which included the Global International Waters Assessment (GIWA); the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities; the regional seas programme; freshwater; and the Global Environment Facility (GEF) related water activities. He then outlined how the programmes fit within the UNEP organisational structure and described three of them, GIWA, the Global Programme of Action and the Regional Seas Programme, in greater detail.
- 86 Noting that UNEP did not work alone on water policy, he listed other organizations working in the area and outlined some of their activities. Those included the Food and Agricultural Organization of the United Nations (FAO), with its emphasis on water for sustainable agriculture and rural development; the World Health Organization (WHO), which was concerned with the supply of water for drinking and sanitation; UNCHS (Habitat), and its efforts in the area of water for sustainable development; the United Nations Industrial Development Organization (UNIDO), with its programmes relating to industrial water use, and other organizations.
- He then went on to describe some of those programmes, including programmes relating to in-stream uses of water, such as hydro-electric dams, programmes for the mitigation of water related natural disasters, monitoring and assessment programmes such as the Global Environment Monitoring System (GEMS), and capacity-building programmes.

2. Joint UNEP/Habitat Water Project

- 87 Following Mr. Drammeh, Mr. Kalyan Ray, Coordinator, Infrastructure Section, Shelter Branch, Habitat, gave a talk on a joint UNEP/Habitat water programme, Managing Water for African Cities, which had been funded by the United Nations Foundation. He outlined trends in Africa affecting the demand for water. Those trends highlighted the need for improvements in how water in African cities was managed, and the concomitant need for an educational programme to achieve those improvements. He then briefly described the programme's early activities and outlined its approach.

- 88 In May of 1999, a memorandum of understanding had been signed with 7 African cities that had agreed to take part in a programme to improve urban water management. By September, the programme had been funded, and by December staff were in place. Early activities had included a city managers' retreat to identify action priorities for the following 6 months and to develop a framework for cooperation among the 7 cities; city consultations undertaken in 4 of the cities; and the presentation of the programme at the Stockholm Water Symposium. Activities planned for the next six months included city consultations in the remaining 3 cities; study visits by city managers to Southern Africa and Israel; a meeting of city managers in Dakar in February 2000 to finalize assessments of training and capacity building needs; and the first programme review by the programme's ministerial advisory group during the World Water Forum at the Hague in March of 2000.

- 89 The goal of the programme was to improve urban water management by exposing city managers to information that would increase their awareness and lead to action. Information and awareness creation would be achieved by various means, including a dedicated electronic network (WACNET); a web site featuring good practices and case studies; a newsletter; support for local initiatives through the provision of seed money, technical assistance and information kits for the inclusion of relevant information in school curricula; the strengthening of regional resource centres that could provide support to city managers; and implementation of a media strategy including regular media briefings, workshops, press conferences, promotional events and other measures.

3. Regional seas programme

- 90 Mr. Manjit Iqbal gave a talk on the Regional Seas Programme (RSP). He explained that UNEP had developed the RSP in 1974 in response to perceived difficulties in addressing regional peculiarities through global instruments. The programme operated chiefly through regional action plans, which normally contained provisions addressing environmental assessment, environmental management, environmental legislation and institutional and financial arrangements. He noted that over 140 coastal States and territories participated in the programme in 16 regions, and he briefly described the status of activities in each region, noting that activity varied among the regions according to the commitment of the participating Governments. Most regions had adopted and implemented action plans, and some had adopted regional conventions as well, but some few regions had not accomplished either.

4. Global Programme of Action

- 91 Ms. Elizabeth Mrema reported on the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). She began by discussing certain relevant features of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and other relevant global and regional conventions. UNCLOS had required States to prevent, reduce and control marine pollution from any source, and at least five regional conventions had specifically addressed land based sources of marine pollution. Nevertheless, because of the magnitude of the problem - approximately 80 per cent of marine pollution came from land based sources - the GPA had been adopted in Washington, D.C. in 1995, and UNEP was designated as its secretariat.
- 92 Under the stewardship of UNEP, the Global Plan of Action was expected to be a source of practical and conceptual advice to national and regional authorities, and to act at the national, regional and global levels. In concrete terms, the Global Plan of Action was to promote adaptation or elaboration of national, subregional and regional action programmes, perform assessments and consolidate information, prepare guidelines for implementation of the Programme, provide assistance to countries, mobilize financial resources and promote awareness among Governments, non-governmental organizations and the general public of the problem of land-based marine pollution.
- 93 At its nineteenth session, the UNEP Governing Council accorded the Global Plan of Action the highest priority and decided it should be fully integrated

into UNEP activities, including the regional seas programme. Since adopting the Global Plan of Action, UNEP had been intensely focused on the first stages of implementation: it had held workshops on regional overviews of land based activities and prioritization of pollution sources; had negotiated with Governments and others over their role in implementation of the Global Plan of Action as well as its role in the Global International Waters Assessment (GIWA).

5. Nairobi and Abidjan Conventions

- 94 Ms. Sylvia Bankobeza, Legal Officer, Division of Environmental Policy Development and Law, gave a presentation on the status of the Convention on the Protection, Management and Development of the Coastal and Marine Environment of the Eastern African Region (the Nairobi Convention) and the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (the Abidjan Convention), for both of which UNEP acts as secretariat.
- 95 She characterized both conventions as being at very early stages in their development and effectiveness. While the Nairobi Convention had been adopted in 1985, it had not come into effect until ratification by the sixth signatory State in May 1996. Since that time, it had held two conferences of the parties and adopted a programme of work, but the bulk of its efforts had been directed to a study by an ad hoc legal and technical working group on whether the Convention needed to be updated in light of changes in the legal environment during the 11 years between adoption and ratification. The ad hoc group had recommended few amendments to be made, and also a handbook be elaborated to assist States in implementing the Convention. The focus of the Convention secretariat since then had been on reviewing the Convention and on pursuing joint efforts with the Abidjan Convention secretariat.
- 96 The Abidjan Convention had been adopted in 1981 and had come into effect in 1984. Only 10 of the 21 signatory States have ratified it, however. The only conference of the Parties held had dealt principally with procedural issues, such as attempting to bolster the ratification rate, and had resulted in relatively little substantive action. The parties had established a steering committee to liaise with UNEP in its role as secretariat, and they had also resolved to appoint a permanent regional coordinating unit, which was to be the primary vehicle for implementation of the convention. The regional coordinating unit, however, had never been established. UNEP had made interim arrangements, and had

undertaken some activities, including, among others, an assessment of regional marine and coastal waters and elaboration of an action plan. Nevertheless, a permanent regional coordinating unit was felt to be vital to the Convention's effectiveness. The next conference of the Parties is scheduled to be held in March 2000.

- 97 In conclusion, she noted that, while efforts were still under way to vitalize the two conventions, they had been hampered by low levels of participation by the countries of the region, and in particular by a failure of the party States to meet their financial obligations. Accordingly, UNEP was engaged in various efforts to improve the situation, including efforts to secure outside funding.

6. Scientific and technical aspects of water management/sustainable environmental management

(a) Presentation

- 98 Mr. John Pernetta, Global Environment Facility (GEF) Coordination Office, made a presentation on scientific and technical aspects of water management, the main thrust of which was the role of science in policy making to achieve sustainable environmental management. He observed that, at the global level, there was failure of the water management system. He also emphasized that there was no way countries could manage human actions in terms of environmental management.

- 99 Describing the relationship between information failures, market failure and policy failures, he noted that, when there was no scientific data, there was failure to communicate intra-nationally and internationally, which led to market failure. Market failure was characterised by economic policies that led to incorrect subsidies and failure to incorporate environmental values into development decision-making. In its turn, market failure led to policy failure that involved incorrect information and advice and bad models and predictions.

(b) Discussion

- 100 In response to a query concerning the relationship between global warming and water management, Mr. Pernetta noted that some areas had more rain than others and the main concern was how much freshwater was available. Global warming could result in major changes in species distribution; it could even lead to loss of species due to water temperature changes. One participant observed that the biggest problem in some countries was inability to transfer scientific information to facilitate water management. He added that environmental moni-

toring was either rare or absent and that some donors were unwilling to fund feasibility studies that would generate scientific data. Responding to that observation, Mr. Pernetta noted, once again, the problem of inadequate information. Scientists conducted research and generated a substantial quantity of data but they did not participate in water management. Those involved in environmental management needed to determine how raw scientific information could be synthesized and transferred to the decision-making process.

- 101 With regard to monitoring, he emphasized that countries did not need to monitor the environment unless there was a problem that needed to be analysed. In his opinion, the important thing was to know what human activities were taking place and how they were likely to impact on the environment; the use of pesticides, for example, could lead to a reduction in fish species.

- 102 In response to an observation about the expense of freshwater in some countries, Mr. Pernetta stressed that access to clean water was a human right and individual consumers should not be made to pay for it. Big users, such as industries, should pay for it. However, the concept of paying for water, he added, had been derived from the United States; he observed that powerful countries such as the United States could influence policy-making in other countries.

- 103 Another participant pointed out that freshwater was decreasing and that people did not seem to understand the concept of freshwater, particularly in tropical countries where it was abundant. He wondered how people could be made to understand the concept. He noted further that unpredictability of rain in some countries had a negative impact on agriculture. Agreeing with that observation, Mr. Pernetta said that there was limited access to information on weather and climate although weather forecasts were now more reliable than in the past. Noting that some weather forecasting models were more reliable than others, he emphasized that countries should share information with other countries in their region and not rely exclusively on their national data. He added that models that were more than ten years old predicted nothing. With regard to the concern that freshwater was decreasing, Mr. Pernetta observed that there was freshwater stress because of the growing demand for water, and also because of water pollution.

7. Approaches to water management issues

- 104 Mr. Takehiro Nakamura, Division of Environmental Implementation, gave a presentation on approaches to water management issues. He empha-

sized that river basins must be properly managed to protect fresh water resources. Human activities such as agriculture and fishing affected the quality and quantity of water, and they must therefore be effectively controlled.

8. Legal issues in successful management of fresh water resources

(a) Presentation

105 Mr. Charles O. Okidi gave a presentation on legal aspects of sustainable freshwater resources. He observed that there was a supposition that the available freshwater was inadequate and should therefore be protected through legal mechanisms. The central issue then was the sustainability of freshwater resources. On the issue of what kind of activity justified legal intervention, he stressed that irrigation for agriculture called for stringent legal and institutional arrangements, and urged lawyers to participate actively, particularly in litigation. Noting that freshwater was limited at the global level, he wondered whether it was justified, for example, to irrigate flowers for export or wash cars in a country with a chronic water shortage. In areas with chronic freshwater shortages, it was recommended to harvest water during rainy periods.

106 He noted that, although there were very few success stories in water resources management, a number of Asian countries had succeeded in irrigating agriculture. In Africa, however, there were very many examples of failure due to mismanagement and misappropriation in water resources management, despite the fact that Africa had the largest number of integrated agreements for the management of water resources. In South America, there were two main water resources management treaties.

(b) Discussion

107 In the ensuing discussion, one participant observed that transboundary waters constituted a thorny issue in view, sometimes, of diverse ideological orientations which made the signing of agreements difficult. He wondered how the issue could be resolved so that waters were enjoyed equally by all concerned countries. Mr. Okidi advised that a country that wanted to negotiate an agreement must be prepared to approach the other party and that there must be openness and trust in the negotiation. Another participant sought to know whether there existed a protocol for dealing with environmental damage. Mr. Okidi informed the participants that the first Convention on the Law of Non-Navigational Uses of International Watercourses, 1997 had been adopted in May 1997.

108 Another participant noted that sustainable development was a central concept in environmental management, adding that, unfortunately, industrialization was responsible for global warming because of gas emissions and depletion of the ozone layer. The concept of sustainable development had changed recently with the introduction of water pricing and, in Agenda 21, pricing had been mentioned in connection with environmental conservation; it already appeared as if water might soon be sold on the international market. He observed that, given the current state of things, the concept of sustainable development needed to be put under serious scrutiny. He concluded that, since there were international water crises, there was a need to revisit international law.

F. UNCHS (HABITAT) PRESENTATIONS

1. Sustainable Cities Programme

109 Mr. Ole Lyse, Environmental Management Adviser, UNCHS (Habitat), gave a presentation on environmental planning and management in the context of the UNCHS (Habitat) Sustainable Cities Programme. He began by outlining some of the reasons that cities are important, as well as some of the impediments to their optimal development that arise out of environmental degradation. In an effort to address those impediments, UNCHS (Habitat) and UNEP had elaborated the Sustainable Cities Programme, which had evolved out of principles first articulated by the two agencies in the early 1980s and later confirmed at the 1992 Earth Summit and the 1996 City Summit.

110 The goal of the Sustainable Cities Programme was to utilize environmental planning and management principles to optimize the sustainability and quality of life of cities and to promote strong and inclusive local government. The programme would emphasize key principles such as cross-sectoral, institutional and boundary co-ordination; broad popular participation; prioritization driven by the concerns of citizens; the mainstreaming of environmental considerations and a central focus on interactions between development and the environment. The programme was being applied in some 40 cities around the world, but it was hoped and expected that success in those cities would spur replication of the approach on a national and regional level.

2. Localizing Agenda 21

111 In advance of the participants' trip to the city of Nakuru on 19 November, Mr. Rafael Tuts, Programme Officer, UNCHS (Habitat), spoke about urban planning efforts being undertaken in that city by UNEP

and UNCHS (Habitat) under the rubric of Localizing Agenda 21. The Localizing Agenda 21 had evolved out of Agenda 21, which had called for medium-sized cities to implement local action plans with their communities, using a strategic planning approach. Cities were chosen for localizing Agenda 21 on the basis of special characteristics that rendered rational development especially difficult but also especially important. Nakuru met this criterion because it was hemmed in on all sides by geographical features that made further expansion impossible and made it essential that the existing developed land be efficiently and sustainably utilized. Like Sustainable Cities Programme, the localizing Agenda 21 sought to employ a long-term approach through a process that recognized the interconnected nature of environmental concerns and development, utilized innovative mechanisms adjusted for local conditions and fully involved the entire range of interested persons at all levels of the process.

3. Best practices

(a) Presentation

- 112 Mr. S. Fricska, Programme Officer, UNCHS (Habitat), spoke briefly on the UNCHS (Habitat) best practices programme before introducing Mr. Ian Gordon, who had elaborated and implemented the Kipepeo project under that programme. In best practices programme, UNCHS (Habitat) evaluated various environment and development practices in terms of whether they improved the quality of life. Evaluation included consideration of five criteria: tangible impact on quality of life; partnership among all stakeholders; sustainability; leadership and community empowerment; and gender and social inclusiveness. Those practices meeting the criteria were maintained on a database, which currently contained about 650 items, including 210 in the environmental field. The programme had also produced casebooks and analyses of practices. Some of the best practice projects, including Kipepeo, had been funded by a joint incentive programme between UNCHS (Habitat) and the municipality of Dubai, United Arab Emirates. The programme, which was funded by Dubai, had thus made far cash grants to 20 projects (10 projects per year) and was set to make another round of grants in the year 2000. The scope of the programme was to be expanded to apply not just to new projects, but also to enabling policies.
- 113 The Kipepeo project was part of a larger programme aimed at saving indigenous forests by conceiving of ways in which the people who lived in and near the forests could earn a living from them without degrading them. Those people had already relied on the forests for their living, but had utilized many unsustainable practices that had jeopardized the forests and their own livelihoods. The goal was to give the people a vital stake in preserving the forests in a healthy state.
- 114 Kipepeo ("butterfly" in Kiswahili) involved the harvesting of butterfly pupae by residents of a forest community on the Kenyan coast, near the city of Malindi, for sale abroad. Mr. Gordon and his colleagues had taught participating local residents how to capture female butterflies, collect their eggs and preserve them for collection and shipment. Studies performed before and after initiation of the project suggested that those activities had had little or no effect on the butterfly populations, raising hopes that the project would in the long term be both environmentally benign and commercially sustainable. Efforts had also begun to promote the project as an ecotourist destination, and groups of tourists had begun to visit the project facilities. Although this aspect of the project was in its early stages, it was hoped that ecotourism would provide a buffer for periods of low pupae harvesting.
- 115 Begun in 1997, the project had suffered a significant setback from the el Niño rains, which had had a severe negative impact on butterfly populations. By 1999, however, the project had been solidly back on track, and had had a significant impact on people's livelihoods. In 1999, for example, the profits from the project produced average annual additional per capita income of \$125 for the people in the project area, whose base annual income had been between \$40 and \$50. The amounts generated by the project constituted 80 to 90 per cent of the funds earned in 1999 by state owned forest lands from all sources, such as the sale of timber, fuel wood and polewood. That suggested both that more projects such as Kipepeo should be considered and also that the Government, owing to corruption and inefficiency, was selling public resources at prices that were well below market price.
- 116 Mr. Gordon noted that the project had been possible only because key officials had shown flexibility in their attitudes toward the use of forest resources. Those officials had allowed a shift from a rigid prohibition on utilizing forest species to an acceptance of their sustainable utilization, as well as a shift from requiring direct state control of such utilization toward permitting community level initiatives. He concluded by suggesting that the importance of Kipepeo to policy makers was that it demonstrated in concrete terms that well conceived policies could have a real impact on the lives of the people in whose name they were formulated.

(b) *Discussion*

117 One participant wished to know whether IUCN, the World Wildlife Fund or any other major environmental organization had participated in or funded Kipepeo. Mr. Gordon said that although there had been some early discussions with IUCN, nothing had come of them. Ultimately, the program had been funded by the GEF Small Grants Programme, which Mr. Gordon said had been extremely responsive and quick acting.

118 In response to a comment, Mr. Gordon noted that Papua New Guinea had been the pioneer in the field of butterfly farming, and had for many years been engaged in a lucrative business of supplying Birdwing butterflies to collectors. He noted, however, that that was a deadstock market, while Kipepeo operated in a livestock market, rendering the lessons learned by Papua New Guinea only partly applicable to Kipepeo.

119 One participant wished to know how it came to be that Dubai had become involved in the funding of the best practices programme. It was explained that Dubai, with whom Habitat had been worked on various projects in Dubai itself, had come forward unprompted, expressing a desire to support the programme. As a result, the joint incentive programme had been put in place as an additional way of promoting best practices.

G. OZONE DEPLETION AND CLIMATE CHANGE

1. Climate change: legal and policy issues

(a) *Presentation*

120 Mr. Seth Osafo, Programme Officer, Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), discussed climate change. He pointed out that many incidents all over the world pointed to the fact that the world climate was changing and that global warming was a big threat to the world. Happily, he noted, the international community had become aware of this threat and, accordingly, scientists had started studying the phenomenon. Greenhouse gases were being emitted into the atmosphere by industries, power-generating plants and even some agricultural practices. It had become evident that if the international community did not make a concerted effort, the world would be headed for a great disaster.

121 As a first step in combatting climate change, the United Nations General Assembly had in 1990 adopted a resolution to develop a framework convention on climate and the Intergovernmental Negotiating Committee on Climate had been estab-

lished. This had been followed by the adoption of the United Nations Framework Convention on Climate Change in May 1992 in New York. The Alliance of Small Island States (AOSIS) had influenced a number of provisions because they felt that their existence was threatened by climate change causing, inter alia, a rise in the sea level. Many other countries also had immediate climate change concerns. For example, in Switzerland, it had been discovered that the thickness of ice cover on the mountains was decreasing and that this would have very serious implications for the tourist industry.

122 Negotiations of the Climate Convention had been very difficult because there had been very many interest groups. Some countries had felt that the provisions of the Convention did not go far enough. The Convention had been signed by about 150 countries and it had already been ratified by most of the countries. The objective of the Convention was to stabilize and to reduce the concentration of greenhouse gases in the atmosphere. It included commitments for all parties; countries' commitments were differentiated according to their abilities and a lot of importance was attached to capacity-building. Within the framework of the Convention, all parties were expected to exchange information on how they were implementing it. Every country was expected to submit to the secretariat a national communication within three years of the Convention's entering into force; some countries were already ready to submit their second national communication.

123 Mr. Osafo then gave the background of the Berlin Mandate on the implementation of the United Nations Framework Convention on Climate Change. The negotiation process of the Mandate had begun in 1991 and had ended in 1993. The negotiations were followed by the first meeting of the Conference of the Parties in March/April 1995 in Berlin, the second meeting in July 1996 in Geneva, and the third meeting in December 1997 in Kyoto, at which the Kyoto Protocol had been adopted.

(b) *Discussion*

124 In response to a query regarding the current stage of the Kyoto Protocol, Mr. Osafo noted that it would enter into force after it had been ratified by 55 countries, which would have to include the Russian Federation and the United States of America. Asked whether there was evidence that the commitments to reduce greenhouse gas emissions were not adequate, he pointed out that some countries had argued that the commitments were inadequate. However, all countries agreed that the stakes in the Protocol were very high. A step by step approach had been advocated and the Second Conference of the Parties would establish whether or

not the commitments were being met. One participant wondered whether emissions could be considered as a commodity; if they were considered as such, was this ethically right or wise? In response, Mr. Safo observed that some people believed that emissions would end up being traded on the stock market, adding that there were arguments for and against this kind of trade.

- 125 Another participant sought to know if a system existed for accepting scientific evidence from different sources. Mr. Osafo pointed out that a number of scientists argued that there was no climate change taking place and that global warming was a transient phenomenon. He remarked that the Convention was based on the precautionary principle. With regard to what credits would be enjoyed by countries for joint implementation of their commitments, Mr. Osafo noted that Norway and Mexico had planned a joint project that would begin soon after the ratification of the Protocol. He added that modalities of calculation of implementation credits would also be worked out after the ratification. With regard to whether the protocol included sanctions for non-compliance, Mr. Osafo pointed out that there was a provision in article 18 of the Convention that dealt with compliance. Discussion of the compliance regime had already started. He, however, emphasized that it was difficult to take action against countries for failing to comply because of respect for national sovereignty.

2. Responding to climate change

(a) *Presentation*

- 126 Mr. Ravi Sharma, Programme Officer, DPDL, spoke about the challenge of responding to climate change against the backdrop of the UNFCCC. He began by briefly explaining the process of global warming, examining the data supporting the theory of global warming and the greenhouse effect, and listing some of global warming's expected effects. Increases in global temperature over the last century, concurrent with increases in emissions and atmospheric levels of carbon dioxide and other "greenhouse gases", had led to a consensus among many scientists that global warming was a real and indeed urgent threat.

- 127 He observed that the expected effects of global warming included increased rainfall in temperate zones and decreased rainfall in tropical and sub-tropical zones; increased crop yield in temperate zones and decreased crop yield in tropical and sub-tropical zones; a spread of tropical diseases such as malaria; and an increase in the level of the world's oceans. The impact of sea level rise would be widely felt, as half of the world's population lived in coastal

areas. However, that and other effects of warming were expected to fall most heavily on developing countries, many of which were already experiencing severe environmental distress and lacked the resources to respond effectively.

- 128 He then discussed two approaches to dealing with global warming: mitigation, or the reduction of greenhouse emissions in order to reduce the warming effect; and adaptation, or making changes to adapt to the changes in climate and environment, such as sea level rise, brought about by global warming. Both approaches would have to be utilized, he observed, because even if greenhouse gas emissions were entirely and immediately eliminated, the effect on warming would not be felt for 50 or 60 years, and whatever climate change that would result from previous emissions could not be avoided.

- 129 Mitigation efforts had begun in the context of the UNFCCC and its Kyoto Protocol. The Protocol called for a cut of 5.2 per cent in greenhouse emissions from 1990 levels by developed countries. That constituted an inadequate response, because scientists believed a cut of 60 per cent was needed to effectively correct global warming. Countries could not agree even on the 5.2 per cent target. Some developed countries did not wish to ratify the Protocol unless developing countries also agreed to adopt emissions targets. Developing countries did not want to do that because they already produced relatively small amounts of greenhouse gases and feared that to agree to reduction targets would stifle their struggling economies.

- 130 Mr. Sharma suggested that the only way to effectively mitigate was through the intensive development of alternative energy sources such as solar and wind power. He argued that Governments should adjust energy development incentives, which then dramatically favored research on fossil fuel development, to promote alternative energy research and development, and that developed countries should make every effort through the Convention's clean development mechanism and flexible financing provisions to ensure that developing countries shared in this technology as soon as possible. As an example, he suggested that steps be taken to enable China to utilize green technology rather than fossil fuel technology in carrying out a planned massive long-term power plant construction programme.

(b) *Discussion*

- 131 In the ensuing discussion, several participants expressed concern that the climate change problem was being used to justify promotion of nuclear energy as a green technology. Mr. Sharma observed that there was little support for this argument in

the environmental community. Neither was there justification for it in the UNFCCC, which called for the use, not merely of technology that does not emit greenhouse gases, but of environmentally benign technology, which nuclear power could not be said to be.

- 132 There was discussion of the unique position of OPEC countries and other countries dependent on sales of oil and coal. It was recognized that, particularly for developing countries, they faced a difficult challenge in supporting reduction of greenhouse gas emissions while at the same time promoting the orderly evolution of their economies. Nevertheless, it was felt that it was in their interest to support efforts to ameliorate global warming.
- 133 Several participants commented on the special significance of global warming for SIDS, both because of their vulnerability to sea level rise and because of their relative lack of resources. In this context, it was pointed out that the Convention contained provisions for financial assistance.
- 134 One participant wanted to know the extent to which green energy sources were then being utilized. Mr. Sharma reported that considerably less than 1 per cent of energy then came from green sources and that it tended to be concentrated in several small pockets (such as wind and solar energy in California, USA). He did, however, point out some notable examples of new projects being developed in the private sector, such as a large scale solar plant being developed by a large company in the energy sector. He also noted that many countries had elaborated plans to develop alternative energy technologies, but opined that those plans would not progress until the cost of alternative energy came closer to the cost of fossil fuel technology.
- 135 In response to a question on ratification of the Kyoto Protocol, Mr. Osafo ventured his opinion that European countries would ratify the Protocol within a year or two, but he expressed considerable doubt about whether the United States, because of its entrenched reliance on certain technologies, especially automobiles, would ever do so.

3. Legal and management issues on the depletion of the ozone layer

(a) Presentation

- 136 Mr. Gilbert Bankobeza, Legal Officer, Vienna Convention for the Protection of the Ozone Layer (Vienna Convention) Secretariat, made a presentation on legal and management issues arising from depletion of the ozone layer. His presentation covered the implementation of the Vienna Conven-

tion and the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol).

(b) Discussion

- 137 One participant sought Mr. Bankobeza's view on the outcome of the recent negotiations on the ozone layer. In response, Mr. Bankobeza said that the parties to the Montreal Protocol had been asked to cooperate in the reduction of chlorofluorocarbons (CFCs) that could bring about climate change and to look for ways of harmonizing activities with the Climate Change Protocol. Countries had been called upon to promote hydrocarbons and substances that did not harm the ozone layer and to promote ozone-friendly technology.
- 138 Another participant observed that the approach to the management of the depletion of the ozone layer was sectoral rather than bio-regional. He wanted to know whether a bio-regional approach could be adopted, and what UNEP envisaged to do. Mr. Bankobeza replied that UNEP tried to create synergies by establishing sectoral and institutional linkages. UNEP pursued a policy of collaboration, a policy which the Vienna Convention secretariat shared.
- 139 With regard to the non-compliance procedure, one participant sought to know who was on the implementation committee. Mr. Bankobeza informed the members that there was regional representation, whereby each region nominated two members. On the issue of phasing out of chlorofluorocarbons (CFCs), one participant noted that developed countries had developed new products whose prices were going to be high. He wondered why developed countries did not transfer the technology to developing countries, with a view to reducing costs. Mr. Bankobeza pointed out that there was a multi-lateral fund which provided funds to developing countries on a grant basis to train technicians and raise awareness. The money was contributed by members, and the manufacturing countries did not incur any expenses. If the prices of those products were rising, it was simply because some costs were unavoidable and not because developed countries had shifted the burden to developing countries. He added that the Montreal Protocol was a good example of the "polluter pays" principle.

4. Scientific linkages between UNFCCC, CBD and CCD

(a) Presentation

- 140 Mr. A. Alusa spoke on scientific linkages between UNFCCC, the Convention on Biological Diversity (CBD) and the Convention to Combat Desertification

in Those Countries Experiencing Serious Drought and/or Desertification, Especially in Africa (CCD). He pointed out that the elaboration and adoption of each of the three conventions had been preceded by extensive scientific assessments by, respectively, the Intergovernmental Panel on Climate Change, an ad hoc group of experts on biological diversity, whose work later gave rise to the Global Biodiversity Assessment, and UNEP, in the context of the United Nations Conference on Desertification and other related efforts. He noted that the expert panels performing the assessments had been intentionally made multidisciplinary in recognition of the intertwined relationship of climate change, biodiversity and desertification.

141 He then went on to discuss the linkages between the problems addressed by the conventions, including specific linkages between climate and biodiversity and desertification and climate. Regarding the former, he pointed out that, for example, the abundance of forests was affected by warming, but that, conversely, global warming could also be expected to accelerate due to accelerated deforestation. Climate and desertification were similarly linked as, for example, increased desertification would have effects on wind speeds, wind turbulence and precipitation levels, which in turn would contribute to further desertification.

142 He concluded by discussing the linkages between the Conventions regarding scientific activities. He noted that all three had established scientific committees to guide the Conventions' policies. All were required to be multidisciplinary and were open to all parties of the conventions, but he suggested that the Conventions needed to do more to work together and thereby exploit potential synergies. That, he said, was a matter that the COP of each Convention would have to address. He also suggested that, at the national level, countries should put in place multidisciplinary committees to guide coordinated implementation of the three Conventions.

(b) *Discussion*

143 In the technical realm, one participant asked whether UNEP had examined proposals for atmospheric harvesting of carbon dioxide and the use of the oceans as carbon sinks. Mr. Alusa explained that, as of yet, no viable proposal for such a technique had been presented.

144 One participant asked Mr. Alusa to comment on the contrast between the 5.2 per cent emission reduction goal of the Kyoto Protocol to UNFCCC and the 60 per cent reduction in ozone depleting substances that scientists had said was necessary to

arrest ozone layer depletion. He observed that a reduction larger than 5.2 per cent had been politically unacceptable to many countries suggesting that the main problem was that developed countries were simply unwilling to change their lifestyles, which depended heavily on energy consumption. On a positive note, he observed that the fact that countries were able to agree even on a 5.2 per cent reduction goal suggested that they could agree on larger cuts if it were technically feasible to do so without a dramatic lifestyle change.

145 A participant from a small island developing State asked for guidance in evaluating climate modelling computer programs. She reported that frequent attempts had been made to market such systems to SIDs in the Caribbean region as tools to be used in the effort to deal with climate change. Mr. Alusa cautioned that such systems were global in scope and were highly inaccurate on a smaller scale. They therefore could not effectively be utilized by an individual country. He noted that the World Meteorological Organization was involved in efforts to develop more accurate models but even those, if they proved successful, would only be accurate in an area as large as, say, East Africa, and again would be of very limited use to a small island State.

H. SPECIES PROTECTION, BIODIVERSITY AND BIOSAFETY

146 Several speakers addressed issues relating to species protection, biodiversity and biosafety. Dr. F. Situma, Senior Lecturer, Faculty of Law, University of Nairobi spoke about the access and benefit sharing provisions of CBD relating to genetic resources. Mr. Paul Chabeda, Task Manager, UNEP, then discussed biodiversity loss and its environmental impact, after which there ensued participant discussion of both presentations. Ms. H. Okusu, Division of Environmental Conventions (DEC), UNEP, made a presentation on negotiations over a proposed biosafety protocol. Ms. Isabel Martinez conducted a participant brainstorming session on managing biodiversity loss. Mr. J. Vasquez, Associate Programme Officer, Enforcement Assistance Unit, CITES Secretariat, made a presentation on CITES, and Mr. Arnuf Mueller-Helmbrecht, Coordinator, Convention on Migrant Species (CMS) Secretariat, discussed CMS. Finally, Mr. J. B. Ojwang, Professor, Faculty of Law, University of Nairobi, presented a paper on integrated implementation of Conventions related to biodiversity.

1. Access to genetic resources and benefit sharing under CBD

147 After giving a brief overview of CBD, which he noted was perhaps the most widely ratified con-

vention in history, Dr. Situma discussed the provisions of the Convention dealing with access and benefit sharing, and proceeded to outline some of the problems and challenges they presented.

148 A major aim of the Convention was to encourage the free transfer of genetic resources for environmentally sound uses without the establishment of undue barriers. That aim, however, was subject to other basic principles and goals. Thus, the Convention also provided that countries had sovereignty over their natural resources, including genetic resources; that they therefore should share in the benefits that accrue when they transfer those resources; and that the transfer of those resources should occur only on terms mutually agreed between the country of origin and the acquirer and only on the basis of fully informed prior consent.

149 The Convention thus provided much potential protection for developing countries, but Mr. Situma observed that in order to take advantage of it, those countries would need to address, through national legislation and perhaps in the course of individual negotiations, various issues. The principle of benefit sharing, for example, raised the question of just who in the country of origin should benefit. Further, he asked, how would that question be affected by whether the property was privately owned, or owned by the government, or by traditional community structures? On the regional level, how would benefits be shared? Would neighbouring countries with genetic resources work together, or would they undercut one another in price wars? Other such questions existed: What degree of disclosure was required by the concept of prior informed consent? As a practical matter, what degree of technical capacity did countries need in order for their consent to be considered informed? Could countries limit the uses to which an acquirer could put transferred genetic resources, including later developed uses? However countries addressed such questions, whether in the form of legislation or on an ad hoc basis in the context of individual transfer negotiations, he stressed the need to approach them against the backdrop of a comprehensive biodiversity strategy.

150 In closing, he noted that the Convention Conference of the Parties had recently met in Bratislava and had agreed to establish a panel of experts to address access issues. That panel had met and had produced a report, available on the internet, addressing issues such as the scope of access to genetic resources, procedures for prior informed consent, the requirement of mutual agreed terms of transfer, benefit sharing, capacity building and the need for regional cooperation.

2. Scientific aspects of biodiversity loss

151 Mr. Chabeda noted that while extinction of species was nothing new — it was estimated that 95 per cent of species that had ever lived had become extinct — the rate of biodiversity loss had increased sharply in recent years and posed a grave threat to the environment and man's quality of life. He listed three levels of biodiversity — genetic, species and ecosystem — describing the impact of diversity loss with respect to each.

152 He discussed current estimates of species abundance, noting the best estimate was that there were approximately 14 million extant species of organisms, of which approximately 1.75 million had been at least crudely identified. He discussed the fossil record, which had given us our estimates of historical levels of species abundance, and also suggested that the rate at which species near extinction fully recover is quite slow, perhaps as high 5 to 10 million years. He noted human activities that he said were accelerating the rate of all types of extinction. Those included the destruction or fragmentation of ecosystems, the growth of massive agro-ecosystems, the intentional or accidental introduction of alien invasive species into ecosystems and pollution of all kinds.

153 In conclusion, he said there was an urgent need to focus research and development on efforts to monitor and inventory living species as part of the effort to save them. He also urged that, inasmuch as a great number of environmental MEAs, paramount among them CBD, were concerned with biodiversity, efforts should be made to coordinate their efforts and capitalize on the opportunities for synergy they presented.

3. Discussion

154 One participant expressed concern that the practical obstacles to enforcing limits on the uses to which transferred resources could be put might be insurmountable. He posed the example of one who takes a tomato from one country to another. How, he asked, could the country of origin ensure that the acquirer only put the tomato to agreed uses? Dr. Situma agreed it was a vexing problem. He noted it was just this sort of problem that CBD was intended to address, but observed that to some extent at least, such a situation would be determined by the honesty of the persons involved.

155 The question was asked whether species migration was accidental or deliberate. Mr. Chabeda explained that there were numerous causes of species migration, some of which might be character-

ized as accidental (a seed carried on the wind, for example). The causes with which CBD was concerned, however, were deliberate or accidental human acts.

156 In response to another question, Mr. Chabeda explained that the rates of species loss he described in his presentation were "net" losses, i.e., they took into account only the loss of identified species. No one knew how many unidentified species had been lost.

157 Mr. Chabeda agreed with the opinion expressed by one participant that it would be a mistake to assume that biological resources could be practically replaced by synthetic ones, as the latter simply could not replicate the vast amount of the former and, additionally, posed greater hazardous waste risks.

4. Biosafety Protocol Negotiations

(a) Presentation

1 Before the start of Ms. Okusu's presentation, the Chair remarked that there were still areas of divergence with regard to the Protocol and that negotiations were still continuing. Consequently, he cautioned, the views expressed by the presenter were not necessarily those of UNEP. Ms. Okusu started by informing the participants that the Protocol was being negotiated under the auspices of CBD. She defined biosafety as safety in relation to recombinant DNA, genetic modification and genetic manipulation. Those processes involved the combination of different genes to produce a new food product and were associated with the alleviation of hunger. She indicated that there were benefits and risks associated with genetically modified products and that there were differences between countries on the meaning of biosafety. She also noted that exporters should give importers prior information about their products.

(b) Discussion

1 On the issue of whether it was possible for a country to have a draft protocol before the conclusion of the negotiations on the Biosafety Protocol, Ms. Okusu answered in the affirmative. One participant sought to know what would be the situation for countries that already had a draft law on biosafety based on the articles of the draft biosafety protocol. Ms. Okusu emphasized that the national framework law would have precedence over the Protocol, adding that the national framework law was also likely to be more detailed than the Protocol. She noted further that national frameworks should change as regularly as possible so as to keep up

with changing environmental realities. Another participant sought to know whether exporters were obligated to provide biosafety information for every shipment, and Ms. Okusu indicated that such information was only necessary for the first transfer. With regard to whether a country that was a party to the Protocol could export to a non-party, she pointed out that that was one of the issues still being debated.

5. Management of biodiversity loss: brainstorming on the bioregional planning approach

160 For the session run by Ms. Martinez, the participants were split into regional groups to brainstorm on the bioregional planning approach.

161 Before the brainstorming, Ms. Martinez gave M.V.M. Ginnis' definitions of "bioregions" and "bioregionalism" as follows:

161.1 "Bioregions encompass diverse cultural areas, homelands, biodiversity, spiritual and ideological canyons, reveal economic practices, territories of the mind, unique histories of the place, and geographically discreet parts of the earth".

161.2 "Bioregionalism is a grassroots doctrine of social and community-based activism that has evolved wholly outside of mainstream government, industry and academic institutions. Bioregionalism is defined as a body of knowledge that has evolved to inform a process of transformative social change at two levels - as a conservation and sustainable strategy, and as a political movement which calls for devolution of power to ecologically and culturally defined bioregions."

162 In the group presentations of the results of the brainstorming, every regional group was in favour of bioregional planning rather than localized planning. One participant observed that there had been a shift in biodiversity management from a top-bottom approach to a bottom-top one, but he cautioned that it was advisable to work hand in hand with local communities. He added that the shift in the management approach should be gradual to ensure that the communities were aware of what was expected of them.

6. Convention on International Trade in Endangered Species

(a) Presentation

163 Mr. Vasquez began by giving a brief history of CITES. The Convention, which had been signed on 3 March

1973, had come into force on 1 July 1975. It has been ratified by 146 Parties. Mr. Vasquez noted that CITES regulated trade not only in live animals and plants but also in parts such as skin and ivory. He informed the participants that the philosophy of the Convention appeared in the preamble. He pointed out that local and international exploitation of wild species of flora and fauna was the second major threat to their survival, after the destruction of the habitat.

164 Mr. Vasquez said that there were several misconceptions about CITES, including the ideas that:

- 164.1 CITES was about trade in endangered species;
- 164.2 CITES prohibited trade in all listed species;
- 164.3 CITES had authority over domestic use and trade in species;
- 164.4 CITES was about charismatic mega-fauna, for example rhinos and elephants; and
- 164.5 CITES was about wildlife conservation but not about sustainable use of species.

165 With regard to the establishment of synergies in accordance with Agenda 21, chapters 8 and 39, Mr. Vasquez noted that CITES worked closely with the World Trade Organization (WTO), CBD and other biodiversity-related conventions. It also worked with the Southern African Development Community and the Lusaka Agreement. He observed that national legislation must fulfil the following requirements: designate authorities, prohibit illegal trade, penalize and confiscate. It had four types of documents: import permit, export permit, re-export permit and certificate of origin. Each party had the obligation of establishing a national network and designating a CITES management authority and a scientific authority. Moreover, the many branches of government involved in the implementation of CITES within each party must be empowered with effective legislation and the capacity to implement.

(b) *Discussion*

166 After the presentation, the Chair pointed out that hardly any country had legislation for implementation of the Convention, noting that Uganda had just passed an Act on Environmental Management. One participant sought to know what happened about trade in genetically manipulated species. In response, Mr. Vasquez observed that CITES was not responsible for the protection of genetically manipulated species. In response to a query on whether CITES could help in the prevention of bio-piracy, Mr. Vasquez noted that CITES assessed legislation used for implementation of the convention to see whether there were areas in which it was defective. Another participant asked what a country could do to pro-

tect an animal species in Appendix 1 of the Convention against diplomats who were likely to take advantage of their diplomatic immunity. Mr. Vasquez pointed out that CITES could assist in the training of police and customs officers.

7. Convention on Migratory Species

(a) *Presentation*

167 Mr. Mueller-Helmbrecht began his talk by noting that it was generally thought that CMS, which had been signed in 1979, covered only birds and pointed out that, on the contrary, it also covered other types of species, for example marine mammals such as whales. He observed that there were between five and ten thousand migratory species. However, very little was known about them. There was therefore a need for concerted international action. CMS provided a framework for countries to work together for a common goal: the conservation of migratory species throughout their entire range.

168 Mr. Mueller-Helmbrecht indicated that CMS used the following tools:

- 168.1 Concerted actions for endangered species;
- 168.2 Co-operative agreements for species having an unfavourable conservation status;
- 168.3 Concerted coordinated research and monitoring to know where the animals were migrating so as to ensure that they were sustainably exploited.

169 The rationale of the Convention was that migratory species were part of the common natural heritage and the world's genetic resources. Migratory species were indicators of:

- 169.1 Linkages of interdependence between ecosystems on a larger geographical scale;
- 169.2 Ecological changes, for example climate, pollution, etc.; and
- 169.3 Interrelating with resident animal and plant species.

180 Mr. Mueller-Helmbrecht observed that CMS covered a very small percentage of total biodiversity and that it was related to CITES, CBD, the Convention on Wetlands of International Importance and the World Heritage Convention, all of which had the same goal: conservation and sustainable use.

(b) *Discussion*

171 One participant sought to know who owned species that migrated from country A to country B given that migratory species were a common heritage. Mr. Mueller-Helmbrecht pointed out that such spe-

cies remained a common heritage. Another participant, expressing the concern that development projects and industries caused the destruction of species, sought the presenter's comment on this. Mr. Mueller-Helmbrecht shared his concern, noting that development projects and industries always led to disruption of the environment and over-exploitation of species.

8. Integrated implementation of biodiversity-related conventions

(a) Presentation

172 Mr. J.B. Ojwang began his talk by observing that environmental resources were crucial to any country because they marked the limit to economic and social development. The international community had focused its attention on the conservation of biodiversity as an issue that was crucial to the life and well-being of present and future generations. The standard approach to biodiversity conservation was through the adoption of a series of conventions, placing obligations on participants to take prescribed courses of action. Environmental conventions reflected the thinking of the various countries party to them. Implementation of conventions was in the first place addressed at the national level where it was very important to decide what instruments were to be used for enforcement. It was imperative to establish coordination mechanisms. There were many environment conservation conventions at the international level. Coordination was also crucial at this level.

173 The possibility of more integration into the schemes of the various conventions should be reflected in the implementation mechanisms at national level. Such integration would lead to greater efficiency and have positive implications with regard to cost, international decision-making, national institutional arrangements, ease of administration and capacity-building for implementation.

(b) Discussion

174 A few participants made comments on the presentation. The participant from Jamaica said that, contrary to the situation prevailing in most countries, implementation of biodiversity-related conventions in his country was well coordinated and integrated because the country had very limited biodiversity resources. The main concern there was integration at the international level. There was a single person working on the implementation of all the relevant conventions. The situation was similar in Antigua and Barbuda.

175 One participant observed that each environmental convention had its own secretariat, and pointed

out that it would have been better to consolidate the secretariats for ease of integration, with UNEP being the depository of all environmental conventions. This would for instance put an end to duplication of reports to the various secretariats. In response to this observation, the Chair noted that the practice of establishing a different secretariat for each convention was fairly recent and that each secretariat enjoyed considerable autonomy, and none of them would be keen to surrender its prerogative. Moreover, the creation of a single secretariat might lead to a scramble, each country fighting to host at least one of them. He added that there was no chance of them being consolidated in Nairobi.

I. DEFORESTATION AND LAND DEGRADATION

1. Deforestation and land degradation: policy and technical issues

(a) Presentation

176 Mr. Bai-Mass Max Taal, Programme Officer, DPDL, made a presentation on deforestation and land degradation policy and technical issues. He began by defining two important concepts: deforestation and degradation. According to him, deforestation was the process of forest cover reduction by 90 per cent or more, while degradation was the reduction in the quality of forest ecosystems. Deforestation mainly occurred in tropical areas and degradation mainly occurred in temperate and boreal forests. Deforestation and degradation constituted a serious problem nationally, regionally and globally. It was life-threatening because forest ecosystems played a crucial role in economic and social development, in environmental protection and in the planet's life support system.

177 Forests were one of the major reservoirs of territorial biological diversity. They acted as carbon sinks and reservoirs and were a significant source of renewable energy, particularly in developing countries. They were an integral part of sustainable development and were essential to many indigenous and local people and other forest-dependent people leading traditional lifestyles, forest owners and local communities, many of whom possessed important forest-related knowledge.

178 Mr. Taal noted that between 1980 and 1995, forest area increased in developed countries while it decreased in developing countries. It was generally believed that forests were decreasing in the developing countries because most energy in these countries came from forests and due to land clearing for agriculture. However, Mr. Taal observed that the underlying causes of deforestation and degradation were as follows:

- 178.1 Poverty: uncertainty about the future made people think only of the here and the now; poor people could not think of sustainability;
- 178.2 Agricultural land was being increased because soils had become poorer and agricultural inputs were beyond farmers' reach. Developed countries did not have this problem; and
- 178.3 Artificial forests had no biological diversity because it had already been destroyed with the destruction of the natural forest.
- 179 Once the world had realized that forests were fast disappearing, it had been decided that afforestation was an environmental imperative. At the Rio Summit, countries had been urged to stop deforestation of tropical forests but developing countries, who owned tropical forests, had been reluctant. This had led to a polarization between the North and the South. The Summit had only resulted in the formulation of principles and not in the establishment of legally binding instruments. It had consequently become necessary to hold negotiations on consensus in order to come up with international arrangements and mechanisms for sustainable management and development of forests. The negotiations had started in 1995 and were ongoing.
- (b) *Discussion*
- 180 One participant observed that forest logging had for long generated a dispute between developed countries and developing countries, while another noted that there was need for a convention to manage forests. They sought the opinion of Mr. Taal on these issues. In response, Mr. Taal pointed out that the International Forest Convention (IFC) was being negotiated, noting, however, that the IFC could not interfere with the internal affairs of a country and that it was not known what the outcome of the negotiations would be. Each country had the sovereignty to manage its affairs in accordance with its environmental, social and political conditions.
- 181 One participant expressed the concern that forests in her country were fast disappearing and wondered whether there could be a legally binding international instrument to control or regulate forest management. Mr. Taal observed that her country had a lot of forest but deforestation was very high because foreign countries that had been given concessions to cut trees by the government had over-exploited the forests without replacing trees. It appeared that the problem in her country was that personal interests were placed before national interests as far as the management of forests was concerned.
- 182 Another participant observed that in his country, exportation of yams had led to deforestation because more and more land was being cleared for the cultivation of yams. This had led to the problem of siltation. Mr. Taal noted that in poor countries, exports were generally preferred to conservation because the countries needed money to repay their external debt. Such countries found themselves in a vicious circle of poverty because the money obtained from exports did not alleviate poverty. Two participants expressed the concern that countries were not implementing the right afforestation programmes and wondered whether an international strategy could be developed to reverse the situation. Mr. Taal indicated that in the on-going IFC negotiations, proposals for action had been put forward but it had not yet been determined how the proposed actions would be implemented.
- 2. Deforestation and land degradation: management issues under CCD**
- (a) *Presentation*
- 183 Ms. Elizabeth Migongo-Bake, Programme Officer, DEPI, spoke on deforestation and land degradation management issues in the context of CCD. She described land degradation as a loss of the land's sustainability and productive capacity affecting more than 250 million people and threatening another 1 billion. Land degradation was brought on by climate variability, including drought, as well as by human activities like overcultivation, overgrazing, deforestation and poor irrigation practices, all of which had their roots in economic pressure and ignorance. Land degradation was self-reinforcing: the impoverishment of the land caused reduced crop yields, which pushed people to use unsustainable farming techniques, which in turn contributed to the further degradation of the land.
- 184 She then outlined certain features of CCD and UNEP activities in the area of land degradation. She described the chief mechanisms through which CCD had been designed to function, i.e., national, sub-regional and regional action programmes, as well as the role of donor countries, recipient countries and various agencies. She stressed in particular the emphasis placed on civil participation in both the elaboration and implementation of CCD.
- 185 She discussed two UNEP activities contributing to CCD, the first a case study of the links between land tenure laws and land degradation in the drylands of Mongolia, Nepal and India, and the second a programme of success stories in land degradation and desertification control. The case study had revealed that the erosion in many societies of

traditional modes of land ownership had contributed to land degradation and that secure ownership (or at least rights of use) of land was critical to halting land degradation. The success stories programme aimed at publicizing successful practices in sustainable land use in order to promote the replication of such practices. It focused on practices that had proven to be sustainable (environmentally, politically and socially) and had featured a high degree of community involvement. Selected successful practices were awarded certificates of merit, but there were plans to reward successful projects with funds as well as certificates in order to increase the incentives for their use.

(b) *Discussion*

186 In response to a question about the role of environmental lawyers in combating land degradation, Ms. Migongo-Bake emphasized the central role of the national action plans under CCD. Those plans were to be the blueprint for combating degradation on the national scale, and CCD anticipated that they would be formulated from the bottom up, i.e., utilizing the knowledge and reflecting the concerns of the people most directly affected. Thus, the environmental lawyer had the job first of meeting those people, learning what they had to contribute and what they needed, and then translating their input into effective law and policy.

187 One participant voiced a concern about the interaction of poverty alleviation programmes and land degradation. Noting that poverty alleviation for farmers usually translated into increases in crop yields from their land, she wondered whether such programmes were not contributing to degradation through the use of unsustainable methods to achieve those increases. Ms. Migongo-Bake agreed that this was a problem, noting that it illustrated the inter-related nature of environmental and development concerns and the need to address them in a holistic fashion.

3. Forest Monitoring and advocacy in Kenya

(a) *Presentation*

188 Mr. Christian Lambrecht, Programme Officer, Division of Environmental Information and Assessment (DEIA), UNEP, gave a presentation on specific examples of community advocacy and monitoring on forest issues in Kenya, discussing the activities of the Kenya Forest Working Group (KFWG). KFWG was a lobbying group started in 1995 out of concern for the rapid rate at which Kenya's forests had been disappearing. It was a community group with a wide ranging membership including individuals, international organizations, non-governmental or-

ganizations and government agencies. Its principal activities were the gathering of information on forest issues and the lobbying of persons and institutions in a position to take action. Mr. Lambrecht emphasized that the effectiveness of the group depended heavily on the quality of its information, its relationships with key people and its credibility.

189 As an example of KFWG's advocacy activities, Mr. Lambrecht described a campaign that had prevented the logging of rare species of hardwood trees. For example, KFWG had discovered that Kenya Railways (KR) had advertised to purchase railroad sleepers made from the trees. Upon learning of this, KFWG had written a letter asking KR to use alternative materials such as metal or concrete to make the required sleepers, and had copied the letter to relevant Government authorities and the news media. As a result, the media had carried the story in the press, the Ministry of Environment and Natural Resources had become involved, and KR had to drop its plans.

190 Another example of KFWG's monitoring and advocacy efforts involved the Mt. Kenya, Imenti and Ngare Ndare forest reserves. It had come to KFWG's attention that those areas had been continually plagued by various illegal activities and were being seriously degraded as a result. To verify those claims, KFWG had performed an aerial survey, which had documented extensive degradation of the forests resulting from activities such as charcoal burning, marijuana cultivation, livestock grazing and logging. With the information it had gathered from the survey, KFWG had published a report on the activities in the reserves. As a result of the subsequent publicity, a new Chief Conservator of the Forest had been appointed, several senior civil servants with responsibility for the forests management had been sacked or transferred, and a new enforcement unit had been established to safeguard the remaining forests in the Ementi reserve.

(b) *Discussion*

191 In response to a question as to KFWG's corporate form, Mr. Lambrecht explained that it had a choice of registering as an independent non-governmental organization or as a subcommittee of an existing non-governmental organization. Because the latter option was simpler, KFWG had been created as a subcommittee of the East African Wildlife Society.

192 Another participant wanted to know the costs of the aerial survey of the forest reserves. Mr. Lambrecht explained that the cost had been approximately \$15 per sq. kilometer for the use of an airplane with pilot and photographs of damaged areas.

J. ENVIRONMENTAL PROJECTS: DEVELOPMENT, FINANCING AND MANAGEMENT ISSUES

1. UNEP project development and funding

193 Mr. Segbedze Norgbey, Programme Officer, Project Coordination and Management Unit, UNEP (PCMU), discussed the project approval process and sources of funding at UNEP. He said the principal source of general funding for UNEP was the United Nations Environment Fund. Project or programme specific funding was supplied by trust funds, counterpart contributions and the Global Environment Facility. While previously the Environment Fund had supplied the major part of UNEP funding, that was no longer the case, and trust funds were now the principal source.

194 Discussing project approval, he outlined the place of individual projects in the larger context of UNEP programmes and long term planning. The latter were set out in the UNEP medium term plan, proposed programme budget, programme of work, and, at the biennium level, strategic planning exercise, all of which were designed to reflect the input of the United Nations General Assembly, the UNEP Executive Director, the UNEP Executive Committee and Management Board, United Nations member States, regional bodies and programme managers, regional directors, other United Nations agencies and external partners. Thus, specific projects were elaborated only upon completion of, and had to be consistent with, those larger plans and policies.

195 He then mentioned the numerous sources of individual project ideas and discussed the requirements of proper project formulation and design, including the required elements of the "results management model" employed by UNEP, i.e., "needs", "results", "outputs" and "activities". Finally, he described in considerable detail the project review and approval process, including peer review and other mechanisms intended to ensure the quality of approved project proposals.

2. The United Nations Foundation

196 Mr. Paul Akiwumi, Programme Officer, PCMU, reported on the United Nations Foundation (UNF) and its relation to UNEP activities. UNF, which was not an official United Nations organization, was a public charity that had been established to receive approximately \$1 billion to be donated over the course of 10 years by Ted Turner, the well known American media magnate, to be used in support of United Nations causes. He also described the operations of the United Nations Fund for International Partnerships, an autonomous trust fund established by the United Nations to interface with

UNF. He then outlined the four main areas of UNF activity, its criteria for project funding and the likely level of UNF support for UNEP activities. He listed the major UNF activities as grant-making, strengthening United Nations institutions and support for the United Nations; public education about the United Nations; and United Nations fund raising. UNF funding would favour projects that focused on prevention rather than remediation, had a funding multiplier effect or other leverage effect, contributed to institutional strengthening, were sustainable and were aimed at benefitting the poorest populations. Regarding UNEP participation in UNF funding, he reported that it was expected that UNEP projects would receive approximately US \$80 million per year.

3. Discussion

197 The participants raised several matters during the discussion following the presentations by Mr. Norgbey and Mr. Akiwumi. Several asked whether there existed guidelines for drafting project proposals. Others asked whether projects could be initiated by Governments, and what the permissible scope of projects was in terms of budget. It was explained that UNEP regional offices provided training on project proposals, and that UNEP had prepared a project formulation and implementation manual, which was available to the participants. It was also explained that there was no arbitrary limit on either the size of projects or the source from which they might come, which included non-governmental organizations, ministerial and other regional or sub-regional organizations and Governments. UNEP ran projects under memoranda of understanding with various Governments, and projects could have budgets as small as \$25,000.

198 One participant expressed concern that the final decision as to funding projects with UNF money would be made by the UNF board rather than by the United Nations. The participant asked whether the United Nations Secretary General would be a member of the UNF board and whether UNF priorities would be consistent with those of the United Nations. Regarding the UNF board's final authority over funding decisions, the presenters explained that as UNF was not a United Nations body, the funding decision would of necessity not be made by the United Nations. They also pointed out that while the Secretary General was not a member of the UNF board, he would, through the UNFIP/UNF arrangements, approve all projects proposed for funding by UNF. They also expressed their belief that UNF priorities were fully consistent with United Nations priorities, and gave several examples to illustrate.

- 199 Another participant asked whether the contribution by Mr. Turner had necessitated amendment of the rules governing United Nations funding. Such an amendment had in fact been necessary, as previously only member States could make contributions to the United Nations. However, under the new rules, any contributions to UNEP of over \$500,000 would require approval by the Committee of Permanent Representatives to the Governing Council.
- 200 Several participants wanted to know the amount of the UNEP budget, and whether it was subject to review by the United Nations. The budget for the 2000-2001 biennium was said to be approximately \$100 million, and it was explained that the UNEP budget was subject to United Nations review.
- 201 Finally, in response to a question, it was explained that projects were fairly often revised after implementation was begun, and that such revisions were subject to the same approval process as the original project.
- 4. Financing environmental management: the Global Environment Facility**
- (a) *Presentation*
- 202 Mr. A. Djoghlaif, Coordinator, Global Environment Fund (GEF) Secretariat, spoke on the subject of GEF, which he described as a partnership among UNEP, UNDP and the World Bank intended to provide new funding to developing countries for the incremental costs of environmental management in 4 key areas: biological diversity, climate change, international waters and protection of the ozone layer, plus the additional area of land degradation to the extent it related to those 4 areas.
- 203 He described the history of GEF, from its beginning as a pilot programme with US \$1.2 billion in funding, through its current state as the result of a restructuring. That restructuring had begun in 1994, spurred by a 1993 independent evaluation, the Overall Performance Study, and was ongoing in an effort to implement decisions made at the first GEF assembly, held in India in April 1998. In the wake of the evaluation, GEF funding had been replenished, first in 1994 in the amount of US \$1.75 billion, and then again in 1998 in the amount of US \$2.75 billion. Various recommendations had been made during the evaluation which, together with the decisions of the GEF assembly, were in the process of implementation. He described those recommendations, as well as the operational principles under which GEF operated.
- 204 He spoke of the governance and structure of GEF, briefly describing the composition and role of the Assembly, the GEF Council, the Secretariat and the Scientific and Technical Advisory Panel, and he also discussed the separate roles of UNEP, UNDP and the World Bank. He then went on to outline some GEF activities (which fall in the categories of operational programmes, enabling activities and short term response measures), and also described project elaboration, criteria and funding procedures.
- (b) *Discussion*
- 205 In the wake of Mr. Djoghlaif's presentation, one participant asked about the process of naming GEF focal points, noting that his government had rather abruptly changed the focal point in his country. Mr. Djoghlaif explained that the selection of the focal point for each country was entirely in that country's hands. He noted that many governments had named ministries of the environment or finance as their focal points, but others had taken a different approach, utilizing a consortium including government agencies, non-governmental organizations and others.
- 206 In response to another question, he explained that efforts were underway to enhance the role of the private sector in GEF activities, reflecting decisions by the GEF Council and the conclusions of a policy paper on the subject.
- 207 Another participant asked Mr. Djoghlaif to comment on rumours of dissatisfaction with the performance of UNDP in the GEF partnership. He noted that some had said that UNDP, with its historical institutional focus on development, had not adequately incorporated environmental considerations into its activities and therefore had not been effective in GEF. He observed that UNDP was currently in the process of transformation under the leadership of its new Administrator, Mr. Mark Malloch Brown. He expressed confidence in UNDP, both in general, and with respect to its ability to incorporate environmental considerations into its approach to development, and reported that there was no intention to remove UNDP as a GEF partner.
- 208 There were questions regarding contributions to GEF funding and the GEF decision-making process. Mr. Djoghlaif explained that while there was a formal mechanism for weighted voting among the country members, it had never been employed. Instead, all decisions had so far been made by consensus, and it was expected that this practice would continue. As to funding, he explained that donations were strictly voluntary and that only member

countries were eligible to donate. He noted, though, that all GEF projects had to receive co-financing from other sources to be eligible for GEF funding.

5. Public relations and the news media in environmental issues

(a) *Presentation*

209 Mr. Tore Brevik, Spokesperson, Division of Communications and Public Information, UNEP, spoke of the role of the news media in raising public awareness of environmental issues and of the need for effective liaison with the news media on the part of UNEP and others hoping to influence environmental policy.

210 He began by discussing the UNEP approach to the news media, noting that, particularly in the last 2 years, media communications had been considered a top priority at the core of the UNEP management strategy. He said UNEP leadership had set the goal of building a culture of communication at UNEP, and ensuring that UNEP became the organization that journalists, policy makers and others turned to first for environmental information. To achieve this goal, it was essential for UNEP to avail itself of both news media systems, such as the rapidly expanding world wide web, and existing media, such as radio, which was an extremely widespread medium often available even to the very poor. He noted in this regard that UNEP would begin sponsoring Earth Report, a 1/2 hour weekly BBC television programme on the environment with an expected audience of 165 million people all over the world.

211 He went on to discuss effective means of communication in the field of environmental journalism. He noted that environmental journalism had become a large field, with many journalists specializing in the area. He suggested, however, that it was too focused on crises and gave insufficient coverage to more fundamental issues and information that was of genuine interest and utility to the public.

212 He observed that the goal of environmental communicators was to change people's behaviour and encourage their participation in the process of environmental policy making and implementation, and he noted several reasons why that goal was a difficult one. Environmental phenomena were complex and inter-related, and not readily reducible to a form that was quickly and easily understood. Environmental science was rapidly and constantly evolving, with the attendant changes in scientific consensus provoking scepticism among the public. The benefits of sound environmental policies were often long delayed, while the behaviours they tried to change produced immediate and often vital ben-

efits. Environmental issues were also often framed in global terms, while many people were most concerned with their immediate environment. Finally, the continuing debate between North and South over the contributions and responsibilities of each for solving environmental problems was a drag on progress.

213 He urged that in communicating on environmental issues, the participants should bear those challenges in mind. Thus, it was essential when presenting environmental issues in the media to relate them to people's lives, to make them vital and interesting, to help people see their importance by finding and highlighting the significance and inherent drama of the subject. Communicators should emphasize the benefits of changing environmentally destructive behaviours, while not ignoring the costs; should work to gain the trust of their audience, enlisting the aid where possible of trusted figures in the audience community, such as clergy; should respect cultural traditions in framing their message; should squarely address the audience's fears about what the desired change would mean for them; and, perhaps most important, should clearly articulate the alternatives available to the audience if they agreed to forego their accustomed practices.

(b) *Discussion*

214 There was comment during the ensuing discussion on the appropriate role of non-governmental organizations in the area of public information, and one participant asked the extent to which UNEP co-operated with non-governmental organizations in information dissemination. It was pointed out that non-governmental organizations were a vital part of the environmental movement and that they had been instrumental in the founding of UNEP, inasmuch as they had been strong voices calling for creation of a United Nations environmental body. It was recognized that non-governmental organizations could pose difficulties for governments, and that the environmental debate could be fractious and punctuated by strident voices, but it was suggested that that was part of a healthy open system of information exchange.

215 Others wanted to know to what extent the UNEP public information campaign worked through its regional offices, and whether it could work directly through news outlets rather than through government, e.g., government information or environmental ministries. It was noted, for example, that there was little information in the Caribbean region media on UNEP activities, and that when information was given to government ministries, it often never made it to the public. Mr. Brevik noted that the UNEP information campaign had been hampered by a

lack of funds, but reported that efforts were ongoing to improve things, including through utilization of the UNEP regional offices. In particular, UNEP was looking for information partners who could be counted on to publicize information supplied by UNEP in a given region.

216 Another participant wanted to know whether it was a good strategy to cultivate personal relationships with journalists. It was explained that friendly relations with journalists could be advantageous, providing ready access to publicity as well as the possibility of shaping how a story is reported or even whether it is reported. It was pointed out, however, that one must be careful to be even-handed with journalists when it came to providing information.

217 In response to a question about how much of a project's budget should be devoted to publicity, Mr. Brevik opined that communication was a crucial aspect of any project and ought to command as much as 1/3 of its budget. He noted, however, that it was typically an afterthought for many policy makers, and often received only budgetary crumbs.

K. MANAGEMENT AND REGULATION OF CHEMICALS AND WASTE

1. Scientific and technical issues in the management of hazardous chemicals and wastes

(a) Presentation

218 Mr. J. Willis, Director, Chemicals Office, Division of Technology, Industry and Economics, UNEP (DTIE), spoke on scientific and technical issues in the management of hazardous chemicals and wastes. He noted that the Global Chemicals Agenda was derived from Chapter 19 of Agenda 21, which dealt with global chemical safety. Its programme areas were as follows:

- 218.1 Three hundred risk assessments had been conducted by the end of 1997; the intention was to achieve 500 by the end of 2000;
- 218.2 Harmonization of classification and labelling of chemicals;
- 218.3 Information exchange on toxic chemicals and chemical risks;
- 218.4 Establishment of risk reduction programmes;
- 218.5 Strengthening of national capacities and capabilities for chemical management; and
- 218.6 Prevention of illegal international traffic in toxic and dangerous products.

219 Mr. Willis also mentioned the following organizations working in the area of hazardous chemicals and wastes:

219.1 The Intergovernmental Programme for Chemical Safety, which was a joint programme of UNEP, the International Labour Organization (ILO) and WHO, which had existed since 1980;

219.2 The Intergovernmental Forum on Chemical Safety, which had been established after UNCED; and

219.3 The Inter-Organization Programme for the Safe Management of Chemicals, which had been established after UNCED. This programme, whose members included UNEP, FAO, ILO, the United Nations Institute for Training and Research, UNIDO and the Organization for Economic Cooperation and Development (OECD), was a coordinating mechanism and had been highly successful in analyzing partnerships.

220 Mr. Willis indicated that the new focus of UNEP was action focused on Governments and non-governmental organizations and development of new chemical instruments. This had led to the adoption of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC Convention), in 1998. Negotiations on another convention on persistent organic pollutants (POPs) are on-going. Its objective is to reduce or eliminate releases of POPs into the environment. He pointed out that the following lessons had been learned from the POPs Convention negotiations.

220.1 It helps to follow on the heels of another negotiation;

220.2 Awareness raising workshops are crucial;

220.3 It was necessary to adopt a measured pace, first the outline, then the draft text;

220.4 It was a good thing to have shared expectations; and

220.5 Day sessions were better than night sessions.

221 In summary, Mr. Willis noted, the focus was on supporting the development and implementation of chemical treaties and on capacity-building for sound management of chemicals.

(b) Discussion

222 One participant wondered why radioactivity was not addressed in the proposed Protocol. In response, Mr. Willis pointed out that the negotiations had covered only organic pollutants; radioactive and nuclear materials had not been covered. Another participant observed that penalties for non-compliance were not provided for and wondered whether it would be possible for countries to sign the convention without knowing about the penalties. Mr. Willis noted that the current status reflected the wishes of the concerned Governments.

223 With regard to a query on whether a joint secretariat of FAO and the PIC Convention would not pose problems, Mr. Willis said that it would not, as each specialized in a different area; UNEP had experience in chemicals while FAO had experience in pesticides. He noted further that if Governments wanted to change, there would have to be a 75 per cent vote.

2. Regulation of hazardous wastes and chemicals

(a) Presentation

224 Mr. Masa Nagai, Legal Officer, Division of Environmental Policy Development and Law, outlined possible legal approaches to regulating hazardous wastes and chemicals. He began by emphasizing the importance of recognizing the problems such substances posed, as those would determine the appropriate policies. In summary, he listed the problems as physical injury from exposure and release into the environment by various means, both intentional and accidental. He also briefly described the manner in which releases occurred and the means by which the substances, once released, moved through the environment.

225 He discussed what he called the starting point for a scheme of regulation and control, i.e., the need to identify problems, consider possible responses and establish an appropriate policy, policy tools, means of implementation and institutional arrangements. He then listed various elements of a waste and chemical regulation regime, including possible restrictions on manufacture and use of chemicals; regulation of chemical and waste discharge and emissions, including municipal waste; enforcement mechanisms, such as fines; compensation of injured persons and cleanup of contaminated sites. He emphasized the central importance of record keeping and documentation control with respect to inspection reports, permits, licenses and other like documents. He also observed that, as mitigation of hazardous waste was both difficult and expensive, a program aimed at prevention should be a vital part of any regulatory and management regime. He suggested such a program should include efforts to build the knowledge base, to assess health and environmental risks, to carefully plan sites for hazardous installations and to prepare for accidents in advance.

(b) Discussion

226 In the ensuing discussion, Mr. Kaniaru commended the presentation to the participants as a very useful checklist of issues to be considered in establishing a chemical and hazardous waste manage-

ment regime, noting that in many countries information was diffuse and unreliable. He also echoed the great importance of record keeping and documentation control to the success of such a scheme, and in particular stressed that the government employees working in this area should be ethically beyond suspicion, as it was an area with great potential for corruption.

227 In response to a question about cleaning up hazardous waste, Mr. Nagai noted that it could be done, but was very difficult. It was essential to have comprehensive legislation and regulations, including perhaps a provision for a revolving fund to permit immediate clean-up without waiting for funds when hazards happen. Further, allocating final liability for hazardous waste pollution required knowledge of who was responsible, which highlighted the importance of effective record keeping and monitoring requirements.

228 Another participant asked about protection for employee whistle-blowers. Mr. Nagai noted that whistle-blower protection legislation existed in some countries, but observed that perhaps the best protection for a whistle-blower was a public that was well informed on environmental issues, as such a public could be expected to rally to a whistle-blower's defense if he or she were threatened with retaliation by a polluting employer.

229 In response to a participant observation about the very long time sometimes required to assign liability and effect compensation for toxic spills, Mr. Nagai noted that such delays were in part due to the difficulty of clearly linking a spill to a particular person's medical condition. He observed that it was therefore very important to have rules clearly establishing who could be considered a victim for compensation purposes.

230 One participant asked what countries could do about chemicals that are imported and later banned or restricted. Mr. Nagai noted that if the chemicals were legally imported, there was no legal recourse. FAO, however, did have a program to help countries dispose of obsolete pesticides.

231 In response to another question, it was explained that the Basel Convention contained no provisions for clean-up of polluted sites. Clean-up was governed only by national law.

232 Another participant described measures being taken in his country to enact chemical regulations, and noted that there was considerable confusion among the legislators involved about what chemicals to classify as toxic and about what guidelines to employ in making classification decisions. Mr. Nagai

noted that there were many different schemes of chemical classification, and that the United Nations had assigned the ILO to harmonize them. He said countries could utilize the ILO scheme, but suggested it would likely be advisable to employ as well the scheme used by the countries or regions from which chemicals would be imported.

3. **Cleaner production as an economical means of achieving industrial environmental compliance**

(a) *Presentation*

- 233 Mr. Leo Heileman, Programme Officer, DTIE, discussed "Cleaner Production" (CP), an approach to environmental compliance being promoted by the UNEP Division of Technology, Industry and Economics. After outlining the main DTIE programme areas, he went on to discuss CP, which he defined as "the continuous application of an integrated preventive environmental strategy" to industrial processes, products and services, with the goal of increasing efficiency and reducing risks to humans and the environment.
- 234 He outlined the reasons that CP was desirable, as well as the prerequisites and impediments to effective CP implementation. He argued that CP was desirable because: it was less costly and safer to prevent harm than to remedy it; it usually paid for itself in a short period of time; it minimized the need to handle waste and comply with rigid environmental regulations; and it promoted greater environmental awareness. He identified the prerequisites to effective CP implementation as a willingness and commitment to improvement, open-mindedness, team work and the utilization of a structured process and methodology, and suggested that the principal impediments were negative prevailing attitudes, lack of information as to the difficulty and benefits of CP, and institutional, economic and technical barriers.
- 235 He gave many examples of CP techniques, including improved production management; training; process change, such as equipment modification to reduce waste and cut costs; recycling; the use of by-products; substitution of inputs with more environmentally benign and/or more efficient inputs; product modification (less wasteful packaging, for example); good housekeeping (such as timely repair of leaks, proper use of insulation and prevention of escape of powdery materials); and changes in technology.
- 236 He then went on to discuss some of the CP programme's activities. Those included the International Cleaner Production Information Clearinghouse, a

database that companies could access to obtain CP ideas; the International Declaration on Cleaner Production, an effort to have Governments, non-governmental organizations, industry and other stakeholders commit to CP principles; a program in 5 developing countries to explore ways of stimulating private sector funding for CP; and, principally, UNEP Working Groups and UNEP/UNIDO National Cleaner Production Centres (NCPCs). Working Groups were technical advice and general information units, each working in a particular industry or in the areas of education, policies and strategies or information sharing. The NCPCs were national centres established in various countries to perform in-plant CP assessments, provide CP training, disseminate information and give policy advice.

(b) *Discussion*

- 237 One participant noted an example of CP in his country, in which a cement plant was capturing and re-using cement dust that had previously been allowed to escape, spoiling nearby crop lands. Mr. Heileman commended the effort as a public service, noting that there was a strong disincentive to capturing cement dust because it was an expensive undertaking with a long pay-back period.
- 238 One participant questioned why companies acted alone in pursuing CP strategies, and asked whether joint action would not be more effective. Mr. Heileman agreed that joint action might be beneficial but suggested that, as the incentive for CP came from a company's own profit, that company was likely to pursue solitary action. However, concerted action did exist where companies were clustered in industrial zones utilizing common facilities. He also noted instances where the waste products of one industry were being utilized as elements of production by other industries.
- 239 A participant also pointed out that some CP measures could have negative social impacts, giving as an example a case mentioned by Mr. Heileman in which manual valves were replaced with a computer system to increase efficiency. Such a move, the participant suggested, could result in job reductions.
- 240 In response to a participant question, Mr. Heileman opined that charges for waste disposal should be tied to the volume of waste produced rather than the volume of product produced, as to adopt the opposite approach would provide less incentive to reduce waste.
- 241 Another participant wanted to know if NCPCs had been established in any countries with economies in transition. Mr. Heileman said that there were

none, but pointed out that there were several donor countries active in those countries that were very interested in CP.

242 A question was posed as to how SIDS could employ CP. Mr. Heileman noted that SIDS presented a CP challenge because of their small size, which reduced the opportunities for economies of scale. He noted, however, that CP was possible on a small scale, and pointed out that there were many web pages devoted to the subject, as well as several donor countries interested in funding projects addressing the problem.

243 The question was posed whether CP could be funded through the Clean Development Mechanism (CDM) as a measure to reduce greenhouse gases. Mr. Heileman predicted that, since CP measures had tended to spread through economies as companies realized the financial benefits, they would have a widespread positive impact on a range of issues, including ozone depletion and water quality. He suggested that it should thus be possible to get CP funding through, for example, CDM, for ozone related CP projects, as well as through GEF, by designing CP projects with a focus on one of the 4 GEF subject areas.

244 One participant asked about linking CP techniques to EIAs. Mr. Heileman suggested that CP principles should be incorporated at all levels of industrial planning, and asserted that they certainly should be included in EIAs. He noted, however, that effective utilization of CP principles would require the people responsible for implementing EIAs to be CP trained. In the same vein, he noted that it was desirable for production personnel also to be CP trained.

4. Review of the Basel Convention

(a) *Presentation*

245 Ms. Iwona Rummel-Bulska reviewed the history of the first ten years of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, developed under the auspices of UNEP and adopted in 1989. Ms. Rummel-Bulska, former Executive Secretary of the Convention Secretariat, described the general problem of commercial traffic in hazardous wastes, and outlined the events spurring elaboration and adoption of the Convention. She set out the Convention's main principles and described some of the past and ongoing points of contention among both party and non-party countries.

246 Previously, only the dumping of hazardous materials in the sea had been addressed by international

convention. Then, in the early 1980s, UNEP added traffic in hazardous wastes to its programme of work, and public interest in the matter was sparked by frequent press reports of "ghost ships" carrying toxic cargos being forced to move from port to port. Heightened public interest had spurred Governments to finally act on proposals put forth by Switzerland and Hungary, the final result of which had been the Basel Convention.

247 The Convention's principal provisions defined hazardous waste; prohibited the transboundary movement of hazardous waste without the prior informed consent of the destination country Government and the Governments of all transit countries; permitted countries to ban the import of hazardous waste; and required illegally shipped hazardous waste to be returned to its country of origin.

248 The principal point of contention among countries had been and was still the question of whether imports of hazardous wastes should be banned altogether. Many developing countries, including in particular African countries, refused to join the Convention because it contained no such provision. The issue had been complicated by a decision of the second Conference of the Parties proposing to amend the Convention to ban imports of hazardous waste from OECD countries to non-OECD countries. Some countries, including some developing countries, objected to the ban as it applied to the importation of wastes for recycling purposes, as the waste recycling industry could make an important contribution to a country's economy. The proposed amendment continued to be controversial, and had received only 14 of the 62 required ratifications. Given this controversy and the considerable interest in recycling, it had become necessary to promote best recycling practices in developing countries to ensure that recycling did not become the means by which the Convention's effectiveness was vitiated.

(b) *Discussion*

249 A question was asked regarding the status of a proposed Protocol to the Convention, to regulate liability for damages caused in connection with violations of the Convention. Ms. Rummel-Bulska noted that it was a very politically sensitive subject. Countries had split along developed/developing lines, with little enthusiasm among the former for the idea.

250 One participant asked about the impact of the Convention on inland waterways, such as the Suez canal. It was agreed that the Convention and UNCLOS needed to be harmonized with respect to the issue of "innocent passage" to ensure that canals and

other transit waterways were not left unregulated with respect to hazardous waste.

- 251 Several participants expressed concern about the possibility of hazardous-waste-to-energy conversion plants being built in their countries by multi-national companies, because the contracts under which those plants were built typically contained a clause allowing the operator to import hazardous waste if the host country did not produce enough on its own to make operation of the plant economic. Ms. Rummel-Bulska noted that there was no obvious solution to this problem, and cautioned countries to scrutinize such contracts very carefully.
- 252 One participant noted that developing countries had stockpiles of certain compounds, such as DDT, that were left over from the colonial era. She asked what such countries were to do if a complete ban was imposed on transshipment. Ms. Rummel-Bulska pointed out that the Convention Secretariat and FAO both had information on disposal alternatives.
- 253 Several participants complained of the hazardous waste generated by international military forces, as for example in Kosovo. Ms. Rummel-Bulska acknowledged that such forces were not clearly covered by the Convention, and said that efforts to address the problem were ongoing.

L. ENVIRONMENTAL AND MANAGEMENT ASPECTS OF DISASTERS AND WAR

1. Legal aspects of natural disaster management

- 254 Mr. Manjit Iqbal gave a presentation on legal measures that could be implemented at the national level to facilitate effective natural disaster management. He began by outlining the various kinds of natural disaster, such as hurricanes, floods, earthquakes, etc., and noted that they had caused approximately 3 million deaths in the last thirty years and appeared to be increasing in frequency and severity, giving examples such as the recent cyclone in Orissa, India. He then briefly outlined United Nations efforts relating to disasters, which included the establishment of an emergency response system run by the Disaster Response Branch of the United Nations Office for the Coordination of Humanitarian Affairs, as well as the establishment by UNEP of an Environmental Emergencies Unit to mobilise and coordinate international assistance and expertise.
- 255 He then went on to discuss laws that could be utilized to prevent and manage disasters, including Disaster Management Acts (DMAs), zoning laws and building codes. Zoning laws could be used to prevent or relocate development in disaster prone

areas, and building codes to ensure that buildings were constructed to survive expected disasters.

- 256 He listed, and briefly discussed, the requisite elements of a DMA. Among other provisions, he noted that a DMA should provide for the declaration of emergencies, specifying the extent to which (and for how long) extraordinary powers were to be delegated to the authorities to cope with the disaster; establish institutions (or designate existing institutions) to handle disaster management and specify their powers and responsibilities; set up a standing disaster management fund to facilitate rapid response; provide for the promulgation of relevant regulations; and, of central importance, require the elaboration and implementation of a national disaster management plan, which should contain measures aimed at prevention, preparedness, mitigation, response and recovery.

2. Policy and legal issues in restoring property rights in a war-torn society: the case of Kosovo

(a) Presentation

- 257 Ms. Sylvia LaCroux, Programme Officer, Habitat, discussed the experience of Habitat in attempting to restore property rights in the wake of civil war in Kosovo. She described a programme the main thrust of which was to restore people to the positions they had enjoyed before the conflict resulted in large scale population dislocations and confiscations of property. She described cadastral systems, i.e., record-keeping systems for recording rights of ownership in land, as the principal tool in that effort, and went on to describe problems with existing systems and United Nations efforts to address them.

(b) Discussion

- 258 In response to a question about funding for relief efforts in Kosovo, Ms. Lacroux reported that over \$1 billion had recently been pledged by the World Bank, the European Union and other donors. From this amount, the Habitat programme would receive \$4.5 million for a 1 year initial phase.
- 259 One participant wanted to know how widespread cadastral systems were in the world. Ms. LaCroux observed that while widespread, they were often slow, expensive and incomplete, sometimes covering only 20 per cent or 30 per cent of properties. Technology existed for very sophisticated systems, but to be effective, those had to be utilized in a holistic environment in which other planning tools, such as land use regimes, zoning, etc., also employed map-based technology.

260 One participant told of her experience in visiting war-torn areas of the former Yugoslav Republic of Macedonia, observing that the people there had exhibited tremendous mutual distrust and anger. Another made similar observations about the situation in East Timor, and wondered how the people there could move forward. Ms. LaCroux agreed that such anger and distrust were the central challenge of efforts such as that in which Habitat was engaged in Kosovo. To overcome it, she said, the international community had to gain the trust of the people by interacting with them, educating them as to their rights and, ultimately, by restoring the rule of law.

3. Environmental security and the protection of the environment during armed conflict

261 Mr. Andree Kirchner, Intern, DPDI, gave a presentation on environmental security and the protection of the environment in times of armed conflict. Addressing first the concept of environmental security, he outlined how concepts of national security were in the process of expanding; where once the notion had referred only to the protection of a State's territorial integrity and form of government, there was now a growing consensus that it should also embrace other human, physical, social, economic and environmental interests. Focusing on environmental interests, including water availability, deforestation, depletion of fish stocks, population growth and others, he noted that a number of such issues had already been at least the partial cause of armed conflict between States. On the practical level, therefore, States had clearly been treating such matters as vital security issues. One example of such a conflict was the 1977 war between Somalia and Ethiopia, which he suggested had its roots in deforestation in Ethiopia and disputes over access to transboundary rivers.

262 Regarding protection of the environment during times of armed conflict, he noted the existence of numerous international conventions the provisions of which should fairly be read to prohibit many acts of war harmful to the environment. However, the first convention to explicitly address harm to the environment had been the 1976 United Nations Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques, which prohibited the "use of environmental modification techniques having widespread, long-lasting or severe effects" against any other State party. He also briefly discussed the 1977 Additional Protocol Relating to the Protection of Victims of International Armed Conflicts, which prohibited the use of "methods or means ... intended or ... expected to cause widespread, long-term and severe damage to the natural environment."

263 He briefly outlined efforts by the international community to address environmental protection during armed conflict, noting that the International Committee of the Red Cross, the International Law Commission, the North Atlantic Treaty Organization and the United Nations had all taken steps to develop international law protective of the environment during such times. Those steps had included proposals that unjustified acts of environmental damage should in some circumstances constitute war crimes. In conclusion, he discussed options for improving protection of the environment during war, including the enactment of a new convention, the consolidation of existing rules or, as he put it, the adoption of a middle way, which would consist of concerted efforts to train and educate countries on the existing rules governing armed conflict and the extent to which they prohibited environmental damage. He suggested that, as the other approaches could be expected to be slow and cumbersome, the middle way should be pursued.

4. Migratory pests

(a) Presentation

264 Mr. W. Meinzingen, former coordinator for the migratory pest activities of FAO in Africa, spoke about scientific aspects of migrant pests, focusing on locusts, army worms and quelea birds in Africa. He illustrated his talk with maps showing, e.g., the distribution of the pests, as well as photographs showing the pests engaged in various activities such as swarming and clustering on plants.

265 For each of the three pests, he described its physiology as it related to its destructive behaviour, its population size, its migratory range, its distribution in Africa, the damage it could inflict on crops and the control measures man had utilized to control the damage it caused. With respect to locusts, for example, he reported that a medium-sized swarm of desert locusts would be about 300 square kilometres in size, with each square kilometre containing approximately 40 million individuals. Such a swarm could denude an area the size of Nairobi in a single day. Desert locusts had their breeding area in the deserts of Eritrea, and had been known to range as far as the Ngorongoro crater and Mt. Kilimanjaro in Tanzania. Control efforts, which were coordinated by FAO, had traditionally relied on pesticides, but more environmentally benign alternative measures were being developed. Those included insect growth regulators, natural pesticides derived from plants, pathogens such as bacteria and fungi, juvenile hormone analogues intended to prevent swarming behaviour, and satellite-based remote sensing and mapping to predict outbreak locations.

(b) *Discussion*

- 266 One participant wished to understand the role of predators in containing populations of pests. Mr. Meinzingen explained that while each of the pests did have predators, they were not numerous enough to have a significant impact on pest populations.
- 267 Another participant noted that her country had an insect pest that shared many of the characteristics of those described in the presentation. She noted that her country was developing a pesticide using ingredients obtained from the nim tree. Mr. Meinzingen noted that the nim was employed by some indigenous peoples for a wide variety of uses, including as an insect repellent and a malaria prophylactic. He said it had promise as a botanical pesticide, but, he explained, there was some difficulty commercializing it because its complex chemistry did not allow it to be readily classified.
- 268 In response to a question about the best approach to pest control, he observed that efforts should be aimed at finding the most environmentally friendly techniques. Regarding quelea birds, for example, a targeted approach was taken, and no effort was made to eradicate them altogether. Whenever possible, pesticides were avoided, but it was also recognized that in view of the tremendous toll migrant pests had on people, sometimes pesticides had to be utilized.

M. PUBLIC PARTICIPATION AND ACCESS TO ENVIRONMENTAL INFORMATION

1. Developing public participation principles: non-governmental organizations' perspectives on the Aarhus Convention

- 269 Ms. Barbara Gemmill of Environment Liaison Centre International made a presentation on the development of public participation principles. She began by noting that the right to a healthy and clean environment might include:
- 269.1 The right of all individuals to be informed of plans and projects which might degrade their environment;
 - 269.2 The right to participate in the procedure leading to a decision; and
 - 269.3 The right to redress for damage suffered or for the lack of respect of legal guarantees.
- 270 She listed several benefits of public participation. They included:
- (a) The Government needs the public's support for effective implementation of its measures;
 - (b) With regard to industry, whoever wishes to

engage in an activity has to take the initiative to give sufficient and relevant information;

- (c) As regards the civil society, the people to whom the measures are directed often have great knowledge and broad experience concerning local and regional conditions;
 - (d) Applying democratic ideas to the improvement of environmental conditions reinforces the basic principles and practices of self-governance; and
 - (e) Acceptance of the public as a valued partner in the process of protecting the environment can inspire cooperation between the citizens, their Government and industries, which is crucial to the success of a regulatory system.
- 271 Concerning the reasons for involving the public, Ms. Gemmill observed that members of the public played a vital role in some respects and at certain times as consumers of goods and services, as individuals who were concerned about the quality of nature and as individuals who caused pollution and environmental damage as employees, producers, tourists, etc. She noted that interaction between the Government and the citizens could be fruitful and that there was strong social support for joint responsibility in tackling and solving environmental problems.
- 272 For the public to be able to participate in environmental management, it should have the right to information, to lodge comments, to initiate legal proceedings and to participate. With regard to information, the Government should disclose the following for any project: (i) why the measure is being taken; (ii) the background to the decision; (iii) the financial and social implications; (iv) the parties involved; and (v) the procedure for verifying observance of the rules.
- 273 On the role of non-governmental organizations, Ms. Gemmill noted that their rise and development showed that the citizens were greatly concerned about environmental problems. However, conflicts among the various non-governmental organizations were sometimes given as an excuse for abandoning every form of public participation. On the other hand, if non-governmental organizations were well organized and co-operated with one another, the result could mean combining forces, energy, knowledge, and even financial resources and possibilities. If this ideal situation could be realized, the Government would be unable to ignore the non-governmental organizations and the role they played in the social and political field of influence.
- 274 In order to involve the citizens effectively, there was a need to educate them. Countries with active

public participation provided a lot of information. The citizens were informed about the condition of the environment, the consequences of pollution, and how they could contribute to the improvement of the environment by changing their lifestyles. In general, the citizens were shown the way through the complicated maze of authorities and departments that could be of help.

2. Infoterra

275 Mr. Gerard Cunningham, Programme Officer, DEIA, spoke about Infoterra, the UNEP environmental information services sub-programme, the goal of which was to enhance access to and delivery of environmental information within and among countries. He began by noting the importance of access to environmental information and then went on to describe Infoterra's operation and structure.

276 Access to information was important because it led to greater public awareness and involvement in environmental decision-making, which in turn led to greater improvements in environmental conditions. In recognition of this, UNEP, through the Infoterra programme, sought to encourage Governments to increase public access to all sources of environmental information, to promote the exchange of environmental information among countries, to promote the "right to know" concept and to increase access to UNEP information resources.

277 Infoterra was a network of 178 member countries, each of which was represented in the network by a national focal point (NFP) set up to answer requests for environmental information. It had evolved out of Recommendation 101 made at the 1972 Stockholm Conference, which had recognized a need for the exchange of environmental information and experience. That recommendation had led to the establishment in 1974 of the International Referral System, under which NFPs maintained inventories of information sources to which they referred those seeking information. That referral system became operational in 1977, but was replaced by Infoterra, an information delivery system, in 1980.

278 Information could be requested from Infoterra in several ways. A request could be passed through an NFP, which would then pass it on to the Infoterra Secretariat's Query Response Unit or to a regional service centre, either of which would attempt to locate the best person or institution to provide the answer to the request. Alternatively, requests could be submitted directly to Infoterra electronically, via Infoterra's listserver or the world wide web.

279 From its inception, Infoterra had had one focal point per member country responsible for handling all

aspects of information requests. However, in the wake of the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, the Infoterra advisory committee decided in 1998 that reforms were needed to enhance public participation and otherwise make the Infoterra system more effective. As a result, efforts were underway to restructure the system so that focal points would act as liaisons between UNEP and a consortium of information sources, and user groups in each country coordinated by a consortium manager.

3. Environmental activism: The role of environmental law non-governmental organizations

(a) Presentation

280 Ms. Akpezi Ogbuigwe, Senior Lecturer, Faculty of Law, Rivers State University, and Director, ANPEZ Environmental Law Centre, Nigeria, presented a paper entitled "Environmental Activism: The role of environmental law non-governmental organizations". She stated that the environmental challenge involved the following:

280.1 Making the law relevant in the emerging ecological age by providing an efficient machinery for the management of global resources and care of the environment;

280.2 Breaking the shackles that bound legal systems, i.e., precedents, rules of procedure, common law, locus standi, jurisdiction and others;

280.3 Upholding justice and equity in balancing the rights of all in environmental cases; and

280.4 Legal activism by the judiciary and the whole of the legal fraternity - lawyers, judges, law non-governmental organizations, the legislative and executive branches of Government, citizen groups and other stakeholders.

281 With regard to the non-governmental organizations movement, Ms. Ogbuigwe said that it had grown beyond expectations in every field of human endeavour, and that it had gone beyond concept to practicality. She noted that non-governmental organizations were closer to the people and were thus in a better position to offer relief to victims and to take steps towards restoration. Non-governmental organizations had the role of de-mystifying the law and bringing it closer to the people.

282 Ms. Ogbuigwe noted that the environment could not be effectively protected or managed without the involvement of the public. The mobilization of the public to participate in management of the environment was therefore a major step toward re-

solving global environmental issues. For effective public participation, it was imperative that the public have access to information, awareness and environmental education and the right to assert its rights. Access to justice implied access to courts and administrative structures or tribunals to seek redress when the environment was damaged.

(b) *Discussion*

283 In response to a query regarding the sources of funding of her non-governmental organization, Anpez Environmental Law Centre, she said that the organization did not receive any major funds from any institution, local or international. The organization's members were lawyers without any international connections, who contributed money from their own legal practices. Over the years, the organization had gained credibility and it was now being awarded consultancies by UNDP. She noted that UNEP did not contribute funds to her organization, but sometimes paid for its members' travel to environment-related meetings.

284 One participant, observing that most of the participants were from developing countries, asked how one could cope with environmental issues in countries which were still in the early stages of democratization. Ms. Ogbuigwe emphasized that non-governmental organizations must always have a link with the Government; the avenues of communication with the Government must be kept open at all times. She admitted that this was not always easy, especially in countries under military dictatorships, but it was advisable to always make an effort.

285 Another participant, noting that in her country students were more interested in studying commercial law because of the prospect of earning more money, asked whether there were many students interested in environmental law in Ms. Ogbuigwe's university. Ms. Ogbuigwe noted that to interest students in environmental law, the subject had to be presented in an interesting manner, adding that students should be made to understand that environmental law was the discipline of the future.

286 In response to a query on whether non-governmental organizations could work together at the regional and international level in the face of financial and political barriers, Ms. Ogbuigwe remarked that non-governmental organizations, countries and regions could work together to address common problems. She noted that this was already happening between Nigeria and Cameroon.

N. TRADE, INTELLECTUAL PROPERTY, ECONOMICS AND THE ENVIRONMENT

1. Environment and trade

(a) *Presentation*

287 Mr. Hussein Abaza, Chief, Economics and Trade Unit, Geneva Executive Centre, discussed environment and trade through a video teleconference. Answering a query on who at UNEP was responsible for drafting MEAs, he informed the participants that the Committee on Trade and Environment had been formed in 1997. However, the Committee had not come up with any conclusions, mainly because debates were very politically charged. He added that barriers to MEAs had been part of the debates.

288 Mr. Abaza observed that contrary to the recommendation made at the 1992 environmental conference that developed countries should provide financial resources for environment trusts, the resources promised to developing countries by developed countries were not forthcoming. Developing countries, he added, were seeking to have their capacities enhanced, not only with regard to the environment but also at other levels, for example economically, so that they could compete economically.

(b) *Discussion*

289 One participant wondered whether it was possible to have a special committee to examine economic issues. Mr. Nuñez pointed out that there was lack of co-ordination at the national level between trade and environment ministries. In his opinion, it was necessary to establish a coherent trade regime. Responding to a query on what the official view was on environmental standards, Mr. Nuñez said that the issue of standards was on the agenda of the forthcoming conference in Seattle. He submitted that there should be standards with environmental objectives and that it was in the interest of developing countries to develop their own. He felt that to this effect, developed countries should provide financial and technical assistance to developing countries. For developing countries to satisfy the requirements of the international market, they must use proper technology in their production.

2. Multilateral environmental agreements and their relation to the General Agreement on Trade and Tariffs/World Trade Organization

(a) *Presentation*

290 Ms. I. Rummel-Bulska made a presentation on this topic. She noted that the issue of trade was crucial

in environmental matters. Multilateral trade agreements limited trade to contracting parties. CITES was a typical trade treaty, and environmental treaties were becoming increasingly important.

291 Ms. Rummel-Bulska pointed out that the system of settling disputes employed by WTO was a good one, although some parties to the treaty were not party to the amendment. Parties in dispute could opt to go to the WTO for settlement. Here, there was a system of panels for mediation and no system of blocking agreements; all decisions were adopted. The system also provided for sanctions on non-complying countries and the enforcement system was effective. On the contrary, environmental treaties had no system of sanctions. The WTO system was based on negotiation.

292 Some countries felt that the precautionary principle, adopted in Rio in 1992, left too much to individual interpretation, and the tendency was now to change to a precautionary approach.

(b) *Discussion*

293 One participant expressed the view that the WTO system of dispute settlement was too stringent. Ms. Rummel-Bulska agreed with this view and said there was a commission headed by Canada and supported by a number of countries, the aim of which was to make the system more flexible. She also noted that some countries were resisting settlement of environmental disputes by WTO and suggested that another agreement could probably be negotiated under WTO.

3. Intellectual property rights

(a) *Presentation*

294 Ms. Patricia Kameri-Mbote, ACTS, discussed intellectual property rights. Her presentation covered the nature of intellectual property rights, international systems of protection, biodiversity and indigenous rights. Intellectual property rights were concerned with the expression of an idea, a right to the intellect. They were intended to enable the holders of ideas to express themselves freely, to disclose ideas. The idea behind the granting of these rights was to ensure that people who came up with ideas or inventions were well remunerated.

295 Given that the flow of ideas transcended national borders, it was necessary to have international arrangements. People who originated ideas were keen to be protected against infringement at the international level. That was why patents were issued. They were a useful tool for maintaining the innovative process; and giving that right ensured that

society benefited from an idea. Rights encouraged innovators to disclose ideas, and led to technological change and development of the individual and the nation. They also encouraged technological research which in turn led to increased food production and use of less land to produce more food. However, it was argued in some quarters that international property rights curtailed trade in biodiversity management activities, thereby threatening traditional farming systems. They could be used to stifle inventions because foreign interests were being protected to the detriment of national ones.

296 There were several conventions that touched on international property rights. One of those was CBD, which made reference to the role of traditional knowledge. The International Convention for the Protection of New Plant Varieties (UPOV) allowed for patenting of plant varieties which must be due to the concern for food security. WTO also covered intellectual property rights protection, which enabled a country to negotiate with other countries. A country could also have its own plant life protection regime to supplement what was contained in international agreements.

(b) *Discussion*

297 One participant asked which environmental principle governed the use of a geographical name for a new product. Ms. Kameri-Mbote observed that in deciding what name to give to a product, environmental considerations could be included. The choice of name also depended on national regulations. She noted that more and more environmental considerations were creeping into the granting of intellectual property rights. With regard to the manner in which biodiversity was being handled to ensure sustainable development, she observed that there seemed to be contradictions in CBD, and that it did not specify when environmental considerations were to be given priority.

298 Another participant expressed the concern that intellectual property had always been used for restricting transfer of technology. In response to this concern, Ms. Kameri-Mbote observed that countries were becoming increasingly interdependent and that innovation always came with new technology. It was only fair then, she noted, for the rights of innovators to be protected.

299 Commenting on the presentation, one participant pointed out that there were individuals who made economic gain from traditional knowledge, thereby degrading the environment, for example herbalists using herbs for medicinal purposes. This practice was hurting some indigenous communities for whom

some herbs had spiritual significance as spirits were attached to specific herbs. He added that in his country, there were many organizations working for environmental conservation and that they were making efforts to incorporate traditional knowledge into environmental management.

300 Another participant pointed out that in her country there were many traditional groups involved in the protection of the environment through traditional practices. Those groups shared environmental knowledge. To support those groups' efforts, the Government was in the process of preparing draft legislation aimed at coming up with a solution to environmental degradation.

301 One participant observed that Caribbean countries had lost a lot of biodiversity resources through researchers who commercialized the biodiversity resources they had "discovered". Another participant noted that countries were sometimes given very little time to prepare a national position before environment-related negotiations, as documents arrived late. Reacting to this concern, the Chair observed that with the current advances in communications, time and space were no longer a problem; the problem was most probably caused by delays in the channelling of information between the countries' government departments. The same participant also wondered whether UNEP could give assistance to small island countries to enable them to come up with regional positions during negotiations. The Chair informed the participants that UNEP had organized regional meetings to bring together such countries to discuss issues. However, he added, UNEP was not involved in the formulation of a position; the countries had to decide the position and prepare the documentation on their own.

4. Intellectual property rights, plant genetic resources and trade

302 Ms. Rossana Silva Pepetto of FAO made a presentation on intellectual property rights, plant genetic resources and trade. Ms. Pepetto started by giving a definition of copyright and industrial property. She described intellectual property rights as including:

- 302.1 Acknowledgement as the holder of rights in recognition of ownership over the creation or invention;
- 302.2 Exclusive rights of exploitation or authorization for exploitation or creation or invention;
- 302.3 Right to sue whoever violates the above rights and exercise all legal remedies available against such persons.

303 She described the relation between intellectual property rights (IPRs) and trade as follows:

- 303.1 IPRs support creativity by being the means through which imagination, ability and inventiveness are rewarded;
- 303.2 IPRs promote the use of creations, inventions, expression of ideas and distinctive signs to create wealth through their application in trade, industry and cultural development;
- 303.3 IPRs favour exports and facilitate technology development and transfer since they encourage investment;
- 303.4 IPRs reduce trade distortions and barriers to international trade, avoiding in particular trade in counterfeit goods and pirated copyright goods;
- 303.5 IPRs give the framework for free and fair competition;
- 303.6 IPRs protect consumers, enabling them to make informed choices; and
- 303.7 IPRs permit ideas to enter into the market and ideas without property rights lack economic value.

(a) Discussion

304 One participant sought to know the relationship between the Convention on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and earlier agreements. In response, Ms. Pepetto indicated that TRIPS recognized earlier agreements; those agreements remained valid and there was no contradiction. Another participant observed that developing countries were short of time for the implementation of TRIPS. He wondered whether any countries had adopted sui generis regimes for its implementation. Ms. Pepetto pointed out that review of the implementation of TRIPS Article 27 (a) (b) was scheduled to take place in 2000. Most developing countries had thought that there would be a revision involving elaboration of the provision, but the nature of the review was still being discussed. There were countries that had sui generis regimes; they included Zambia, where informal innovation had been defined, India, where there were drafts on breeders' rights, Costa Rica and Bangladesh.

305 Another participant asked whether in a case where an industrialist took an indigenous plant in a developing country and transformed it through genetic manipulation, the developing country retained the ownership of the original plant. In response, the Chair noted that once a property right was given to a developer, the original owner ceased to have a right to it. He added that such informal property

was not legally protected. In his view, there should be balancing of interests between the owner and the people who had the technology.

306 To a query regarding the obligations of innovators when they destroyed the environment, Ms. Pepetto noted that TRIPS contained an explicit exemption that allowed countries not to grant property rights when the environment was destroyed.

5. Intellectual property rights: Africa's position

307 Following Ms. Pepetto's presentation, Mr. Manab Chakraborty, DEPI, gave a short supplementary presentation on Africa's perspective on intellectual property rights. Mr. Chakraborty pointed out that an essential component of a free trade regime was the adequate protection of property rights. However, the privatization of indigenous knowledge by offering property rights, patents, or geographical appellation would inhibit the free flow of ideas, inventions and dissemination. Agricultural biodiversity was achieved by farmers and herders as they selected seeds and local livestock breeds best suited to their particular tastes, social and economic needs and local environmental niches, from a common but freely exchangeable genetic pool. Therefore, to introduce private rights would run counter to age-old traditions and social exchange systems.

6. Natural resources valuation, economic incentives and benefit sharing

(a) *Presentation*

308 Ms. Fionne Higuero, DEC, made a presentation on natural resource valuation, economic incentives and benefit sharing. Her presentation was preceded by a video show on environmental economics. It was given within the context of CBD, and therefore centred around economics for the conservation and sustainable use of biodiversity. She reminded the participants that the objectives of CBD were the conservation of biodiversity and the sustainable use of the components of biodiversity. She indicated that biodiversity loss was one of the major resource problems facing the world and that the available policy options were restricted by inappropriate economic tools that failed to capture the value of species and their diversity.

309 There were four types of economic value: direct value, for example of medicinal herbs; indirect value; option value which related to the amount that individuals would be willing to pay to conserve a tropical forest for future use; and existence value which related to valuation of the environmental

asset unrelated either to current or optional use. Ms. Higuero pointed out that activities on biodiversity valuation were as follows:

- 309.1 UNEP case studies on the use of valuation techniques;
- 309.2 Economic values and the developing world and global values of biodiversity;
- 309.3 Values of biological and genetic resources in country studies;
- 309.4 Training workshops; and
- 309.5 Work of the CSERGE and individuals.

310 OECD, Ms. Higuero noted, divided incentive measures into the following four main categories:

- 310.1 Positive incentives;
- 310.2 Disincentives;
- 310.3 Indirect incentives; and
- 310.4 Perverse incentives.

311 Ms. Higuero noted that there were three types of incentive measures: economic; social, for example, awareness creation; and institutional, for example constitutional provisions for biodiversity conservation. She further noted that a programme of work on incentive measures was now in place at the secretariat and, as a result, case studies on the use of incentive measures were being submitted by parties and organizations to promote the use and application of incentive measures.

312 There were four types of benefits: direct/indirect; short term/long term; monetary/non-monetary; and individual/public. With regard to monetary benefits, Ms. Higuero observed that they were not as huge as many people assumed.

(b) *Discussion*

313 In response to a query regarding how developed countries could take advantage of biodiversity from developing countries for biotechnology and give more benefits to developing countries, Ms. Higuero emphasized that transfer of technology was a very important aspect of CBD and that parties had made a commitment, although this had not always been met. On the issue of how developing countries could protect their biodiversity from being over-exploited, Ms. Higuero pointed out that countries had the liberty to develop sui generis regimes for the protection of biodiversity. They could establish intellectual property rights. However, before this could be done, national legislation had to be in place and the benefits had to be shared at the community level. Another participant wondered what measures could be taken to ensure that a country that took a biodiversity resource from another country would put the resource to the agreed use. Ms.

Higuero indicated that the obligation to put the resource to the agreed use must be included in the contractual arrangements between a developing country and the concerned company.

- 314 One participant wondered whether valuation was based on gross domestic product (GDP). Ms. Higuero observed that GDP was not always considered, and suggested that countries should at least include in the valuation the cost of collection of the resource. It was advisable to consider the replacement value in the calculation of the value of a lost resource. Speaking about the standardization of valuation, one participant wondered whether this would entail giving economists more scientific training or scientists more economic training. In response, Ms. Higuero expressed the opinion that the important thing was to accept and to adopt certain economic methodologies.

O. SMALL ISLAND DEVELOPING STATES

(a) Presentation

- 315 Mr. David Smith, DPDL, gave a presentation on small island developing States. Taking the floor, he noted that SIDS were confronted with two major problems, concentrated vulnerability and lack of options. With regard to concentrated vulnerability, he said that SIDS were very small and a number of them faced many problems, for example the rise of the sea level as a result of which some risked disappearing from the face of the earth. He expressed the opinion that it was up to developed countries to intervene, as they were capable of using much more developed technology. International negotiations, rather than national policy, held the key to the salvation of SIDS. SIDS faced the problem of lack of physical options due to their limited space.
- 316 The biggest environmental problem facing SIDS was climate change, which was causing a rise of the sea level. Freshwater was also a source of concern; as water is drawn out of ground, the water table falls and the water becomes very salty, making it unsuitable for human consumption.
- 317 Fisheries in SIDS were under-utilized. With regard to offshore fisheries, there was first the problem of inadequate scientific knowledge in this domain. Second, there was a lack of resources. Third, for some States, there was an absence of management plans and capacity. Fourth, there was the problem of insufficient capacity and resources to maximize sustainable yields and income. Inshore fisheries were threatened by the depletion of stocks and the pollution of the coral reef.

318 Pollution, both land-based and sea-based, was a major environmental problem for SIDS. Land-based pollution was mainly caused by:

- 318.1 Contamination of groundwater, freshwater and the marine environment;
- 318.2 Increasing quantities of solid waste;
- 318.3 Lack of controls on chemicals imported into SIDS; and
- 318.4 Lack of capacity to manage chemicals.

319 On the other hand, sea-based pollution was caused by:

- (a) Introduction of new species;
- (b) Ship waste;
- (c) Transportation of nuclear materials; and
- (d) Damage and pollution from dredging.

320 With regard to biodiversity, Mr. Smith noted that there was degradation of territorial biodiversity due to the destruction of its habitat. In addition marine species were declining due to the contamination of the coral reef. He also noted that while tourism contributed significant benefits to SIDS, unsustainable tourism constituted a threat in some areas. With regard to energy, he noted that dependence on fossil fuels was causing climate change because of the carbon emissions associated with this source of fuel.

(b) Discussion

- 321 Reacting to Mr. Smith's presentation, one participant informed the participants that in the Caribbean, there was a project on combating ship-generated waste being run by a group of Eastern Caribbean islands, which was using the same set of experts instead of each country going it alone. The project was aimed at protecting the fragile coral reef. She noted that this kind of concerted effort was both effective and cost-cutting and would be recommended for all SIDS. She asked if UNEP could intervene in any way. In response, Mr. Smith advised small countries to write to the Executive Director of UNEP, because he was keen to see UNEP working better. Another participant pointed out that there was need for coordination of activities to combat pollution by United Nations agencies. Agreeing with this sentiment, Mr. Smith expressed the view that UNDP should coordinate the activities of the United Nations agencies in the countries.

P. FUTURE DIRECTIONS OF ENVIRONMENTAL LAW AND POLICY

- 322 The participants held five regional brainstorming sessions on the future directions of environmental law and policy. The five groups were as follows:

- 322.1 The four developed countries: Austria, Canada, the Netherlands and New Zealand;
- 322.2 Africa;
- 322.3 Asia and the Pacific;
- 322.4 Latin America and the Caribbean; and
- 322.5 Countries with economies in transition.

323 Introducing the assignment, Mr. Kaniaru remarked that the participants had had vast exposure since the beginning of the course. He pointed out that the future focus on environmental law entailed review of Montevideo II, which had 18 areas. Some of the areas had been implemented while others were under implementation and still others had not been attended to at all or were just starting, due to lack of funds or human resources. He noted that environmental law was developed with and by Governments and that the next UNEP programme preparation process would start in January 2000 and end in February 2001. He asked the participants, who were experts in their Governments, to consider the following issues during the brainstorming:

- 323.1 What should be the focus in the next 10 years or so?
- 323.2 What topics should be addressed and what priority should be assigned?
- 323.3 What concepts and global aspects should be studied further?
- 323.4 What should be issues of regional concern?
- 323.5 Implementation of the Stockholm and Rio principles.
- 323.6 What aspects of capacity-building should be considered?
- 323.7 What message should be further considered by experts?

324 After the brainstorming sessions, representatives of the five groups gave reports on their suggestions. The following emerged as priority issues to be considered in the development of environmental law and policy for the next decade:

- (a) Capacity-building: It was noted that some countries, particularly small ones, had difficulty preparing for and attending meetings. It was suggested that there should be better coordination to ensure that all countries attended meetings and participated effectively. Small countries needed strengthening of negotiation skills to enable them to arrive at regional positions.
- (b) Awareness creation: It was necessary to support national awareness creation projects to ensure greater participation of the public in environmental management, by making the public aware of international environmental conventions.

- (c) Promotion of a regional approach to environmental law issues: It was felt that a regional approach to environmental law issues should be adopted. For example, ways should be found of conducting regional environmental impact assessments. The Lusaka Agreement was cited as a good example of co-ordinating regional efforts.
- (d) Integration of traditional knowledge: It was agreed that traditional knowledge should be integrated into the mainstream environmental policies.
- (e) Transfer of technology: Transfer of safe and environment friendly technology from the North to the South was considered essential.
- (f) Funding: With regard to the funding of environmental interventions, it was agreed that there was need for additional funds to developing countries.
- (g) Pollution monitoring and clean-up: Monitoring and clean-up of previously contaminated areas, especially due to armed conflict, for example in the Balkan Sea region, was considered important.
- (h) Transport: Transport-related environmental issues such as noise and air pollution were deemed in need of attention.
- (i) Poverty and lack of resources: It was felt vital to address poverty and the impact of external debt and globalization.

Q. COUNTRY REPORTS

325 In addition to the presentations by UNEP and Habitat staff and other resource persons, some of the participants reported on specific environmental phenomena in their home countries.

1. Ozone depletion in New Zealand

326 Ms. J. Macmillan reported on the response in New Zealand to the depletion of the atmospheric ozone layer. She began by noting that for various reasons, including its relative lack of air pollution and its location in the southern hemisphere, New Zealand received substantially more ultraviolet radiation than other parts of the world. New Zealand was thus among the countries most at risk from further ozone layer depletion, and the issue was therefore of particular importance to it.

327 On the domestic front, New Zealand had responded to the ozone depletion problem by enacting the Ozone Layer Protection Act of 1996. The Act regulated the production, importation and consumption of ozone depleting substances. Since New Zealand did not manufacture any such substance, the

emphasis was on importation and use, which were scheduled for complete phaseout in 2015 for HCFCs and 2005 for Methyl Bromide.

328 However, even at its peak of consumption, New Zealand had accounted for no more than 0.2 per cent of global consumption of ozone depleting substances. Eliminating domestic consumption, therefore, could not alone forestall further depletion of the ozone layer. For that reason, New Zealand was a vigorous proponent and participant in global efforts. It had signed the Vienna Convention for the Protection of the Ozone Layer in 1986, and had ratified it in 1987. It had been the second country to ratify the Convention's London Amendment and the first developed country to ratify its Copenhagen Amendment. It also contributed to the Montreal Protocol Multilateral Fund (MPMF), a fund established to assist developing countries to switch from ozone depleting substances to safer alternatives.

329 In conclusion, Ms. Macmillan noted that while much progress had been made toward eliminating ozone depleting substances, there was still much to do. This included stopping illegal trade in ozone depleting substances; ensuring ratification and implementation of the amendments to the Montreal Protocol; assisting and encouraging developing countries to comply with the Montreal protocol; and increasing donations to the MPMF.

2. Nam Pong River: a case of water pollution in Thailand

330 Ms. R. Jatupoomdecha described a case of water pollution in Thailand, illustrating the conflict between environmental and development concerns. She noted that the Government of Thailand had embarked on a policy of industrialization in the 1950s that had led to the concentration of factories in and around Bangkok, causing environmental degradation in that area. In response, a new policy of dispersing factories in rural areas had been enacted.

331 In 1993, the Nam Pong River basin, downstream from one of those rural factories, had been severely polluted, resulting in a major fish-kill and discoloured tap water. Similar subsequent events had occurred frequently. Initially there had been disputes as to the cause of those events, but the factory had admitted violating water quality standards and it had been concluded that the factory had been a significant contributor to the fish-kills and other problems. Nevertheless, attempts to resolve the problem -- and measures against the factory -- had been long delayed due to the economic importance of the factory to the area around it, where some 2000 people had relied on it for their livelihood. Even-

tually, the factory had been subjected to criminal enforcement measures, but the entire experience demonstrated that the Government needed to seek a better balance between industrial development and environmental concerns.

3. Waste management in Austria

332 Mr. R. Sturm reported on waste management in his country. He began by listing some general characteristics of Austria and then discussed the volume and characteristics of Austria's waste, noting that Austria produced 3.3 tons of waste per person per year and that hazardous waste had grown steadily in volume due to population growth, economic growth and unfortunate lifestyle patterns, such as a large number of single person households.

333 In response to the problem, the Government had enacted the Waste Management Act (WMA), the principal goals of which were to reduce both the volume and toxicity of waste. The WMA required the Ministry of Environment periodically to draw up waste management plans utilizing a three pronged approach of preventing, recovering and properly disposing of waste.

334 He described waste reduction measures that had been enacted in the three focus areas affecting both industry and households. Thus, for example, business concerns with more than 100 employees were required to institute waste management plans, and on the household level, individuals were enabled to return packaging to the point of purchase free of charge. Non-hazardous waste was extensively sorted by consumers prior to collection in order to facilitate proper disposal and recycling. As a result of such measures, the percentage of waste being delivered to landfills was decreasing. Increasing amounts of disposed waste were subjected to treatment of various kinds, including physico-chemical, biological and thermal. He noted in particular the use of incineration, observing that because Austria had the most stringent emission requirements in Europe, its incinerators were relatively environmentally benign and that, in addition, some were used to produce both household electricity and heat. Currently, only 32 per cent of household waste was subjected to such treatment measures, but the goal was for all such waste to be treated by 2004.

335 He observed that, notwithstanding the progress made, more had to be done to reduce the amounts of waste which, he noted, continued to increase. Dramatic change, he suggested, might require equally dramatic measures such as a "green" tax system and extensive changes in lifestyles emphasizing consumption. Unfortunately, he concluded,

such measures were highly controversial and very uncertain of success.

4. Constitutional regulation of treaty making

336 Mr. Luis G. Franceschi of Venezuela spoke about the constitutional basis of treaty making and its effect on international environmental law. He began by noting the importance of domestication of international treaties, observing that treaties were not given practical effect until they were made part of national law. He then outlined the difference between states with a monist constitutional treaty-making scheme and those having a dualist scheme. In the former, treaties became part of domestic law once duly ratified, without the need for the enactment of implementing legislation, while in the latter such legislation was necessary for treaties to take effect.

337 He suggested that modern law should be geared toward facilitating domestication of treaties. To that end, he proposed a new version of the monist approach in which no treaty would need enabling legislation and some treaties would not require any participation at all by the legislature. Under this approach, only "critical" treaties, i.e., peace treaties, treaties which by their terms required the modification or passage of legislation and some others, would require legislative input, which would be limited to approval or not of the treaty as a whole (i.e., the legislature would not have the power to approve with amendments). After ratification by the executive, such treaties would become part of domestic law. Non-critical treaties would become effective immediately upon ratification by the executive, and would require no legislative input at all. He observed that such a mechanism would facilitate domestication of international treaties, and he suggested that States should include a provision embodying it in their constitutions.

5. Forest fires in Mexico

(a) Presentation

338 Mr. Gerardo Guiza presented a report dealing with forest fires in Mexico. He noted that the forest fire in 1998 was related to the El Niño weather phenomenon. Mexico accounted for 10 per cent of the world's biodiversity resources, but forest fires constituted a major threat as they were the main cause of deforestation and provoked carbon dioxide emissions. The main causes of forest fires were:

338.1 Intentional fires to transform forest land into agricultural and grazing land and into urban settlements;

338.2 Negligent use of fires in farming, e.g., slash-and-burn land clearing;

338.3 Carelessness of excursionists and forest visitors who often do not put camp fires out; and

338.4 Natural causes during prolonged droughts that provoke spontaneous fires.

339 The country had experienced a significant decrease in budgetary resources and combating forest fires was therefore becoming increasingly strenuous. The resources used for combating fires were helicopters, airplanes and the fire fighting force. Local communities and non-governmental organizations had played a significant role in the country's efforts to solve the problem.

(b) Discussion

340 One participant asked what penalties were imposed for fires caused by human activities. Mr. Guiza indicated that at the onset of the fire, people had been cautioned against activities that could begin fires but some had not heeded the warning. Once the fires had started, huge penalties had been imposed on people responsible for intentional fires. As a precautionary measure, camp fires had also been banned. He, however, observed that people ordinarily used fire for land clearance and that in the absence of an alternative method of clearance, it would be difficult to stop the practice. On the question of whether the substances used to combat the fires were harmful to the environment, he indicated that water had caused some damage to the vegetation. Another participant asked whether the species had been counted after the fire. Mr. Guiza pointed out that only 2 per cent of the forest had been completely destroyed and that the number of species destroyed was not available.

6. Desertification in Nigeria

341 Ms. Hafsat Dupe Belogore presented a report on desertification in Nigeria. She noted that desertification, along with the associated persistent droughts, constituted the most serious environmental problem facing northern Nigeria. Nigeria was losing about 350,000 sq. meters of its land mass to desert conditions and the desert was advancing southwards at an estimated rate of 0.6 kilometres a year. The drought situation had worsened over the last 30 years and the desertification process had accelerated, thereby threatening the livelihood of millions of people living in the affected areas. Desertification had resulted in poverty and mass migration and the capacity of the drylands to support a growing population was being undermined.

342 She observed that the Government had in the past made considerable efforts to combat desertification but such efforts had been in the form of isolated uncoordinated sectoral projects. That had led to the expenditure of considerable financial resources on unsustainable and unfocused schemes, which had ultimately produced insignificant results. Several desertification control programmes were currently being implemented by various agencies in the country. They ranged from afforestation to integrated rural development and poverty alleviation programmes by the federal Government with support from the World Bank, the European Union, the African Development Bank and UNDP.

343 Ms. Belgore informed the participants that Nigeria had ratified CCD in 1997. The Convention, she said, provided an opportunity to address the problem faced by people living in drylands. CCD had evolved a multi-sectoral and inter-disciplinary approach to combating desertification. She noted that the text of CCD called for Governments to demonstrate the importance they attached to tackling dryland degradation, by allocating sufficient resources and by instituting appropriate policy and institutional changes. Examples of these included ensuring security of tenure over land, and the devolution of power to local communities.

7. Arsenic contamination in Bangladesh

344 Mr. Shameem Ahsan presented a report on arsenic contamination in Bangladesh. He said that arsenic contamination in Bangladesh had been first detected in 1993. It was found in the country's groundwater. About 24 million people were exposed to arsenic contamination and 50 million were at risk of exposure. More than two thirds of the country relied on water that was arsenic-contaminated and five thousand people had already manifested symptoms of severe poisoning. Superficially, the symptoms affected the skin. The magnitude of the problem had prompted the Government to declare arsenic contamination a national disaster in 1994-1995.

345 Unfortunately, no one was certain about the cause of the contamination, but scientists were considering four possible causes. It was likely that excessive withdrawal of groundwater had led to the exposure of the topsoil to oxygen. Arsenic thus exposed to oxygen could be entering into the ground and contaminating the groundwater. Natural geological changes could be responsible for the arsenic contamination. Industrial effluent and use of pesticides were also likely culprits.

346 The contamination had very serious social consequences. The victims were isolated from the soci-

ety. Women were appallingly ostracized and discriminated against and were in some cases divorced. Ignorant villagers could mistakenly take the symptoms of arsenic poisoning for those of leprosy and avoid the affected persons.

347 Numerous international organizations were involved in the fight against arsenic contamination, the most notable among them being the World Bank, WHO and the United Nations Children's Fund. Moreover, the Government of the Netherlands was funding projects to provide safe drinking water or to treat contaminated water and Japan was conducting research on decontamination. However, those combined efforts were still not sufficient in the face of the magnitude of the problem.

348 UNEP could help in the assessment of the extent of the arsenic problem. It could provide a regional map of arsenic in the ground. The knowledge thus provided could be used by the Government in siting new water wells in areas found to be free from arsenic. Another area in which UNEP could be of assistance was in raising public awareness.

8. Lake Ohrid protection project in The former Yugoslav Republic of Macedonia

349 The participant from The former Yugoslav Republic of Macedonia, Ms. Ivanova Jadranka, presented a report on the Lake Ohrid Protection Project. Ms. Jadranka informed the participants that Lake Ohrid was located between her country and Albania. It was also one of the oldest lakes in the world. It was full of unique flora and fauna and was one of the biggest biodiversity reservoirs in the world. Ms. Jadranka noted that the Lake Ohrid Protection Project was the first major bilateral project between her country and Albania.

350 Ms. Jadranka informed the participants that the ecological stability of the lake was threatened because of poor environmental management both in her country and in Albania. The causes of environmental degradation were as follows: agricultural activity; pollution caused by industrial effluent; the presence of large numbers of visitors during the tourist season; and population pressure that led to haphazard urbanization.

351 She noted that in 1994, the World Bank entered into an agreement with her country and Albania to fund an environmental protection project. The World Bank, in conjunction with the Swiss Bank, had appointed a consultancy company to conduct a feasibility study. The project had been approved for financing in May 1997 by the GEF Council and in August 1998 the Government of the former Yugoslav Republic of Macedo-

nia had signed the agreement with the World Bank. Ms. Jadranka added that the project would be implemented in phases for a three year period.

352 Other organizations involved in the project were the Regional Eco Centre in Budapest, which was responsible for the participation of the public in collaboration with several non-governmental organizations. The Government of Germany had bought technical equipment for the water treatment plant. It was envisaged that the project would eventually be financed with domestic resources.

9. Solid waste management in Kiribati

353 Mr. Kautu Temakei made a presentation on solid waste management in Kiribati. Giving background information on his country, Mr. Temakai said that Kiribati was entirely made up of coral islands. Eighteen of the 33 small islands were atolls while most of the rest were low coral islands. Many of the atolls and islands were arid or semi-arid. He also noted that Kiribati was experiencing a high population growth rate of 2.5 per cent per annum. Recent rapid and unplanned urbanization had resulted in an uncontrolled internal migration into the administrative centre of South Tarawa where population density had become very high. This migration had led to overcrowding and related environmental problems which included lack of proper solid waste management.

354 The problem of solid waste had been compounded by the fact that the I-Kiribati (the people of Kiribati) traditionally did not believe that solid waste could create problems. In other words, the I-Kiribati and foreigners perceived waste differently. However, the emergence of environmental and health-related problems associated with poor solid waste management had significantly raised public awareness in general. Consequently, there had been a gradual change in the people's perception of waste.

355 A recent analytical study had identified three major sources of solid waste: residential, private and government commercial waste. There was no effective waste management system in the urban areas of South Tarawa. The limited land due to urbanization and offshore erosion limited the number of possible or suitable sites for landfills. The land tenure system made it difficult for the Government to use private land for dumping. This state of affairs had led to a multiplication of pests and disease carrying vectors, and concern was often expressed regarding the uncontrolled disposal of hazardous and toxic wastes.

356 The institutions responsible for the disposal of solid waste were two municipal councils and the envi-

ronment unit. Mr. Temakei noted that solid management issues in Kiribati were scarcity of land, lack of environmental legislation, lack of financial, technical and human resources and lack of public awareness.

357 With regard to what the Government and other organizations had done to address the problem of solid waste, Mr. Temakei indicated that in 1995 the Ministry of Environment and Social Development had recommended appropriate plans. These ranged from waste reduction at source, to institutional development/strengthening for the eradication of waste. In 1996, the Sanitation and Public Health Project had been developed with funding from the Ministry of Home Affairs and Rural Development.

358 At the level of non-governmental organizations, the Foundation of the Peoples of the South Pacific (FSP) had been instrumental in persuading people to convert solid waste into compost manure. Although other non-governmental organizations spearheaded clean-up activities, they appeared to be playing the role of implementation while FSP played both an advisory and an implementation role. Other notable non-governmental organizations involved in solid waste management were the Solid Waste Education and Awareness Programme and the Kiribati Waste Minimization and Management Programme.

10. Forest fires in Indonesia

(a) *Presentation*

359 Mr. Asianto Sinambela presented a report on forest fires in Indonesia, with particular emphasis on the 1997/1998 fires. He observed that despite the fact that it was known that environmental resources were very important for sustainable development, policy implementation in Indonesia was weak and poorly co-ordinated. Increased population and the consequent strain on land were major factors contributing to forest fires. Competition for forest products had increased and there was large-scale land clearance by big agriculture-based companies. Fires had a negative impact on the forest ecosystem.

(b) *Discussion*

360 Answering a query by one of the participants, Mr. Sinambela pointed out that during the fire disaster, Indonesia had received international support in the form of helicopters and airplanes from its neighbouring countries to the east, Brunei and Malaysia. Another participant sought to know what action the Indonesian Government had taken against the companies involved in massive clearance of forest land. Mr. Sinambela said that they had been penalized heavily. He noted, however, that due to nepo-

tism, some businessmen, who enjoyed the protection of powerful personalities in Government, over-exploited forest resources without bothering about afforestation.

11. Lead contamination in Trinidad and Tobago

(a) Presentation

361 Ms. Cleopatra Crawford presented a report on lead contamination in Trinidad and Tobago. In April 1993, a newspaper article had revealed that an estimated 500 squatters had been subjected to lead poisoning from a toxic waste landfill. An EIA had revealed that the source of the problem was the use of the area to dump toxic waste from a company located in a nearby industrial state. Lead contamination posed a threat to the health of the residents and there was a risk of contamination of groundwater and a nearby water treatment plant that produced approximately 40 per cent of the country's potable water. The soil contained toxic amounts of copper, antimony and bismuth. Nearby communities were also at risk since lead contamination of surrounding sites could be caused by airborne lead-contaminated dust, runoff water from the affected site, and smoke particles from the burning and re-smelting of lead-contaminated wastes which took place on the site.

362 Health officials had found that approximately 400 of the 500 affected residents had elevated levels of lead in their blood and had hospitalized 50 of the most serious cases. Fearing that the persons released from hospital would be reinfected if they returned to the settlement, the Ministry of Health had considered relocating the entire community. However, this had not been possible since the alternative site had been found to be unfit for habitation. The ministry had turned the issue over to the Cabinet. Among other things, the Cabinet had formed a task force to investigate the problem and to recommend immediate and short term solutions.

The task force had comprised representatives of various ministries and private citizens with specific expertise in contaminated soil. It had recommended that the Government take steps immediately to evacuate the residents of the area.

363 A site had been selected and infrastructures had been constructed. However, on visiting the site, the Minister of Housing had decided that it was too good for the squatters and that it should accommodate a regular housing component with the squatters re-assigned to back plots. The Ministry of Housing had sought a legal opinion from the Attorney General and Minister of Foreign Affairs with respect to the enforcement of compulsory evacuation. No response had been received and compulsory evacuation could not begin until such an opinion had been given. Finally, the Cabinet had agreed to the establishment of a technical team to manage the evacuation, treatment and proper disposal of the contaminated material. The team had decided that the soil would be treated on site, compacted and sealed to prevent leaching.

364 Over the years, the sense of urgency had worn off and the resettlement of the residents had been treated as a regular resettlement and regularization project and to date, nothing had been done to alleviate the residents' problems.

(b) Discussion

365 To a query about what the source of the contaminating material was, Ms. Crawford said that the lead had been contained in batteries that had been dumped by a truck, adding that at that time, no legislation on dumping of industrial wastes had been in place. One participant sought to know whether the Government had considered declaring the area a disaster area. Ms. Crawford answered in the negative, and observed that there would have been legal complications if the Government had moved people compulsorily.

III. CLOSURE OF THE SESSION

366 Mr. Bakary Kante formally closed the session at 12:00 p.m. on 3 December 1999, following which the participants enjoyed a farewell luncheon.

CHAPTER 2: COUNTRY REPORTS

- A. AFRICA**
 - B. ASIA AND THE PACIFIC**
 - C. CENTRAL AND EASTERN EUROPE**
 - D. LATIN AMERICA AND THE CARIBBEAN**
 - E. WEST ASIA**
 - F. EUROPE**
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A. AFRICA

ENVIRONMENTAL IMPACT ASSESSMENT OF ERECTION OF VETERINARY CORDON FENCES IN THE NORTH WEST DISTRICT OF BOTSWANA

Presented by:
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Attorney General's Chambers
Botswana

INTRODUCTION

In 1995, an outbreak of contagious bovine pleuropneumonia (CBPP), commonly referred to as cattle lung disease, was detected in the North-West District of Botswana. The Government's reaction to prevent the spread of the disease, was to erect cordon fences restricting the movement of cattle from the areas where the disease was first detected, to other parts of the district. It should be borne in mind that the North-West District is well endowed with fauna of all types, and as such the fauna was likely to be affected by the fences.

To effectively assess the situation, it is thus important to understand the nature of the disease and its effect on the Botswana society, the state of environmental law in Botswana and whether the proposed EIA was an appropriate action in the circumstances.

BACKGROUND ON CBPP

The North-West District is a rural district with an estimated population of 100,000 people, 50% whom rely on farming, particularly cattle farming, for their livelihood.¹ The cattle population in the district was estimated at 250,000 in 1996.² As in the rest of the country

there is a mixture of open access grazing and close cattle ranching practices. Consequently there is a high level of unrestricted cattle movement in search for grazing and watering.³ This free movement of cattle provides a good vehicle for the transmission of CBPP.⁴ The disease is spread by contact. The most effective control measures for the disease are cattle movement restrictions, vaccinations and slaughter. With the outbreak of the disease in 1995, the government decided to impose movement restrictions in the infected area. To overcome the complexity of controlling cattle movement in open range grazing a number of fences running east-west across the district were constructed. These were in addition to already existing buffalo fences.

To add to this milieu, the North West District is rich in fauna of all types including elephants,⁵ buffalo,⁶ zebra⁷ and other various large mammals. A concern that arose in relation to these animals was the effect that the fences would have on their migratory patterns. Such animals would ordinarily migrate at different times/seasons in search of forage, water, and for mating and nesting. The potential impacts of the fences on the migratory patterns of the animals has become a cause of concern, more especially the fear that the animals were likely to die either due to lack of sufficient forage or

1 Townsend & Sigwele – Socio Economic Cost Benefit Analysis of Action and Alternative for the Control of Contagious Bovine Pleuropneumonia in Botswana (1998) p1.

2 Ibid p3.

3 Ibid, As Botswana had not recorded on incidence of lung disease since 1939, it is believed that the disease was introduced by illegal cattle importation or unauthorized cattle movement into the country from the neighbouring Kavango District in Namibia.

4 Ibid.

5 M. Murray, Fauna of the Okavango River Basin (Botswana Sector), a report prepared permanent Okavango River Basin Commission (1997), says there estimated population of the Africa Elephant at 79,000 for the Okavango Delta area in 1993.

6 Ibid estimated at 20,000.

7 Ibid estimated at 20,000.

water in one area or due to injuries caused by attempts to cross the fences. To address this problem on environmental impact assessment of the fences was instituted.

STATE OF ENVIRONMENTAL LAW IN BOTSWANA

In seeking to do this EIA it must be borne in mind that Botswana does not have an EIA Act. In fact whatever EIA is conducted, it is done within an established policy framework⁸. The policy adopted by Parliament envisaged the enactment of legislation that would require, inter alia, "the necessity for new development projects (public and private) to be accompanied by professionally prepared and approved environmental Impact assessments (EIAs)"⁹. However such legislation is not yet in place even though an Environmental Impact Assessment Bill is presently being discussed by relevant authorities.

Outside of the Bill, environmental impact assessment, is carried out not much as a legal process but as required by exigencies of particular situations. Various projects with potential of significant impact on the environment are normally subjected to EIAs. Essentially such EIAs were carried out because it was advisable to do so, or it was a requirement by donor organizations. Some of the EIAs carried out related to the following projects which were considered major projects with the possibility of significant impact on the environment:

- a) Southern Okavango Integrated Water Project
- b) Trans-Kgalagadi Highway Projects
- c) Letsibogo Dam
- d) Bokua Dam
- e) Morupule Transmission Line

As it has been said, Botswana does not have a law on environmental impact assessment, nor a law on the environment generally. The environment is sought to be protected by a myriad of enactments. However only a few of these are exclusively environmental in character. They include:

1. Agricultural Resources Act
2. Agro-chemicals Act
3. Atmospheric Pollution (Prevention) Act
4. The Fish Protection Act
5. The Forest Act
6. Wildlife Conservation and National Parks Act

As such outside of the National Conservation Strategy, there is no legal instrument providing for the implementation of EIAs. However some would disagree and say that "...Botswana has adequate legislation covering environmental protection"¹⁰. It has been observed that the laws are not effectively applied because of lack of sufficient institutional support and manpower, and also because of an overlap and conflicts between various enforcement authorities.¹¹ Recognizing this attitude, the Government has always proceeded on the proposition that it may be worthwhile to apply existing legislation such as the Town and Country Planning Act to agricultural land use and environment planning, with a view to exploring particular ecological aspects, considering available and appropriate institutional arrangements to study and decide upon suitable environmental approaches to problem areas.¹²

THE PROPOSED EIA

Firstly it must be emphasized that an EIA is a tool for decision making. The nature of EIA legislation from many countries is to make the process a forward-looking (projective) exercise, and that the result of the exercise be taken into consideration in the decision making process. Depending on whatever the result of the EIA is, then decision would be made as to authorize or stop the carrying out of the proposed activity. As it is the Government of Botswana has taken cognisance of this in the past and in one instance a proposed new dam project had to be re-sited when the EIA showed that the overall impact would be negative. Similarly an extensive soda ash mine in the Makgadikgadi Salt Pans was subjected to some EIA before implementation of the project.

On the other hand the erection of cordon fences was deemed to be an emergency situation that was necessary for the protection of the national herd. Hence no EIA was taken, but was done after the event. The working hypothesis of the EIA was that:

The presence of fences affects movements to key resources, on either local or bigger geographical scale, such as surface water, water bearing plants, minerals/salt licks and forage of high adequate quality. Blocking access could lead to (a) direct mortality in the short term during attempts to get through fences or (b) indirect mortality/reduced fecundity in the short or long term though effects on nutritional status/health.¹³

8 See National Policy on Natural Resources Conservation and Development, Government Paper No. 1 of 1990. (also referred to as Botswana National Conservation Strategy)

9 Ibid p15

10 Botswana National Report for the United Nations Conference on Environment and Development (1992) p64

11 Ibid

12 Supra note 10 p70

13 Environmental Impact Assessment of Veterinary fences in Ngamiland, Inception Report (final version) (1999) p6

It was contended in the Inception Report that the distribution of some animals, such as the buffalo, is constrained by the erection of the buffalo fences. In addition these fences tended to restrict their movements, and that the problem may be compounded by the erection of newer fences. As a result this would lead to a more perceptible decline in their population.¹⁴

It is my view that on an initial basis, the EIA cannot, strictly speaking be called that. This argument is premised on the understanding that an EIA is a projective scientific approach to assist in decision making (see for instance the two examples referred to above in relation to the dam, and soda ash projects); the approach in respect of these projects can be said to be EIA in the real sense of the expression. On the other hand it must be borne in mind that time was of essence in the decision to prevent the southward spread of CBPP. The speed with which the fences were erected without EIA must be understood within the socio-economic context of the affected area and the country at large. Cattle are a source of income to many farmers and of foreign exchange to the country at large from beef export. Secondly, typical of many African societies, they are a statement of wealth and economic power. The fences were being erected to isolate the affected areas so as to maintain healthy herds, but as soon as the first cordon fence was erected, the farmers by-passed it and brought cattle into uninfected area until eventually the 3 east-west fences were erected.

It is my view that a more unemotive approach, having seen that the farmers sought to move cattle beyond the first fence, would have been to discard the movement restriction approach. As it is, these farmers had gone to the extent of cutting international boundary fence to move their cattle surreptitiously around these fences. At that stage it should have become obvious to government this strategy was unworkable. The next approach would be vaccination. Environmentally this sounds attractive but could prove to be uneconomic. The government thus proceeded to the third option, namely slaughter. This eventually resulted in the slaughter of all the cattle in the district. This approach created its own adverse impact to the environment, namely that of disposal. Government sought to bury whether unburnt or burnt carcasses and this could result in massive condemnation of underground water resources. There is a proposal to study the effect of this strategy on the environment. This is necessary bearing in mind that the Botswana National Conservation Strategy specifically identifies "pollution of air, water, soil and vegetation resources" as a major environmental problem.

The point here is that had there been time to do an EIA there may have become apparent to decision makers that the erection of fences was a short-term approach with minimal benefits. Now the North West district has to address two adverse situation, that is the problem of cordon fences, and the problem of pollution. Eventually each of these on its own has the potential of creating problems in achieving the goal of "conservation of all main ecosystem, wildlife and cultural resources". The restriction of movement had the possible effect of restricting of movements of wildlife as well as the possible effect of restricting the transfer of pollens, seed and other reproductive material from one zone to another, thus limiting the regenerative capacity of flora. Alternatively it could be argued that by restricting movement of wildlife there is likely to be massive regeneration of specialized localities of specific flora, thus effective biodiversity in the different zones. It has been noted that:

Within the Okavango Delta the inter-relationships between recent declines in many large mammal species populations and increases in others (elephant, lechwe, wildebeest) are not well understood, but may relate to shifting biomass.¹⁵

Such has been attributed to various causes of fire, long-term desertification, and the inaccessibility of traditional ranges.¹⁶ Eventually an EIA on the cordon fences would have to assess the effect of having certain animals at the wrong place at the wrong time. This is particularly more so where the dynamics of water availability are highly variable on a seasonal basis, even on a water system as stable as in the Okavango/Ngamiland which is on the fringes of the Kgalagadi Desert. Murray emphatically points out that as elephants move towards the Delta they will impact on riparian woodlands, and tend to alter or destroy the habitats of smaller wildlife species. It must be borne in mind that the cordon fences run east-west, such that they are likely to channel these animals into the Okavango water system with possible adverse effect on the vegetation and wildlife of the Okavango region.

ISSUES TO BE ADDRESSED BY ENVIRONMENTAL LAW OVER THE NEXT 10 YEARS

1. To ensure that there are laws (national and international) specifically addressing the control of use of biotechnology in relation to crops, especially food crops and other plants with edible parts. Biotechnology or genetic engineering as a research tool may be used to improve certain desirable traits in plants by manipulating responsible genes.

14 Ibid p7

15 Murray op cit p18

16 Ibid

This process ought to be regulated to ensure that they do not interfere with biodiversity and food production especially in developing countries. It is thus necessary that developing countries are able to identify the necessary laws for regulation of such techniques.

2. Creation of necessary enforcement mechanism for environmental law, bearing in mind that there is need for specialized enforcement mechanisms.

3. This may include creation of specialized land and environmental tribunals. This is premised on the assumption that specialist tribunals are often quick and better equipped to deal with specific problems. It may also assist in the avoidance of delays due to the intricate and often time consuming procedural requirements of the ordinary courts.

NATIONAL POLICY AND LEGAL ENVIRONMENTAL PROTECTION: IMPACTS CASE STUDY ON ENVIRONMENT POLLUTION

Presented by:
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National Council of Environment Management
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I. INTRODUCTION

Taking into account the variable "Environment in the definition of development policies and strategies" can be considered as one of the major events in the reflections and initiatives of the last years on the future of societies. In the countries of the Sahel, and in Burkina Faso in particular, the national effort in regard to management of the environment has essentially been directed towards the fight against desertification and towards dietary self-sufficiency for almost three decades.

During this time, environmental problems of another order have appeared with an acuteness which has created another battle front. The problems are different types of pollution caused by lack of management of municipal solid waste; waste water and excreta; rain water drainage; industrial, hospital and other dangerous waste.

Diversification and intensification of productivity in the formal and informal sectors, poverty and the insufficient awareness of the population are among the factors which combine to bring about the deterioration of the living environment, with a premium of negative impact on the health of the population in both urban and rural areas.

II. NATIONAL POLICY AND ENVIRONMENT PROTECTION

In the face of this, the Department of the Environment and Water, has been armed with constitutional measures relating to the environment, including, inter alia, the National Action Plan for the Environment (PANE). It has set itself the task of elaborating a national strategy, for proposal to the Government, for the decontamination sub-sector. The national strategy is meant to be a

consistent and reliable framework for guidance in matters of decontamination.

The national strategy is also meant to be a tool in the service of dialogue between the different ministries, decentralized communities, grassroots communities, non-governmental organizations, associations and private players for the effective and harmonious management of the decontamination sub-sector. There are many different types of environmental problems noted throughout the country.

III. WATER POLLUTION PROBLEMS

Due to my training as an engineer in environmental chemistry and my field of expertise, I will concentrate on the pollution aspect.

In December 1996, a relatively serious case of pollution was reported in a village 25 kilometres from Ouagadougou. The inhabitants complained to the department for pollution prevention and decontamination at the Ministry of Environment and Water of pollution of their village.

The local population was mostly agricultural. They complained that their crop yields had been gradually diminishing over two years and that some unusual illnesses had been noted.

A canal whose source was on the outskirts of the capital (Ouagadougou) cut through the village and flowed into a river a little further on. The canal was subject to the dumping of industrial waste water from the industrial area in the capital.

The flow of waste water was very high during the rainy seasons and caused the canal to overflow, which affected directly the nearby wells and plantations. In the

dry seasons, the canal supported mosquitoes and other pathogenic insects. This was accompanied by the emission of extremely unpleasant odours.

Other consequences noted: of the three springs close to the canal, two were abandoned for the simple reason that the water was contaminated.

In the village only one spring was in use and the quality of the water remained doubtful. The gradual disappearance of certain flora and fauna had also been noted in the area.

A reforested area and 100 square feet of mango trees had been destroyed. Animals and fish had died from intoxication and this had grave consequences for public health as the population ate the dead fish and animals.

Following these observations, samples were taken for analysis to determine the type and state of pollution of the waste water.

In order to resolve the problem, it was recommended that the industrial units treat their waste waters before discharging them. It still remains for the non-toxicity of the discharged waters to be checked as the country did not, at the time, have discharge norms at its disposal.

Burkina Faso is drawing up a document on norms this year- i.e.1999.

IV. OTHER ENVIRONMENTAL PROBLEMS

Like the big cities of the underdeveloped countries in the sub-region which are in the process of industrialization, Ouagadougou, capital of Burkina Faso, has problems of atmospheric pollution of varying degrees.

A study revealed concentrations of carbon monoxide (CO) and nitrogen dioxide, notably due to emissions from motor vehicles, higher than the limits of recommended norms.

At certain times of the year there is a marked reduction of visibility due to airborne emissions and fumes, characteristic of under-developed Sahelian countries where the majority of main roads are not tarmacked and the fuel used in most households is still wood.

A second environmental problem is that of urban waste. The system of waste management has not been very reliable. The system of collection, transport and treatment of household waste is defective due to lack of regulation. Lately, there has been a proliferation of latrines which contaminate the local ground water.

A third environmental problem is the management of dangerous and bio-medical waste. The techniques for management of this kind of waste are not well known and this exposes the population to serious health hazards.

These are the three problems which I think could cause serious problems to public health in the next ten years unless there is adequate regulation. Environmental law could contribute towards the resolution of these problems.

BENEFIT SHARING CASE STUDY IN CAMEROON

Case Under Consideration Sustainable Harvesting of *Prunus Africana* Benefit-sharing Between PLANTECAM and the Village of Mapanja

Presented by:
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Ministry of the Environment and Forestry
Cameroon

INTRODUCTION:

In response to the Rio Convention on Biological Diversity (CBD) of 1992, Cameroon's National Environmental Management Plan has the objective of developing policies, strategies and actions for the protection of the environment, and the rational management of natural resources. All this is with the view of contributing to sustainable development. The elaboration of this plan made it possible to define specific policies and strategies for the protection of the environment and the rational management of resources. It also defines some eight priority areas, one of which is the "Cameroon biodiversity".

Thus the 1996 Framework law relating to Environmental Management stipulates, in its Article 63, that the exploitation of genetic resources should be done in a way that takes into consideration the rights of future generations. This law further states that sustainable use of "Cameroon's biodiversity will be promoted through a system of control for access to genetic resources. Article 65 (1) states that exploration and exploitation of genetic resources should be done under conditions stipulated by international Conventions relating thereto, duly ratified by Cameroon, especially the Rio Convention on Biological Diversity of 1992.

The 1994 Forestry Law No. 94/01 of 20/1/99, in laying down forestry, wildlife and fisheries regulations, attempts to at least, address certain vital needs. These include, inter alia, to rationalize the forestry sector; to conserve and sustain biological resources; to increase the contribution of forest resources to development; and to improve the lives of local communities and forest dwellers.

It is therefore within the context of the above mentioned environmental law and policy, amongst other regulatory instruments and policy documents in Cameroon, as well as the relevant international conventions such as the Convention on Biological Diversity, 1992, that important environmental problems including access to genetic resources and benefit sharing are considered in Cameroon.

Thus the benefit sharing case study is justified as an important environmental problem not only within the context of the Cameroon environmental law and policy, but also within that of international conventions specifically the CBD, 1992 to which Cameroon is a party.

Furthermore, benefit sharing, is such a sensitive and important issue that, if not well handled leads to environmental degradation but if well handled ensures conservation of natural resources.

CAMEROON'S BIODIVERSITY

Cameroon ranks 4th in terms of Africa's biodiversity after the Democratic Republic of Congo, South Africa and Madagascar. Apart from timber exploitation, Cameroon's Biodiversity is also a source of a wide range of other forest products: medicinal plants species, fruits, fibres, construction material and game that are used locally. Medicinal species exploited include: *Prunus africana*, *voacanga* and *yobimbe*, sold primarily to pharmaceutical and phytomedical companies at home and abroad.

Cameroon is commonly referred to as Africa in miniature because most of Africa's ecological zones are represented in Cameroon. From the tropical rainforests in the southern part of the country through mountain for-

ests and alpine savanna in the highlands and sahelian savannah, and an almost desert situation in the North. It is within this rich ecological system and landscapes that *prunus africana*; the genetic species under consideration is located on the mountain forests on the eastern slopes of Mount Cameroon.

EXPLANATION OF THE PROBLEM

The case study under consideration was carried out on the slopes of Mount Cameroon around Mapanja village in the southwest province of Cameroon. In recent years there has been unsustainable exploitation of *prunus africana* in this area, with trees being felled rather than harvested according to established sustainable techniques.

Prunus africana is a hard wood medical species, commonly known as *pygeum* found in some mountainous forest areas in Africa, such as the mountain forests of the Northwest and Southwest provinces of Cameroon and other countries like Kenya, Madagascar and so on. It is a genetic resource used for carving and for medicine. For the past 20 years the bark of this species has been sold on the phytomedical market in Europe as treatment for benign prostatic hyperplasia. Collections of this genetic resource in Cameroon take place around Mt. Cameroon, Mt. Kupe, Bamenda Highlands including Mt. Oku and Nso.

Due to high demand for access to new species from phytomedical companies, a report circulated at the Eighth Meeting of Plants Committee of CITES in November 1997, stated that 3,200-4,900 tons of pygeum bark are exploited annually from wild populations for export, primarily to France, Italy and Spain as well as to USA, Argentina, Brazil, Venezuela and Japan.

Phytomedical industries potentially generate a range of benefits including monetary benefits like fees, advance payments and royalties and non-monetary benefits such as development of sustainable sourcing industries of countries of origin, training and technology etc.

Prior to 1993, way back as before the 1970s, the local populations around Mount Cameroon exploited *pygeum* on a small-scale for traditional carving, construction began with PLANTECAM's commercial interest in the *pygeum* bark in the 1970s. PLANTECAM established a system of training collectors to sustainably harvest bark from opposing quarters of a tree and enforced this while its monopoly lasted but in 1993, in effort to generate more benefits for Cameroonians, the Government of Cameroon ended export permits to three (3) domestic companies. These companies worked with contractors and buyers, with little interest in long term sustainability. By 1994 massive illegal exploitation of *pygeum* was taking place around Mt. Cameroon due to:

1. The 1993 extension of export licenses to companies with little interest in sustainable *sourcing of pygeum*;
2. A shortage of *pygeum* trees in the Northwest province, the sources of the bulk of the bark to date, due to local over exploitation of *pygeum* and degradation of the forests due to encroachment from agriculture. As a result contractors with exploitation permits moved into the Mt. Cameroon region to meet up with the quotas.
3. The granting of special permits to companies other than PLANTECAM for exploitation on Mt. Cameroon SOCO and MEBA were issued with special permits to exploit *prunus africana* at Muyenge and Ekona – Muyuka respectively. The zone granted to SOCO fell within the PLANTECAM area, while *pygeum* trees were not found around Ekona. This led to illegal and unsustainable exploitation.

It is reported that there was a marked increase in *pygeum* bark supplied by individual contractors to PLANTECAM from 1993. In the villages around Mt. Cameroon there was limited concern at the level of exploitation and some villagers actively collaborated with middle men, supplying them barks; because these activities were largely illegal, there was little or no control over the harvesting and a resulting high level of felling of trees to collect the bark.

APPROACHES TAKEN BY VARIOUS ACTORS TO DEAL WITH THE PROBLEM

The main actors involved in this case are:

- The Bakweri village of Mapanja and Bokwongo located in the Mt. Cameroon region of the South west province of Cameroon;
- The French owned company PLANTECAM MEDICAM, the main purchasers of *pygeum* bark within Cameroon. The company also processes bark into extracts for export;
- Ministry of the Environment and Forestry (GoC) and Mt. Cameroon Project a local conservation and sustainable development project which facilitated the signing of the agreements between PLANTECAM and the villages of Mapanja and Bokwongo village in 1997.

In an effort to correct the process of unsustainable exploitation of *prunus africana*, with trees being felled rather than harvested according to established sustainable techniques, and to generate greater benefits for local communities from the commercial use of *pygeum* bark, in 1997, an agreement "the Agreement for Sustainable Management of the Species and Production of *prunus africana* at Mapanja Village" was signed between the main purchasing company PLANTECAM

MEDICAM and the village of Mapanja located in an area of the Mt. Cameroon forest with significant remaining *pygeum* population.

This agreement outlines general benefit for the village such as increased revenues from higher payment per ton collected; training in sustainable management techniques; and also serves the wider conservation need of managing this species sustainably.

Concerning the process for establishing the arrangement, the plan to bring local communities under PLANTECAM's license for bark collection developed in 1994 and was further investigated in a study sponsored by PLANTECAM to look into this possibility in 37 villages around Mt. Cameroon. One of the primary findings was that such a system would most likely succeed in villages on the Eastern slopes of the mountain including Mapanja and Bokwongo villages.

The initiation of this system began in Mapanja village with the following step:

- Perception gathering;
- Conflict mappings and identification of common grounds to set up a harvesting system;
- Putting in place a participatory monitoring and evaluation system.

This process culminated in the signing of two contractual agreements: between PLANTECAM and Mapanja village in July 1997 and PLANTECAM and Bokwongo village in 1997, for harvesting and supplying of *pygeum* bark under PLANTECAM's license; with a view to guarantee sustainable management of *pygeum*, and generate greater long-term benefits from the exploitation for local communities.

The arrangement for the village of Mapanja is called "the Agreement for Sustainable Management of the Species and Production of African prunus at Mapanja village" facilitated by Mt. Cameroon Project (MCP) and the Ministry of Environment and Forestry (AMINEF), the agreement was signed in July 1997 by PLANTECAM MEDICAM and the prunus harvesters of the village of Mapanja.

According to the terms of this agreement Prunus Harvester's Union harvested bark in place of PLATECAM's recruited workers and sell the bark to PLANTECAM at the rate PLANTECAM buys from middlemen with special permits (209cfa per kg) contrary to the reduced price (100 cfa per kg) which these middlemen used to pay to the villagers.

THE OUTCOME OF THE ARRANGEMENTS

The actions taken in this *prunus africana* case have to a considerable extent been successful. The local com-

munities have gained both monetary and non-monetary benefits as their own share of the utilization of the genetic resource (*prunus africana*) around them which is a fulfillment of the provisions of the Convention on Biological Diversity (Article 8(i)). It can be said that in this case, the objective of the CBD on "fair and equitable sharing of benefits arising from the utilization of genetic resources" has been greatly realized in the pygeum case.

With higher earning the villagers are now able to contribute to their development fund with which they intend to realize a long awaited water project.

The non-monetary benefits resulting from the agreement are:

TRAINING

Bark harvesters have been trained to harvest the bark sustainably and monitoring is on-going to ensure that these methods are adhered to. Training has also taken place in other domains such as financing, accounting and management.

CAPACITY INSTITUTIONAL BUILDING

There are:

- improved village structures
- village development fund
- *prunus*
- monitoring committee

Infrastructure and equipment

- upgrading of roads, for instance the road to the less accessible village of Ekonjo
- building of the community hall with the help of PLANTECAM
- supplies of equipment to communities, for example, cutlasses and climbing gears.

The villages of Mapanja and Bokwongo also observe that illegal and unsustainable harvesting of *pygeum* bark in their area including the felling of trees has greatly declines since the signing of the agreement.

FOLLOW UP OF THE ACTIONS IN THIS CASE

Follow up in the case of *prunus africana* can be perceived through the Monitoring Committee and the general legal framework relevant to the exploitation of *prunus africana* in Cameroon. For example the 1994 forestry law and the 1996 framework law on environmental management are the main legal instruments; although earlier ministerial decisions such as Decision no. 0045/D/MINEF/DF of 1993 still apply to the exploitation of *pygeum* bark in Cameroon.

The 1994 Forestry Law as mentioned above attempts to at least address the need to rationalise the forestry sector, conserve and sustain biological resources, increase the contribution of forest resources to development and to improve the lives of local communities and forest dwellers.

However, in spite of the improvements exposed in the *prunus africana* case, over-exploitation of forests resources including *pygeum africana* bark continues. This is because effective implementation of the law has still not yet been achieved. In general, the policy framework has not created mechanisms for sharing benefits with local communities. As a result little incentive exists for them to conserve, or sustainably harvest, populations of *pygeum* or other medicinal plants.

Also *pygeum* bark exploitation is said to have caused serious damage to pygeum which has relatively low population densities and is found in afrofrontane forest areas, very limited in size.

RECOMMENDATIONS

The need for a few other specific measures to be taken side by side with the ones mentioned above have been expressed:

- sustainable harvesting quotas must be established;
- Inventories must be conducted to establish reasonable harvesting levels for *pygeum*;
- Increase cultivation to meet global demand. Already, efforts to cultivate *pygeum* have expanded in both North West and South West provinces of Cameroon.

The commercial exploitation of *pygeum* can generate benefits for local communities in a manner which provides incentives for conservation of species, and in providing an alternative income based on sustainable use of local forests and the biodiversity they contain.

Most pressing is the need to develop ecological, commercial and socio-economic strategies that promote and make possible the sustainable exploitation of this species.

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ISSUES ENVIRONMENTAL LAW IS LIKELY TO, OR SHOULD BE ADDRESSED IN THE NEXT 10 YEARS.

- Prior to the Congo Basin-Heads of States-Summit in April 1998 in Yaounde on Sustainable Forest Management in the Congo Basin, their Ministers had met in a preparatory meeting during which the development of Non-Timber Forest Products (NTFP) in the sub-region was strongly recommended. I therefore, think that environmental law is likely to, or should address the harvesting and management of secondary or non-timber forest products like medicinal plants, "eru" etc (eru is a hard-leaf forest plant widely consumed in Cameroon and Nigeria as vegetable) in the next 10 years, either at the national level or at the sub-regional level.
- Another issue is that of intellectual property rights in relation to local and indigenous knowledge in biodiversity prospecting.
- Environmental law in Cameroon should address the protection of the coastal ecosystems and specific habitats like mangroves, which environmental law and policy in Cameroon have neglected.
- Adequate legislation on access and benefit sharing.

CASE STUDY ON POLLUTION IN THE SUEZ CANAL, EGYPT

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The Suez Canal is exposed more than ever to marine pollution. The heavy volume of traffic through the Canal, with an excellent record of safety and the increased capacity of the waterway to accommodate large cargo vessels through the Canal. As a result the 6 days trip around Cape Town has been pushed down to only less than 2 days. The utilization of the Canal has hence been bolstered.

Furthermore, due to the increasing trade among states and among trading blocs such as the EU, NAFTA COMESA, the Asia-Pacific Group, all have increased demand for middle-East oil. Expectations have also risen about the vitality and indispensability of the Canal with regards to international trade and commerce.

The booming traffic across the Canal has certainly been welcomed by the Suez Canal authority and the two ports (Port Said-Port of Suez) at the North and South Entrance. However, this might not be the case with the three cities, which lie along the course of the inland waterway. These have a total population of over one million residents, who have misgiving about the pollution in the Canal.

Having said this, the competent authorities in Egypt are monitoring the marine environment. This is to control the level of pollution in the canal, and to reassure the citizens residing nearby.

So far, the principal source of pollution in the Canal is limited to oil spills and sewage waste and garbage discharge from the vessels in transit. These have a synergistic negative impact on the marine living resources in the Canal. To guard against this hazard, a new environmental law was passed in 1994. This has more stringent provisions to maintain, protect and preserve the environment against all sorts of pollution on land, in the air and at sea.

The new law conforms also with provisions of international conventions, including the 1973 Convention for Prevention of Marine Pollution from Ships and the 1969 Convention on Civil Liability (and its amendments).

However, over the last decade or so two new forms of pollution have evolved, posing greater risks to all sorts of life in the Canal and its neighbouring region. This has raised questions about the safety measures, which should be taken by the passing ships.

The first area of concern is the increased trade in hazardous and noxious wastes across borders. While the 1989 Basel Convention has succeeded in attracting attention to the enormity and complexity of the problem, it stopped short of imposing a comprehensive ban on international trade of hazardous waste, and aimed only at its control. Even though the Convention imparted a strict regime for movements of hazardous waste premised on prior consent of the importing state, it was not until 1997 when the Third Meeting of the States Parties to Basel Convention, recognised that movements of such wastes to developing countries carried high risks. These bore the risks of not constituting environmentally sound management of hazardous waste, as required by the Convention. Consequently the Parties further imposed a partial ban on the transboundary movement of hazardous wastes only into the developing countries.

Decision III/1 of the Third States Parties meeting of Basel Convention amended the Convention by instituting a comprehensive ban on movement of hazardous wastes from developed to developing countries. Unfortunately decision III/1 did not enter into force yet despite its adoption 2 years ago. The ban, regrettably, covers only exporting hazardous wastes to developing countries but is not extended to cover the traffic through its territorial and inland waters. This leaves the developing countries vulnerable to the dangerous situation that may arise in case of an accident during the transit of hazardous wastes through its waters. This is especially in the absence of provisions addressing the question of liability and compensation.

The continued permissible trade in noxious wastes among the OECD countries and among the non-parties to the Convention through the territorial water and waterways in developing countries, continues to jeopardise the water

safety and coastal cities and towns neighbouring such waters.

Another loophole in the Basel Convention is found in Article 9, which deals with the illegal traffic of hazardous wastes. The article describes in detail what should be done in case of illegal traffic, however it avoids the question of how to fix the damage to the transit state in case of any leakage.

The article should have obligated the importer or exporter, or both of them, to redress the damage to the environment, and restore the situation to the pre-accident status.

The second major cause of concern to the safety and security of the Suez Canal is the transit of nuclear powered ships, and ships carrying nuclear material. Given the virulent and widespread consequences of nuclear accidents, and the prevailing absence of International Convention in force that regulate the transit of nuclear material across borders, it is up to each country to set up safety measure that it deems fit.

The 1982 Law of the Sea Convention did not directly address this problem but only requested nuclear powered ships and ships carrying nuclear material or material of hazardous or noxious nature, while exercising their right of innocent passage in the territorial waters,

to carry documents and take special precautionary measure according to the International Conventions dealing with such ships.

The 1963 Vienna Convention on Civil Liability for Nuclear Damage ruled out of its scope, such incidents that involved nuclear powered ships. However it made it possible to collect indemnities only from operators of nuclear installations for nuclear damage involving nuclear material originating from his nuclear installation. No reference was made to the shared responsibility of states, on whose territory the installation, is located to compensate for the nuclear damage.

The 1997 Protocol amending the Vienna Convention contained much stricter language in excluding from its scope nuclear material not used for peaceful purposes.

Following the adoption of the CTBT, which certainly will help reduce transit of nuclear material to places of tests around the world, the time is ripe to take action to minimise movements of nuclear material and rein in its transit across borders, and rid the marine environment of the scourge of nuclear accidents.

Should the international community have not heed calls for reforming this loophole, this will take its toll on the safety of the environment around the globe for years to come.

RESOURCE USE CONFLICTS AROUND LAKE NAIVASHA (CASE STUDY) KENYA

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THE PROBLEM

Encroachment of Lake Naivasha through heavy water abstraction for irrigation purposes reclamation, pollution by agrochemicals and biodiversity loss among others.

1. Introduction and Background

The Rift Valley Lakes in Kenya which include Lakes Baringo, Elementaita, Bogoria, Nakuru (famous for its flamingos) and Naivasha, comprise some of the most fragile ecosystems and biologically rich areas in the country. Although these lakes are known for their rich biodiversity, they are presently under great threat from land encroachment, eutrophication, water level fluctuations, siltation, toxic chemicals contamination, acidification, land reclamation, overfishing, introduction of invasive species, and other human development activities.

2. Past Management Practices of the Lakes

In the past, the lakes' resources have been managed on sectoral basis. There has been no single institution legally mandated to develop and manage these resources. Although Kenya Wildlife Service (KWS) is responsible for the assessment and management of lake resources within national parks and reserves, most of the factors affecting the lakes are external and beyond the mandate of KWS. An appropriate management plan (structure) needs to be established, which takes into account all the factors that affect the lakes.

The management of biodiversity resources within the lakes is characterized by several weaknesses. Among these include, weak legal framework relating to biodiversity management, lack of appreciation of value

of biodiversity resources, inadequate infrastructure, poor access to biodiversity data information, low level of awareness amongst the stakeholders and adoption of new technologies including biotechnology

The problems facing Rift Valley lakes must be addressed within the appropriate socio-economic context and sustainable development. Most of the lakes are threatened by agricultural encroachment, despite the known but difficult to quantify, value of ecosystem services they provide. These include nurseries for fish breeding and habitats for hippos, amphibians, and hundreds of resident and migratory birds.

This paper focuses on one of the lakes within the broad terms of reference, which include an explanation of the problem; approaches taken by various actors to deal with the problem and the way forward.

The lake is designated a Wetland of National and International Importance under the Ramsar Convention (1995). However, its future stability is uncertain due to increasing demands upon its fresh water supply mainly for intensive agricultural use, and for geothermal power production. This is further compounded by gradual qualitative changes caused by hydrological perturbation and pollution. Hence, the need for urgent remedial action.

However, despite all the efforts at local and national level, unsustainable human activities within and outside the lakes' ecosystem, continue. The degradation of the lakes and the destruction of catchment areas are on the increase, posing a serious threat to valuable biodiversity in the lakes. The ever increasing human population around the lake's ecosystem, has led to great demand of water resources, resulting to encroachment of the lakes for agricultural development, residential areas and tourists hotels.

3. Limnology of the Lake Naivasha

The lake is a eutrophic lake and lies in a semi-closed basin on the floor of the Rift Valley at approximately 1890m altitude. It has an inflow, predominantly from Nyandarua mountain ranges to the north-east of the Rift Valley. It is characterized by irregular inter-annual rainfall, as is common with most places which lie within the inter-tropical convergence zone. The lake is shallow with the deepest part being 15m. The lake size is prone to periodic fluctuations largely as a result of drought and water abstractions for irrigation. Documented research indicates a historic pattern of high and low water levels every 7 years with the general trend being downward. In recent years, the lake level has been observed to be receding alarmingly. This variation has encouraged continual encroachment.

4. Social Economic Activities

Lake Naivasha is the only fresh water lake in Nakuru District of the Rift Valley Province. It is the only lake that supports commercial fishing. Besides, there is a national park within the vicinity, which is home to many animal species especially game. The lake is also an international habitat for about 400-500 species of migratory birds. It has about 1% of the global waterfowl, hence making it a site for not only national but of international importance.

5. Land and Land-Ownership

The lake region can be classified as low potential and rangeland farming area. Activities undertaken around the area include dairy and beef ranching, horticultural production and some agronomic production. Overhead sprinkler started in the early 1970s. However, over the past 15 years, modern horticultural production for export has continued to pick pace. To-date, there are many farms growing vegetables and cut flowers for export.

It is worth noting that most of the land around the lake is privately owned.

6. Other Causes of Degradation

Due to the unsustainable farming activities taking place around the catchment areas of the lake, as well as deforestation and devegetation, there has been an increase in soil erosion. As a result, the amount of silt reaching the lake has also increased. This contributes further to the degradation for the lake.

In summary, the threats to the lake includes the following:

- Water abstraction for irrigation purposes;
- Geothermal Power Production;
- Siltation;
- Salinization;

- Natural resources of the catchment area;
- Eutrophication from fertilizers and the proliferation of salvinia molesta;
- Pollution from pesticides, and other chemicals; and
- Invasion of the lake by salvinia molesta a water weed.

If these trends are to be reversed, new policies must be adopted.

7. Key Actors

Two government organizations have a direct control over certain aspects of the lake. These are Kenya Wildlife Service (KWS) and the Department of Fisheries which manages the fishery through issuance of licenses and the enforcement of fishing-net mesh size regulations. On the other hand, KWS is in charge of administering Lake Naivasha as a Ramsar Site. (Ramsar sites are internationally recognized wetland areas of local, national and international importance and are governed by an international treaty).

Other bodies with vested interests include the National Environment Secretariat, local organizations such as the Lake Naivasha Riparian Owners Association (LNROA). Other government agencies such as the National Museums of Kenya (NMK), the Naivasha Division of Agriculture Office, the Department of Resource Surveys and Remote Sensing (DRSRS), Department of Water Development and the Kenya Power Generating Company. These have specialized resource utilization needs.

8. Constraints

The following constraints are regarded as crosscutting in all the lakes. Most of the issues arising in these constraints are fundamental in nature and thus of wide concern in the conservation and sustainable use of biodiversity resources in Rift Valley lakes.

The main constraints are a lack of co-ordinated land use policies, and effective legislation to control resource use. Most of the existing policies, legal and administrative arrangements are sectoral and often contradictory. They address various environmental values i.e. forests, land, water, wildlife in isolation. In addition to this, enforcement and implementation of the existing arrangements is inadequate. For example, there is rampant deforestation and excision of the natural forests within the catchment area of the lake, yet there is the Forest Act which is supposed to protect the forests. There is widespread soil erosion, siltation and sedimentation of rivers and the lake, yet there are laws such as the Agricultural, Land Planning and Lakes and Rivers Act and which are supposed to be used to manage these resources. Likewise, there is over-fishing and exploitation of resources and encroachment towards the lake,

contrary to the existing laws and regulations regarding overfishing. Unco-ordinated land use and development practices in the catchment basin, has led to unnecessary conflicts, competition, and degradation of the environment and biodiversity in the lake and its ecosystem. The horticultural and power production policies have contravened the sustainability of the lake and its biodiversity. Not to mention that the economic benefits accrued only benefit a few of the communities around.

Other constraints include:

- Lack of integration of biodiversity issues with the national planning and development process;
- Lack of adequate scientific information base; and
- Inadequate public education and awareness and general appreciation of the important values, functions and attributes of the various ecosystem.

9. Approaches taken by various actors to deal with resource use conflict:

i) Development of a Digital Biodiversity Database of Lake Naivasha Region

In order to understand the complex environment and development problems, there is need to collect, store, retrieve and analyze the right kind of data. The National Environment Secretariat (NES) of the Ministry of Environment and National Resources (MENR) through the GEF/FAO/UNDP Project entitled "Institutional Support for the Protection of the East African Biodiversity" undertook to develop a digital Biodiversity Database of Lake Naivasha Region. The data indicates interactions between resource utilization and sustainable biodiversity conservation.

The projects focus on the lake and the main objective to create institutional awareness and build capacity within relevant government and non-governmental organizations so as to ensure adequate protection of biological resources in the lake. The database which is now in place would be useful for environmental assessment and monitoring of Lake Naivasha and the surrounding ecosystems for the purpose of sustainable development. It is expected that it will be regularly updated.

ii) Development of a Wetlands Policy Development

In Kenya, the Inter-Ministerial Committee on Environment provides a national forum in which important environmental matters are deliberated and appropriate recommendations and policy ideas formulated to be taken up by relevant institutions. Several technical sub-committees have been formed to deal with specialized areas requiring specific attention. Among these is the National Wetlands Standing Sub-committee. The committee draws its membership from various government institutions, universities, the private sector and NGOs.

In addition, the National Environment Secretariat provides support, while the Kenya Wildlife Service acts as the Chair.

This committee is in the process of formulation a draft policy on all wetlands in Kenya, lake Naivasha included. This is through wide stakeholder participation. Recognizing Kenya's wetlands constitute about 4% of the total area of Kenya, this committee is crucial.

iii) Establishment of a Management Committee

A joint management committee which incorporates various sectors such as forestry, water, agriculture, environment, the municipal council, flower growers, fishermen and power stations has been established in the recent past. The committee is expected to aim at addressing the problems facing the lake within wider socio-economic context and sustainable development such as integrated plan would include focusing on the catchment as well as the lake, enhancing partnership with the local community through a community support programme, that would be aimed at delineating them from degrading the catchment area.

iv) The Environmental Management and Coordination Bill (1999)

The final solution is largely legal. One way of tackling the problems alluded above lies with the enactment of the Environmental Management and Coordination Bill (1999) which is currently in Parliament awaiting debate before it becomes law.

The Bill which aims at establishing an institutional framework for the management of the environment will radically alter Kenyan law on Environment Management Authority which will authoritatively and cohesively coordinate all environmental management activities in the country. The Bill calls for a Council of 32 at national level, committees of at least 30 at provincial level (8 provinces), and similar committees at every district level. Such grassroot environmental management organization needs to be encouraged for ecologically sensitive areas like Lake Naivasha. Further, the Bill will also introduce Environment Impact Assessment for all proposed development projects.

10. Conclusion

The many interests in utilization of water among various users such as for irrigation, hydro-electric power generation, inland fisheries, recreation and urban development, has resulted into unsustainable demands of water resources, that totally ignore ecological sustenance of the lake ecosystem and catchment areas. These patterns pose serious management problems and therefore demands an integrated management approach within socio-economic context in order to ensure sustainability

ENVIRONMENTAL LAW IN LIBERIA

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1. INTRODUCTION

Liberia is situated on the west coast of Africa between latitude 4 and 9 and longitudes 7 and 12 degrees. The vegetation ranges from rain forest to mangrove swamps, including some savanna in the far north. The climate consists of two seasons: the rainy season (May to October) and the dry season (November to April). The average rainfall is about 117 inches and the annual temperature ranges from between 65 to 85 degrees fahrenheit.

The country has a land area of about 43,000 square miles, and a population of 2.5 million (1997 estimate of which 62 percent is rural and 38 percent is urban). The Ministry of Planning and Economic Affairs reports that the average population growth rate is estimated at 3.3 per cent per year.

Liberia is endowed with minerals, tropical forests, abundant arable land and water resources. A traditional agrarian subsistence sector and a modern monetized sector characterize the economy. The Liberian Dollar and the United States Dollar are the two major mediums of exchange.

2. ENVIRONMENTAL LAW

Areas in which environmental law and policy in Liberia is likely to address in the next 10 years.

A. Land Restoration

Small-scale, semi-industrial and industrial mining activities have left many pits (small and large) in regions where mining has taken place. Presently, the mining of alluvial gold and diamonds continue to cause the same impact. An environmental law requiring the back filling of mined-out pits, as well as restoration of diverted water courses caused by mining, will need to be strongly effected.

B. Reforestation

The felling of trees for logging and charcoal production, and the process of shifting cultivation by agrarian farmers have all tended to negatively impact on the Liberian ecosystem and climatic conditions. An environmental law will be needed to enforce reforestation efforts in a bid to forestall the advancement of the Sahara desert into Liberia's rain forest.

C. Handling of Wastes

Wastes generated from industrial and domestic use can cause serious environmental health problems. An environmental law requiring the proper management, treatment and disposal of wastes (solid and liquid), that may be particularly hazardous and toxic in nature will need to be brought into full effect within the earliest period of time.

Since the ushering in of a democratically elected government in July 1997, the country has enjoyed political stability and is gradually regaining its status with states and international organizations. The country is presently ripe with investment opportunities and is presently mobilizing local and international support for its National Recovery Programme (NRP).

3. ENVIRONMENTAL PROBLEMS IN LIBERIA

Liberia, not being an exception to other developing countries, has had, and continues to experience, vital environmental problems. Chiefly, among the numerous problems are: coastal erosion; water pollution; deforestation; air pollution; waste management; destruction of wildlife etc.

Institutional capacity building to promulgate and formulate legislation and policies aimed at alleviating and/or minimizing the numerous problems has been and is

still the technocrats' primary concern. To facilitate the accomplishment of this goal, several mechanisms were being put into place prior to the inception of the civil crisis in the country. However, the unprecedented and hopeless crisis has had, in no uncertain terms, a devastating effect on that process.

Prior to the war, the government had in place an Inter-ministerial Committee for Environmental Problems Management and Monitoring. The Committee was charged with the responsibility of performing the functions of a commission, and working out modalities for having in place functional mechanisms and strategies for control and management of environmental problems.

The Committee was instrumental in conducting the national seminar on Urban Development and Management Strategies in 1986; conducting the regional workshop on Toxic and Hazardous Wastes in 1984, and the regional workshop on Environmental Management, also in 1984. These workshops and seminars were intended to promote the formulation of appropriate laws for environmental control. They had the blessing of the United Nations Environment Programme (UNEP).

In addition to the creation of the Inter-Ministerial Committee, there existed environmental laws and policies advocacy groups in Liberia. Prominent among them are the Society of the Conservation of Nature; Pollution Control Association; People United for Progress; Environmental Commission; etc.

Fellow participants, reference to the solution of environmental problem in Liberia, particularly through the force and effect of environmental legislation, we are pleased to inform this august body that prominent amongst the environmental problems experienced in the late eighties and early nineties was the problem of toxic and hazardous wastes. Fortunately, Liberia was never directly a victim but was highly threatened like many other countries in sub-saharan Africa.

The alarm regarding the threat of the importation and storage of toxic and hazardous wastes in Liberia was raised by Greenpeace, an environmental concern organization, based in London. This organization alerted Liberia of certain individuals intending to participate in the trade.

Based upon the information received, and realizing that many of the neighbouring countries were being victimized by the effect of toxic and hazardous wastes, the concerned parties mustered up their efforts through coordination and collaboration to put into place proper mechanisms for aborting the dreams of unscrupulous individuals in the society for bringing into the country toxic and hazardous wastes. Consequently, an Executive Order was passed prohibiting the importation, storage and use of toxic and hazardous wastes. This law imposes a death penalty for any person(s) found guilty of contravening the law.

The passage of the Executive Order, is no doubt, was very successful, though no culprit was ever and has never been apprehended, because the coming into effect of the law halted the numerous rumours that were in circulation regarding the threat of toxic and hazardous wastes in Liberia.

4. Conclusion:

Organizers, presenters, fellow participants, on behalf of the Government of the Republic of Liberia, we wish to express our heartfelt thanks and appreciation to the United Nations Environment Programme (UNEP), particularly the Legal Economic and Other Instrument Branch, for the opportunity accorded us to share with you the Liberia Experience. It is our anticipation that we will continue to enjoy this opportunity in future.

ENVIRONMENT DEGRADATION AND INSTITUTIONAL AND LEGAL FRAMEWORK OF ITS PROTECTION: IMPACTS CASE STUDY ON THE ENVIRONMENT (EIE), NIGER

Presented by:
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Republic of Niger

I. INTRODUCTION

In Africa, when we talk about environmental issues we always refer to violation, protection and restoration of our productive potential. In this context the environment is seen as a 'working tool' for African producers.

However, the multi-sectoral features of the environment, and of our activities, command us to always question ourselves about possible consequences and impacts of our development activities.

The objective of this paper is to try to discuss various issues linked to the environment degradation in Niger, and the decision making instruments that facilitate their solution. Examples are such as those linked to the Impact Case Study on Environment (EIE), through the study: "Environment Degradation and Institutional and Legal Framework of its Protection: Impacts Case Study on the Environment (EIE)".

II. PROBLEMS LINKED TO ENVIRONMENTAL DEGRADATION IN NIGER

Our natural ecosystems' degradation, weakened as much by our practices as by a harsh and severe climate, today seems to call out at us to be more careful and safeguard the current patrimony for the survival of future generations.

Niger is a country of 1,267,000.00 sq km, situated in the Sahel, with about 9 million people. More than 80% of this population is living in a rural area and perform agricultural, livestock, forestry and fishing activities. However, since the 1973 drought, the weak performance of its activities is largely due to the economic recession in the agricultural sector, and the country in general are facing. In fact, environmental degradation, particularly in basic production, has led to a decrease

in production, permanent food insecurity, and diminishing incomes in the agricultural sector.

Despite this situation, Niger still has a significant potential of natural resources. Notably, this is characterized by a biological diversity (plants, wildlife, fishing resources), for which protection is of vital importance.

The environment crisis that affects Niger has an overall characteristic and concerns three main factors, which are:

- i. Successive droughts (1973, 1984) with particular consequences, such as
 - high degradation of natural resources and the loss of the biodiversity;
 - wind erosion (silting up of water surface and cropping lands);
 - habitat and wildlife degradation and its extinction from human settlements;
 - pasture lands degradation, and their overrun by species of grass more or less eaten by cattle (*cordifolia*, for instance)
- ii. Population growth, with a population that doubles in less than 25 years, cropping lands largely used, forests with already a shortage of about one million steers a year, Urgent measures should be taken at various levels, one of which consists of ensuring, the implementation of any action and its impact on environment.
- iii. Poverty, unfortunately, limits the large-scale adoption of technology that could possibly reverse the tendency of the environmental degradation.

The degradation of the urban environment adds to all these issues mentioned above, resulting in significant

pollution and damages due to the failure in household waste collection and the stagnation of sewage in towns as well as bad management of industrial wastes.

III. DECISION INSTRUMENTS ON ENVIRONMENT MANAGEMENT IN NIGER: CASE STUDY OF IMPACTS ON ENVIRONMENT

One of the essential basis for Niger's economic recovery remains agricultural production. Unfortunately, this activity is contingent on a set of environmental factors, as well as on natural atrophy, all of which may seriously hamper any hope of recovery.

These problems have a global dimension that are characterized by a general degradation of the environment and its consequences (loss of quality life, reduction of the biodiversity, poverty etc.). The international community has worked in favor of environment protection and natural resource management through various conventions and international agreements. Niger has ratified a number of these, and at national level important measures have been taken.

IV. ENVIRONMENT MANAGEMENT POLICIES IN NIGER

For a long period of time, Niger went through sector-based practices of environmental policy, that were regularly adjusted to the ecological and social context and economic development policies. More recently Niger's approach has adjusted to the international reality context.

1. Highlights in environment policies

Further to the above, Niger has had different environmental policies at different times in the past:

- a) From 1930 to 1970 – During this period, environment policy was centered on forestry protection, primarily against fraudulent woodcutting. This was because equipment and human resources were not sufficient at the level of forestry and water resources units.
- b) From 1970 to 1983- During this period, the environmental conservation policy underwent many changes in order to focus on the fight against desertification. This followed the severe droughts experienced during this period.
- c) From 1984 to 1993 - The year 1984 was marked by an important debate on the fight against desertification, held that year in Maradi in May. Following this debate, the fight against desertification was pointed out as environmental policy axis. The "Maradi Commitment" was thoroughly analyzed and translated into national policy of fighting against desertification. This focussed its work on the following points:

- Overall and integrated approach;
- Participatory approach;
- Land reclamation.

Specific policies have been set up particularly in the field of forestry development, the tropical forestry action plan that has been replaced by a new practical instrument of ligneous resources exploitation and commercialization: Ordinance No 92-037 dated August 1992, and its enforcement decree.

2. Niger's New Environment Policy

The globalization of environment issues from the United Nations Conference on Environment and Sustainable Development, held in Rio de Janeiro in June 1992 has introduced deep changes in Niger environment policy

The environment policy is supported by the national Environment Plan for a Sustainable Development (PNEDD), one of the four framework Programs of the Economic Recovery (PRE). The PNEDD objectives are:

- Strengthening of grassroots level communities involvement;
- Partnership development;
- Search for a better integration of participatory actions for a better synergy among the participants;
- Setting up an efficient funding mechanism.

Many instruments have been developed for the implementation of the environment policy, some of which are: the National Program on the Fight against Desertification and Natural Resources Management (PAN-LCD/GRN); the Management Program of Biological Diversity; the Water Program and Sustainable Development; and the Institutionalization of Impacts Studies on Environment: an appropriate framework for the sustainable management and environment protection

Niger has initiated impact studies on the environment through such legal and institutional texts as:

- The Constitution of the 5th Republic (enacted by Decree no. 99-320/PCRN dated August 9th 1999). This states in its article 27 that "any person has the right to get a safe environment. The state sees to the environment protection";
- The adoption of Ordinance No. 92-030 on adoption of major guidelines for a rural development policy in Niger in 1992;
- The establishment of the National Council of Environment for a Sustainable Development (CNEDD) in 1996;
- The adoption, on 10th January 1997, of Ordinance No. 97-001 on the Institutionalization of Impacts Studies on the Environment;
- The promulgation of the Framework law on Envi-

ronment Management, no. 98-56 dated 12/29/98; and

- The development of regulations (applying the framework law on Environment Management), related to the Environment Evaluation Bureau and Impacts Studies (BEIEE).

V. LEGAL, INSTITUTIONAL AND ADMINISTRATIVE FRAMEWORK ON ENVIRONMENTAL MANAGEMENT IN NIGER

1. Administrative Units and State Institutions

*In Niger Environment Administration has been marked by a big structural instability due to various readjustments made in the government body. We moved from a system of scattered competent personnel to an overall management through a specific ministry, Ministry of Water Resources and Environment (from 1982), with its central and regional environment, wildlife, fisheries and aquaculture departments.

*Inter-ministerial environment bodies are entitled to ensure the necessary complementary nature of activities on environment management, through inter-sectoral based collaboration. There are, among others:

The National Council of Environment for a Sustainable Development (CNEDD) established by Decree No. 98-004/PM dated January 9th 1996;

- The Natural Resources Management cells (Cells GRN) established by ministerial decision No. 406/MAG/EL/MFE dated November 1995;
- The National Committee of the Permanent Inter States Committee on Drought Control in the Sahel (CILSS) established by Decree No. 84-51/PCMS/MDR dated March 1st 1986;
- The National Committee on Rural Code (article 122 of Ordinance No. 93-015 dated 3/02/93);
- The Technical Committee on Fight Against Desertification and Natural Resources Management (CT-PAN/LCD-GRN) established by ministerial decision No. 066/PM/SE/CNEDD dated 8/22/1997;
- The National Monitoring Committee of the United Nations Conference on Environment and Development (COMNAT), established by ministerial decision No. 30/MHE/DE DATED June 23rd, 1993 in order to ensure the follow up of the CNUED and work out national files "Agenda 21 National";
- The National ozone Committee established by Ministerial Decision No. 036/MHE/DE dated May 27th,

1994 in the framework of the implementation of the Montreal Protocol on Substances that Deplete the Ozone layer;

- The Technical Committee on Biological Biodiversity (CTDB) established by Ministerial Decision No. 053/PM/CNEDD dated 7/21/97;
- The Environment Evaluation and Impacts Studies Bureau (BEIEE) established by Ordinance No. 97-001 under the patronage of the Ministry of Water and Environment.

2. Legal Framework

A. National texts:

It is important to refer to the following legal texts:

- The Constitution of the 5th Republic;
- Law no. 74-7 dated March 4th, 1974 on forestry law (reviewed);
- Ordinance no. 93-014 dated March, 1993 on water law (reviewed by the law no 98-041 dated 12/7/98);
- Law no 98-56 dated 12/29/98 on the Framework Law related to Environmental Management'
- Law no 98-07 dated 4/29/98 on Hunting and Wildlife protection;
- Law no 98-042 dated 12/7/98 on fishing in Niger river;
- Ordinance no 93-013 dated 3/2/93 on the Orientation Principles of the Rural Code;
- Ordinance no 97-001 dated 1/10/97 on Institutionalization of Impacts Studies on Environment

B. International Instruments

Niger is currently Party to important international conventions and agreements on environment protection, especially:

- Membership of the Montreal Protocol on Ozone Layer Protection;
- Ratification of Bamako and Basel Conventions on the control over transboundary transportation of hazardous waste and their destruction, respectively in 1996 and 1997;
- Ratification of the Ramsar Convention on 11 February 1971;
- Ratification on January 19th 1996 of the International Convention on Fight Against Desertification; and
- World meetings on Environment and Sustainable Development, those held in Stockholm (Sweden) in 1972 and in Rio de Janeiro (Brazil) in 1992.

***EIE definition, its role:** The EIE is a formal procedure aimed at forecasting the environment consequences on a development project. It is a tool of management for decision makers on major development projects.

3. Legal and Regulation Framework on Impacts Studies on Environment (EIE)*

The institutionalization of Impacts Studies on Environment (EIE) by Ordinance no 97-001 dated January 10th 1997, made compulsory the integration of environment factors into any process of planning and implementing development activities.

Thus, the law no 98-56 dated December 29th of 1998 on the Framework Law on Environmental Management in Niger involves provisions of the Ordinance no 97-001 dated January 10th, 1997.

For the implementation of the aforementioned two texts, a number of provisions, and regulations have been elaborated. These should be based on:

- The organization, composition, attributions and the operation of the Environment Evaluation Bureau and Impacts Studies (BEEEI);
- The Administrative Evaluation Procedure and Analyses of Impacts on Environment.

In addition to the concern on filling the legal gap arising from the non-elaboration of applicable texts of the ordinance no 97-001, these two decrees allow Niger:

- 1) to set up a specialized multi-disciplinary structure in Environment Evaluations and Impacts Studies (EIE)¹. This will study environmental impact assessment reports, and decide on the implementation of activities, programs and projects for example in the field of mining, oil drilling and road works;
- 2) to have a procedure booklet on EIE that will constitute national guidelines, defining steps in the achievement, and specifying the content of the EIE Report and the mechanism of the EIE publication responsible for taking into account population concerns;
- 3) to identify projects that can have negative impact on environment and for which an EIE is compulsory; and
- 4) to protect the environment through selection of alternative projects, minimizing negative impacts, and through the implementation of a mitigation programme.

A BRIEF ON DROUGHT AND DESERTIFICATION CONTROL ACTIVITIES IN NIGERIA

Presented by:
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I. INTRODUCTION

Desertification, along with the associated persistent droughts, constitutes the most serious environmental problem facing the northern parts of the country. Nigeria is presently losing about 350,000sq meters of its landmass to desert conditions which is advancing southwards at an estimated rate of 0.6 kilometers a year. Entire villages, farmlands, access roads and other infrastructure are being buried by moving sand in the northern parts of Bauchi, Borno, Jigawa, Katsina, Kebbi, Sokoto, and Yobe States. Natural factors including climate change, aggravated by human activities such as population pressure, energy crisis, overgrazing, bush-burning, bad farming practices and rural poverty are known to enhance desertification processes.

Over the past 30 years, the drought situation has worsened, and the desertification process has accelerated. This has threatened the livelihood of millions of people living in the areas. Famine, poverty and mass migration have become widespread and the capacity of the drylands to support increasing growths in population is being undermined. With deforestation, overgrazing and over-cultivation continuing to undermine land productivity, it is pertinent that urgent solutions are found.

As at present, between 50% and 70% of the land in some of the frontline states of Borno, Yobe, Jigawa, Katsina, Sokoto and Zamfara, and between 15% and 50% in the other northern states, are susceptible to wind erosion and desertification. Despite these statistics, many of our people are yet to considerably appreciate the impact that the depletion and degradation of natural resources have on the livelihood of the present and future generations.

Government has in the past made strenuous efforts to combat these menaces of desertification, however such efforts have been in the form of isolated sectoral projects

that lacked coordination. This led to expending appreciable amount of financial and human resources on unsustainable and unfocused schemes, which ultimately produced little results. Presently, several desertification control programmes are being executed in isolation by different agencies in the country. This range from afforestation to integrated rural development and poverty alleviation programmes by Federal government with support from the World Bank, European Union, African Development Bank and the United Nations Development Programme.

II. TOWARDS A PRAGMATIC APPROACH

Nigeria, during the UN Conference on Environment and Development (UNCED) in 1992, championed the urgent need for an international convention on desertification. The international community supported the initiative and the United Nations Convention to Combat Desertification (CCD) was adopted in 1994. The Convention, which was ratified by Nigeria in 1997, provides a valuable opportunity to address the problems faced by people living in the drylands. It sets out an approach to be followed by governments, development agencies, researchers, NGOs and others aimed at better coordination of activities, a strong local level focus, and innovative funding mechanisms.

The CCD has evolved a new pragmatic approach to tackle the twin problem of desertification and drought. Its approach is based on the fact that desertification is an issue that is multi-sectoral and inter-disciplinary in nature. The primary focus of the CCD rests on the need for affected countries to initiate action at national and local level to combat desertification. The text calls for governments to demonstrate the priority which they place on tackling dryland degradation, by allocating sufficient resources and by appropriate policy and institutional changes, such as ensuring greater security of tenure over land, and devolution of power to local communities.

Nigeria has adopted the CCD's pragmatic approach to tackle the twin problem of desertification and drought. The CCD's preferred approach involves the elaboration of the National Action Programme (NAP), jointly prepared by all relevant agencies of government, private sector, non-governmental organizations and the communities themselves. We have integrated this into our national planning processes including the National Policy on Environment, National Agenda 21 and "Nigeria's Vision 2010" – our blueprint for sustainable socio-economic development.

Already, a permanent co-ordinating committee, the National Co-ordination Committee for Desertification Control (NCCDC), has been established for the review and implementation of the Convention. The committee, which has representatives of governmental and non-governmental organization as members, has been monitoring the development of NAP being drafted by consultants. The committee has also been mandated to harmonize relevant Government activities, and ensure proper co-ordination of existing and future activities aimed at combating desertification and mitigating the effects of drought in the country.

The NAP should achieve improved management of soils and biological resources in the dry areas at the local level through a variety of mechanisms including:

- policy and institutional changes to establish clearer rights and incentives to land users to manage and invest in their land;
- economic and financial measures to provide economic benefits and increased incomes from better management and investment, and;
- technical support: to support farmers to develop methods for more sustainable practices, based where possible on traditional systems, skills and priorities.

Apart from the preparation of NAP, grassroots mobilization and awareness are being pursued through rural appraisals, workshops and seminars. To achieve this, the Government is working hand in hand with other stakeholders including NGOs and CBOs. Already, a national awareness workshop/dialogue, and the West African sub-regional NGO/Government Awareness Workshop have been held in the last two years.

On the international scene, from the negotiation processes to Conferences of Parties to the CCD, Nigeria has been placing active roles in defending the interest of the country as well as other African countries. We have also played the roles expected of us during the negotiations of the West African Sub-Regional Action Programme (SRAP-WA), which was recently endorsed by Ministers of Environment in the sub-region for adop-

tion by Heads of State and Government of ECOWAS and Chad. Like the NAP, the SRAP-WA is the key instrument for the implementation of the Convention in the sub-region, [particularly as it affects trans-boundary natural resources].

III. WEST AFRICAN SUB-REGIONAL ACTION PROGRAMME (SRAP)

Article 11 of the Convention, advocates for the preparation of a Sub-Regional Action Programmes (SRAPs) for implementation of relevant Regional Implementation Annex (RIAs). SRAPs are intended to harmonize, complement and increase the efficiency of National Action Programmes (NAPs). In West Africa, a Sub-Regional Co-ordinating Committee (SRCC) was established as a technical forum mandated to prepare a SRAP for the sub-regional. Its membership consists of all National Focal Persons for the CCD in member states of the sub-region and the liaison centres-ECOWAS and CILSS.

The committee met first in Ghana and held its second meeting in the Benin Republic between 21st and 24th September 1998, from which a draft SRAP was produced. At the committee's third meeting held in Togo between 20th and 22nd May 1999, the draft SRAP was finalized and endorsed to Council Ministers responsible for environmental matters in the sub-region. The Ministers at their meeting held between May 24th and 24th, 1999, and recommended the document for approval by Heads of State and Governments of ECOWAS countries and Chad.

The priority action thrusts of the SRAP-WA are:

- i. sustainable management of shared resources;
- ii. sustainable management of shared plant and animal resources;
- iii. scientific and technological co-operation;
- iv. development and rational management of energy sources;
- v. control of crop, forestry and animal pests;
- vi. early warning and drought alleviation;
- vii. information training/communication; and
- viii. co-ordination of policies for marketing regimes and establishment of common infrastructure

For the purpose of implementation and monitoring of SRAP activities, the following co-ordination mechanisms were put in place:

- i. The Authority of Heads of State and Government of ECOWAS and Chad as the highest decision making body;
- ii. The Sub-regional Forum, which brings together all stakeholders and meets every three years to evaluate the implementation of SRAP as well as provide guidelines for its activities;

- iii. The Sub-Regional Co-ordination committee (SRCC) convened at least once a year under the chairmanship of ECOWAS and Chad;
- iv. The Technical Secretariat of SRCC is under the supervision of SRCC, but run by CILSS. It prepares meetings of the SRCC and the Forum, monitors the activities of the SRAP, and prepares evaluation reports.

Future Government programmes will also focus on arresting desertification by protecting desert prone areas, rehabilitating affected areas, and institutionalizing drought ameliorating measures.

It is envisaged that by the year 2010, the following environment friendly technologies in the energy sector would have been produced and distributed:

- 15,000 solar water heaters;
- 450 solar stills;
- 225 solar dryers;
- 1,000 village wind energy electrification projects;
- 2,000 village solar electrification projects;
- 20,000 solar power refrigerators for rural health centres.

Furthermore, as part of the efforts to address the problem of desertification in the north and loss of valuable forests in the south, the President launched the 1999

Tree Planting Campaign on 5 August 1999 under the theme "A Tree for Democracy" in line with the current ethos of democratic participation and consensus building in Nigeria. Unlike in the past, the national tree planting campaign will not be a one day affair, but the beginning of a sustained exercise of the planting. The Ministry is determined to ensure that the target set by the President to establish 1,000 hectares of plantation this year, followed by 3,000 hectares annually is achieved.

IV. CONCLUSION

It is noteworthy to mention that degradation may not be deliberate on the part of the inhabitants of the affected communities. It is the result of ignorance or more likely economic, social and political pressures. It is therefore necessary to raise public awareness and promote understanding of the essential linkages between the environment, resources and development, and encourage individual and community participation in environmental improvement efforts.

When people are given the responsibility of their pasture, water and fuel needs, backed with relevant government programmes, a substantial progress would be made in the efforts to combat desertification. Ultimately, however, concerted sub-regional, regional and global efforts in desertification control programmes will tremendously assist to curb the menace of drought and desertification.

CASE STUDY ON AN ENVIRONMENTAL PROBLEM IN SWAZILAND

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THE POLLUTION OF NDLOTANE RIVER

The case study is that of the pollution of Ndlotane river. Swaziland is a landlocked country, with South Africa on the south, north and west of her borders and Mozambique on the east. The Ndlotane River runs through Swaziland from South Africa, and therefore, this case study involves two countries. This is widely used by local communities for domestic and agricultural purposes.

The problem was discovered by the communities, first they noticed that the vegetation around the river did not look as impressive as it used to be it was now stunted and did not show much life. Over a period of time, it was reported that the river, which used to teem of fish hardly had any fish, also from now and then residents of the area could find dead fish on the banks of the river. The problem did not end there; the livestock that drank water from the river began suffering from various diseases. The people who used the water for domestic purposes noticed the change in smell and in colour of the water. Even though I do not have the statistics it is reported that a number of people were, at varying times, treated for diseases related to the polluted water.

This was a cross border problem and the two countries, relying on the numerous international conventions relating to the environment, had to come together and address. In South Africa there is Mondi Forest, a pulp company that was depositing its waste into the Ndlotane River, which led to the pollution of the water to the extent that local communities could not use the water.

This case was reported to the Joint Water Committee, a committee made up of Swaziland and South Africa. On

the South African side, the matter was taken up by the Department of Water Affairs. A committee comprising of Swaziland's water resources branch, Swaziland Environment Authority, the South African Department of Water Affairs and Mondi Forest (the polluter) was formed.

This committee was tasked with the responsibility of addressing the problem caused by the depositing of waste into the Ndlotane River. The issue raised by Swaziland was that the communities were using the water and therefore the pollution caused to the river had to be stopped as this was interfering with the quality of water which was now being used by these communities for their domestic and other uses. As this had serious financial implications for the company this problem could not be addressed overnight thus the parties agreed on a phase out programme. However, there had to be an interim measure, which had to be put in place. The problem had to be phased out progressively.

The eminent problem was, how do the communities survive in the meantime? Mondi Forest then came in and built boreholes from which the communities could draw their water meanwhile the problem of the water pollution was being addressed.

The parties have been meeting quarterly every year since this phasing out programme began (which is approximately four years now) and it is believed that by the end of this year the problem would have been solved. Currently the communities are utilizing the water from the boreholes.

From the above, one can conclude that the parties have been successful in dealing with the problem and the phasing out programme is still on course.

ENVIRONMENTAL POLLUTION IN TANZANIA

Presented by:

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ENVIRONMENTAL PROBLEMS IN TANZANIA

1. The Environment

The lives of all Tanzanians are intimately connected to the environment¹. Accordingly there is a symbiotic relationship between development and environment. This has led people to embrace the concept of sustainable development.

2. Environmental Management

Environmental management in Tanzania is multi-sectoral. However the institution which is mainly charged with the duty to manage the environment is the Vice President's Office (VPO). In this office there is a Minister responsible for the Environment.

Other institutions are Ministries responsible for particular environmental component such as agriculture - Ministry of Agriculture; wildlife and forestry - Ministry of Natural Resources and Tourism; water - Ministry of Water; land - Ministry of Land, Human Settlement Development etc. These are sectoral institutions dealing with sectoral aspects. Apart from the central government there are local governments. These are divided into two groups, that is:

- (i) Urban Authorities, established under the Statute called Local Government (Urban Authorities) Act No. 8 of 1982;
- (ii) District Authorities, established under the statute called Local Government (District Authorities) Act No. 7 of 1982;

Many policies including National Environmental policy and Land policy recognise local government authorities as agents of the central government in environmental management.

Together with the Central and Local Government authorities there are other institutions, under respective

Ministries charged with the duty of environmental management as regards particular environmental component for instance the National Environment Management Council (NEMC) whose function is advisory to the Government on matters respecting environment, the Central Water Board for Water, the Tanzania National Parks Authority (TANAPA) for National Parks², Marine Parks and Reserves Unit for marine parks and reserves.

3. Environmental Problems

Both the National Environmental Action Plan (NEAP) and the National Environmental Policy (NEP) identify six major problems³ which need urgent attention. These are problems of:

- (a) Land degradation;
- (b) Lack of accessible, good quality water for both urban and rural inhabitants;
- (c) Environmental pollution;
- (d) Loss of Wildlife habitats and biodiversity;
- (e) Deterioration of aquatic systems;
- (f) Deforestation.

4. Selected Environmental Problems

- 4.1 A selected environmental problem in this paper is environmental pollution. It is appreciated that pollution in towns and the countryside is affecting the health of many people, and has lowered the productivity of the environment.
- 4.2 The most pronounced problems relating to pollution are:- urban pollution, industrial pollution, rural (mainly agricultural) pollution, mining pollution and coastal pollution. In urban areas solid waste management, effluent discharges and noise and air pollution are major problems.
- 4.3 Industries in Tanzania have not, from the beginning, been subject to environmental regulations such

1 National Environment Action Plan (NEAP) of 10th June, 1994 page (iii)

2 Marine Parks and Reserves Act 1994

3 NEAP pg. 9 and NEP pg. 6

as environmental impact assessment requirements. They are, therefore heavy polluters, as industrial waste may contain heavy metals as mercury, chromium, lead, cadmium, salts and pesticides.

- 4.4 It is estimated that less than thirteen (13) per cent of solid waste generated in Dar es Salaam is collected⁴, the rest is disposed of within the city. A great proportion of this total is in the form of non-bio degradable plastic, glass and metals. The main official dump at Tabata in Dar es Salaam was recently closed as a health hazard.
- 4.5 There are industries located in rural areas, but with more or less the same pollution problems as those in towns i.e. sisal processing industries cause water and land pollution.
- 4.6 Increasing use of pesticides, and their improper use and disposal, has resulted in soil and water pollution, and human poisoning particularly in cotton and coffee growing areas.
- 4.7 Environmental problems related to mining include local deforestation and soil erosion, air and water pollution, and disturbance of vegetation and wildlife and heavy metal pollution of water sources.
- 4.8 Coastal pollution mainly exists from oil spillage and sewage. Waste disposal is a serious problem on both ocean and lake shores.

5. Solutions to the problems

- 5.1 The Government, through legislation, has recognised pollution as a problem (The penal code prohibits air and water pollution). Further the Tanzania Bureau of Standards (TBS) was established as a standard issuing body. The National Environment Management Council (NEMC) was established, mainly to advise the Government on environmental matters and, in particular, to monitor environmental quality and recommend pollution standards to the Government.
- 5.2 Local Government authorities have also been empowered to make by-laws regarding protection of public health and welfare. Further, local authorities have issued environmental sanitation and abatement of nuisance by-laws.
- 5.3 Recently, the Mining Act of 1979 has been reviewed and resulted into the New Mining Act 1998. This requires licence applicant to submit programs for environmental protection i.e. requirement for the undertaking of Environmental Impact Assessment (EIA).
- 5.4 Some other Acts such as Tanzania Harbours Authorities Act, Merchant Shipping Act (and the expected Tanzania Maritime Authority), create specific prohibitions on polluting of the environment.
- 5.5 Another response by the Government is hinged on the improvement of policies related to environment. Good policies lead to enactment of good laws be-

cause the laws must reflect the policies. Good legislation leads to making of good subsidiary legislation. Good legislation alone is meaningless if no enforcement is done.

- 5.6 Another response is to raise environmental awareness through environmental education.

6. Approaches taken by Actors

Several actors have been participating in solving the pollution problem according to their respective powers and limits. For instance central government has been making policies and enforcing laws enacted by Parliament. Local authorities have been making local policies and subsidiary laws, and enforcing them. Several agencies such as NEMC, Commission for Science and Technology (COSTECH) and the Tropical Pesticide Research Institute have been performing, among other thing, their advisory role to the government. Non Governmental Organisations (NGO's) and members of the public at large have been participating to minimise the problem.

7. Success

One can be in position to note that some thing has been done by different actors as a response or solution to the problem of environmental pollution but success is not hundred per cent but less. This is due to some factors:

- (i) When the government is advised it may not necessarily take that piece of advice even if it may be environmentally friendly;
- (ii) As regards enforcement of environmental legislation:
 - (a) There may be no laws providing for control of environmental aspects (such as EIA);
 - (b) The laws may be there, but are outdated, for instance they may provide minimal penalties;
 - (c) The appropriate laws may be there but might not be adequately enforced because of a lack of legal (substantive and procedural) knowledge or skills;
 - (d) Even if the laws are applied to provide for heavy penalties and might be properly enforced, the nature of the said laws might be only punitive and not providing for measures to restore the damaged environment.

CONCLUSION

The Government should make efforts to formulate good policies which would lead to enactment of legislation and subsidiary legislation for management and protection of environment.

4 NEAP pg.14

B. ASIA AND THE PACIFIC

ARSENIC CONTAMINATION: THE BIGGEST ENVIRONMENTAL THREAT TO BANGLADESH.

Presented by:

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INTRODUCTION:

Bangladesh faces its biggest environmental disaster - the contamination of groundwater (from both deep and shallow tube-wells) by arsenic. That has put millions of lives at risk, while many have already died of its poisoning. In the 1980's, however, evidence of arsenic contamination in water drawn from these pumps began to emerge. Only recently (mid -1990's) has the crisis achieved broad public awareness.

WHAT IS ARSENIC ?

Arsenic, a chemical element, is a common constituent of many minerals and rocks and is known for its toxicity. It is on the borderline between metals and non-metals. Its chemical symbol is "AS". It occurs naturally in the ground as part of the soil and rocks. If mixed with ground water, it cannot be seen, smelled or tasted. It cannot be removed from water by boiling or by using normal filter. Arsenic poisoning cannot be traced immediately. It takes 8-15 years of continued arsenic polluted water to develop arsenic skin lesions. A man can contact arsenic only through drinking contaminated water. Washing clothes, cleaning body etc. by contaminated water cannot cause poisoning and a person can do all sorts of works using the contaminated water. It is important to know that arsenicosis is a disease. It does not pass from person to person by touching, talking or sharing the same house.

SYMPTOMS OF ARSENIC POISONING

Early symptoms due to arsenic poisoning can range from the development of dark spots on the skin to the hardening of the skin to nodules - often on palms and soles. In course of time, these symptoms can become more lethal and in some cases, internal organs including the liver, kidneys and lungs can be affected. In most severe cases, cancer can develop in the skin and internal organs and limbs can be affected by gangrene. It is

very difficult to differentiate the arsenical manifestation in stages. A person without manifestation may face serious consequences of arsenicosis, leading to cancer or acute renal failure. Arsenicosis - disease borne by drinking arsenic contaminated water may lead to a very painful death.

MAGNITUDE OF THE PROBLEM

Arsenic was first detected in 1993 by the Department of Public Health Engineering (DPHE). In mid - 80's, it was first detected in West Bengal, India but the situation there was not as severe as in Bangladesh.

According to official survey, of the 64 districts of Bangladesh, 59 are badly affected (1.12 million out of 5 million tube-wells) by arsenic contamination. Water supplies (both from deep and shallow tube-wells) tested from these districts show presence of higher level of arsenic than the WHO recommended maximum permissible level of human intake of arsenic contamination (0.05 mg per litre). About 24 million people are exposed to arsenic contamination and over 50 million at some risk of exposure.

More than two thirds of the population of Bangladesh is now affected by arsenic contaminated water while so far more than 5 thousand people are reported to have been identified with the symptom of severe poisoning. As a result many tube-wells have been sealed due to high arsenic content. The magnitude of the problem prompted the Government to declare the issue a natural disaster in 1994/1995.

LIKELY REASONS BEHIND THE CONTAMINATION

Sadly, today there is no scientific explanation what exactly is causing the contamination. Experts, however, have pointed out several factors which might have caused the contamination:

- (1) Excessive ground water withdrawal from the tube wells may result in soil erosion that exposes the layer to oxygen and when the arsenic is exposed to oxygen, it can enter the ground water and contaminate it;
- (2) Natural geological changes are also presumed to be the primary reason for arsenic contamination. The basis for such belief lies in studies conducted in West Bengal, India having similar alluvial deposits;
- (3) Industrial discharge;
- (4) Application of pesticides;

In the early sixties as per the donors' prescription (like World Bank and UNICEF), untreated tube well water was heavily promoted in Bangladesh as a safe alternative to micro-biologically unsafe, untreated surface water to prevent deaths from diseases caused by contaminated water. Massive social movements followed to convince people into using tube-well water. This gradually led 97% people of rural Bangladesh to depend on ground water as the major source. What they were not told is that there might be even bigger threat in the water from the tube wells. Ironically, the wells that were meant for safe drinking water have turned into reservoirs of arsenic poison. Likewise, it would be very difficult to convince common people into going back to use surface water again. It may be noted here that Bangladesh has one of the world's highest concentration of tube wells (4.5 million-5 million) to pump ground water for drinking and irrigation. The unfolding crisis is the unintended consequence of a hugely successful safe water programme.

SOCIAL IMPACTS OF THE CONTAMINATION

The hazard has snowballed into social problems too. The victims find themselves segregated from the society. Either they feel shy to attend any public or social function or that they are discouraged to attend. Women suffer most appalling social ostracization and discrimination which is a bigger problem than the disease itself. "Who will marry them?" says an old woman. Married women succumbing to the disease are reported to have been divorced, a social problem of considerable magnitude. Ignorant villagers can mistakenly suspect skin manifestations of arsenic poisoning as those of leprosy and avoid the person.

POSSIBILITIES OF TREATING ARSENIC CONTAMINATION PROBLEM

The top priority in addressing arsenic poisoning is to provide humans with arsenic free drinking water and the most logical solution would be to go back to surface water sources. However, this must be done with caution because most of these sources in the region are already heavily polluted with bacteria and heavy metals. It is an extremely alarming health hazard as well as environmental problem which will take years to solve.

Raising awareness among people, pursuing them to take necessary action and follow alternative options for drinking water could be the best steps of the hour.

WHO IS DOING WHAT?

The problem is now so wide-spread and acute that, apart from the government, numerous international organisations have been involved in tackling it and in helping to seek short-term and long-term solution. The World Bank has reached an agreement with the Government of Bangladesh to execute a proposed fifteen year arsenic mitigation water supply project (US\$ 32.4 million) which is being implemented with the support of UNDP. In April 1997 the World Bank sponsored a team of geologists from the British Geological Society.

WHO is supporting a crash programme with new analytical equipment and chemical supplies to strengthen analytical capabilities of the Department of Public Health Engineering (DPHE) in zonal laboratories of Bangladesh. UNICEF is working to strengthen the capacity of the Bangladesh Department of Public Health Engineering to measure arsenic contamination. It is also backing a government countrywide survey of arsenic pollution, which is meant to raise public awareness of the health hazards of unsafe water. The government of Netherlands is funding projects to provide safe drinking water or treat contaminated water. Japan is involved in arsenic decontamination research projects, utilising GIS.

But all these efforts are too little to combat the disastrous problem of arsenic contamination. Almost nothing has been done to remove arsenic from water and treatment of arsenicosis patients.

POSSIBILITIES OF UNEP INTERVENTION.

There are some areas in which UNEP could provide assistance to on-going efforts. This can be done by UNEP alone, or in co-operation with other UN and international organisations and agencies, as follows:

1) Measuring the extent of the arsenic problem - UNEP could support the development of a regional map of arsenic in ground water within its assessment activities. This would provide a substantial knowledge base for the Government of Bangladesh to use in siting new water wells in areas identified as being free of arsenic contamination.

2) Determining mechanism of arsenic dispersal, since the exact geo-chemical mechanism for arsenic release from the soil is also unclear and requires further scientific study and discussion. UNEP could assist in such efforts, particularly UNEP's Water Branch and its Chemicals Unit, by convening studies and expert groups to analyse and discuss both phenomena, in order to provide guidance in understanding these problems.

3) Raising public awareness, since the importance of raising public awareness, particularly to alert the citizens in regard to the serious nature and the spatial extent of the arsenic problem, has been acknowledged by all involved parties. UNEP, through its Information and Public Awareness Unit, Division of Environmental Information and Assessment (particularly InfoTerra), and the Regional Office for Asia and the Pacific, can provide substantial assistance in such activities.

4) Although the World Bank has initiated substantial activities in studying the extent of the problem and supporting treatment and preventive measures, UNEP could nevertheless use its role as a GEF Implementing Agency to provide assistance within the "Contaminant-based Operational Programme" of the GEF Operational Strategy. This programme is meant to help demonstrate ways of overcoming barriers to the adoption of best management practices to limit contamination to international waters.

This could include demonstrations and pilot tests, as well as focused regional projects to help meet particular technical needs, or improve the use of certain measures. It could also include targeted technical demonstration and capacity-building projects to help built aware-

ness of international waters concerns, as well as best practice measures, tools for finding solutions, and policies for innovative institutional approaches. To this end, UNEP could readily undertake a fact-finding mission to Bangladesh, perhaps in co-operation with the GEF partners, to further explore these possibilities within the context of the GEF.

The above four intervention areas as identified by UNEP are well recognised by the concerned agencies of the Government of Bangladesh, and the Government has welcomed the proposal of UNEP to send a fact-finding mission to Bangladesh.

SOURCES

- 1) Briefing Document on Arsenic Contamination of Groundwater in Bangladesh and India. UNEP.
- 2) Arsenic Contamination of Groundwater and Bangladesh Position. Ministry of Health and Family Welfare, Dhaka, Bangladesh.
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WATER SHORTAGE IN CHINA

Presented by:

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1. SITUATION

China's agriculture depends on irrigation, 90% of cash crops and 70% of grain crops are irrigated. Without the vast freshwater resources, it is difficult for China to nourish her 1.2 billion people. But now, water availability and quality are all under great threat.

The Yangtze River is the longest river in China and the Yellow River is the second longest. In the past several summers, while attention was focused on the flooding by the Yangtze River, the Yellow River had been plagued with quite a different problem, it was short of sufficient water to reach the sea. During 21 of the last 26 years, the Yellow River had dried up part of its way. Since 1991, its lower section had dried up every year. As these dry-ups had become more regular, both the number of dry days and the length of the river course afflicted had increased. It must be more than worrying to realise that in large areas, particularly the north-western parts of China, freshwater resources are diminishing at a constant rate. In certain regions, both ground and surface waters are so polluted they can neither be used for drinking nor irrigation unless they are first decontaminated.

2. CAUSE

The primary cause is China's excessive use of freshwater, diverted directly from the Yellow River or from the groundwater table, for an increasingly intensive grain agriculture determined to push per hectare yield to new levels. This is done mainly to satisfy the domestic market and reap export surpluses.

Losing fertile land at a high annual rate in China through industrialisation, also means a demand for greater efficiency in producing crops in the remaining areas. Official statistics indicate a loss of eight million hectares of land between 1978-1996. This substantial land loss in turn causes a higher usage of chemicals to increase crop yield at the expense of more water contamination.

Some 80-90% of waters in the upper reaches of the Yellow River are diverted by long canals for irrigating adjacent land. As a result, the lower and middle stretches of the Yellow River were completely dried out for 227 days in 1997, compared to 72 days the years before, due to natural seasonal fluctuations of rainfall. Hence, a rigid water management system has to be undertaken immediately to avoid irreversible dry periods of the Yellow River.

The drying out of the Yellow River bed is an obvious sign of severe environmental deterioration. What cannot be seen is the dramatic lowering of the groundwater table, which can only be felt by local farmers whose wells can no longer reach the aquifer. For them, freshwater would have to be brought in via pipelines by melting glaciers from the mountain areas far away, as seen in the case of some villages and towns in North-western China, which imported water from the distant Qilian mountain range.

At the meantime, another deplorable phenomenon is observed: the severe deterioration of the water quality along the middle and lower reaches of the Yangtze River from Chongqing to Shanghai, which lies on the confluence of Jialing River into the Yangtze River, suffers from a severely inadequate waste and sewage treatment or removal system. Most of the city sewerage lands up in the Yangtze River.

A river cruise from Chongqing to Wuhan through the spectacular Three Gorges, which will soon be filled with water to a height of 135-185m through the gigantic Dam Project, testifies to the deplorable state of the surface water. Empty soft drink bottles, polystyrene packings and other litter lie adrift downriver. This is only the physical aspect of the pollution. It is not difficult to imagine what the real damage is to the environment, such as the various chemical reactions, that will occur as a result of the pollution.

The situation will surely worsen when the dam is finished. The free flow in the Yangtze River will be blocked, leading to stagnated water. Oxygen content diminishes in stagnant water, due to reduced convection, as compared to the mixing process of air and water in a free flowing water body. As a result, stagnant water loses its capacity to metabolise organic load by oxygen-hungry microorganisms in oxygen-abundant waters.

Surface water pollution cries for immediate action, both in terms of having an efficient prevention of untreated sewage discharge and the installment of wastewater treatment plants for improving surface water quality throughout China.

3. ACTION

In spite of the bleak aqueous environment in China, there is real hope for improvement in the immediate future. Both central as well as provincial and municipal governments have recognised the urgency of stopping further water deterioration, and have initiated steps to improve the water quality.

Serious health problems have arisen from the poor environment throughout the country. Hospitalisation costs for people affected by poor drinking water quality are on the rise. Threats to social stability are also feared, since public demonstrations expressing concern over the environment are reportedly increasing.

To illustrate the increased awareness of the Chinese political leadership, an immediate action plan has been put into power by the central government to clean up the lower Yangtze River. The lower tributary set a record in river water pollution with an extremely high load of petrochemical, coal, and oil pollution. The affected river bears a near-black appearance, mainly from aliphatic and aromatic hydrocarbons that have killed most aquatic life long ago. With a multi-million-dollar programme, water treatment plants have been installed, and repeatedly errant polluting industries shut down, all indicating that a speedy and thorough cleaning would be possible if political will was strong.

China's environmental status quo is similar to that of Western Europe's and the US' some 30 years ago when society underwent a priority shift. Environmental needs at that time started to gain the same attention as economic growth, although much of it can be attributed to growing public pressure. "Economy first" has since changed to "Economy only with Ecology". This change of priorities did not lead to economic depression, contrary to pessimist expectations. Instead, it led to the opening of a new market of environmental technology and related fields.

China would do well to study the experiences of its Western counterparts, and avoid similar mistakes in environmental management. Chinese religion and philosophy dictates that man is just a tiny part of the universal cosmos and should strive hard not to disturb its harmony. China may think to go back to these age-old Eastern wisdoms to encourage its people to cooperate in recovering the mistreated environment.

The recovery of China's famous water bodies and its careful management as a water resource is certainly impossible without the vigorous cooperation of her people. At present, there is still a long way to go, but the enormous task needs investment and support by the central and local governments. In the same vein, just as foreign experts on environmental protection can lend their advice, China should start her public environmental education, even in schools so that the young are educated about the environment at their early age.

In the next 10 years, there will be many great changes on environmental law as following:

- the number of articles in environmental law will become more and more;
- the number of legal liability for polluter will become more and more ;
- the legal liability for polluter will become more and more strictly;
- there are more and more same provisions in environmental law of different countries.

ISSUES WHICH ENVIRONMENTAL LAW SHOULD ADDRESS IN INDIA

Presented by:

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An endangered environment has largely to do with a prolific humanity. This is especially true in the Indian context. The Indian population grew marginally from 320 millions in 1912 to 360 millions in 1947. The growth since has just been whopping – a billion or thereabout now – a 2.8 fold increase over a period of 52 years. The technological advancement has built immunities even in the weakest of men, that even he survives a bit longer. The gospel that only the fittest survives no longer seems to hold. However the reduced mortality rate has not induced a corresponding drop in the birth rate. The result is a teeming, unmanageable population. Ironically the apparent power of man over nature, which has allowed him to multiply, now appears poised to have recoiled on him. The existential demands of the population have already drained and destroyed the natural resources to an extent that its renewal is becoming increasingly difficult. In addition, human activities in the name of development have vitiated and polluted the elements. Unfortunately, the average Indian is yet not alive to the fact that his own survival is inalienably linked to the survival of his natural ambience. In order to avert this looming disaster, the State will not only have to act with an immediacy for remediation, but will also have to appreciate the fundamentals of the problem.

So far the environment has been perceived as subservient to the man and his needs. But the creative purpose does not admit such a dichotomous vision. The man is no different from his environment and the former stands subsumed in the latter. And for the environment to remain in balance, it is necessary that no aspect thereof proliferates at the cost of the other. The mankind that will thus qualify as an aspect of environment shall not be allowed to overwhelm or destroy, by its excessive growth, its other aspects. This bolder and holistic view of environment, as of man and the elements, must acquire acceptance legally, in various Acts. If the Environment Protection Act is amended to carry this definition of the environment, a population over-growth will

amount to environmental pollution punishable under law. While the idea at this point of time may appear to be idealistic, impractical and ahead of its times, the salvation of our own cosmos may well lie in this, eventually.

Avoiding remedying is most often the preferred method of dealing with a potential environmental impact. Where this cannot practically be achieved, some form of mitigation is to be considered. From a resource management point of view, financial compensation cannot be the generally preferred approach where it would lead to progressive, irreversible conversion of natural capital to financial capital. Where environmental resources are scarce and/or highly valued by the community, compensation can take the form of recreation of an equivalent environmental asset or amenity. This is so that there is no net loss of the resource in question. An example would be the creation of a new Wetland to replace one lost to development. In such cases, it is important that the replacement environmental resource is functionally equivalent to the resource being lost (e.g. the replacement wetland should be able to support the same species, achieve the same amount and degree of water purification, etc.). Such environmental compensation should be part of Environmental Acts/existing statutes.

SAVING THE TAJ MAHAL – CASE STUDY

Introduction

The Taj Mahal, built by the Mughal emperor Shah Jahan in the memory of his beloved Mumtaz in early 17th century is an architectural marvel, a tangible reflection of cultures in confluence and perhaps the most eloquent testimony to the rich cultural heritage of India. In fact, the Taj has been recognized as a heritage of universal value and its importance transcends the national boundaries. It is popularly identified as one of the wonders of the world and stands included in the World Heritage

List maintained by UNESCO. Continuity of the Taj in its pristine beauty and splendour is thus a matter of interest and concern for the whole of the mankind.

PROBLEMS BESEIGING THE TAJ:

The Taj has witnessed over three centuries that are past, withstood its vicissitudes and pressures, weathered exposure to elements without losing aura and grandeur. This man-made structure did not decay nor wither. However, the last fifty years have brought about a quality change in the ambience of the Taj, not for the better. Paradoxically, threat to the Taj is more from man than from nature. Extraordinary technological advancement that the mankind has achieved in this century has brought into its wake an unprecedented and accelerated human growth in all its facets – collectively called development – the residual effect of which threatens and disturbs the ambience quality all over. In the specific context of the Taj, the situation has worsened in the last three decades. It may be relevant to mention that the growth of Agra (the city of Taj) is not Taj-centric. Agra was for some time the capital city of India and the location of the Taj there was incidental. Thus the factor compelling the growth of Agra were many and varied of which the Taj was, of course, an important one. Over the last 50 years Agra has assumed the character of an industrial town. The city has now two power plants, over 250 small industries mainly foundries and a railway shunting yards all emitting sulphur dioxide and particulate matter much in excess of the permissible limits. To further compound the situation, the rapid industrial development of Agra-Mathur region has resulted in acidic emission into the atmosphere at an alarming rate. These industries not only vitiate the air quality but also vitiate the waters of the river Yamuna which flows by the side of Taj. The Taj is a perennial tourist attraction and this, paradoxically, contributes to the threat to this grand monument. The annual tourist inflow to view the Taj, is manifold, more than the population of the city. This leads to choking vehicular traffic, contributing in no small bit to the already polluted airs of Agra. Unfortunately, Agra and areas in its proximity have gradually lost the green top which could have cleansed the environment to some extent. This dwindling green top is essentially because of a growing urbanization. Collectively these factors put the Taj under seige. If the situation is not radically altered, the Taj will lose its glow, turn pale before assuming a ruinous look.

THE EXTENT, NATURE AND SERIOUSNESS OF THE PROBLEM:

The Taj Mahal being a monument in the World Heritage List, the Government of India also sought the advice of the experts from ICCROM through the UNESCO on the structural and chemical conservation aspects of the monument. Accordingly, two experts studied the problems pertaining to the conservation of marble and sand-

stone in Taj Mahal, and recommended remedial measures. It is opined on the basis of the data made available by the various investigating agencies in India to the UNESCO experts, that yellowishness of the marble is due to (a) suspended particulate matter, and (b) dust fall impinging on the surface. It is also noted that the discoloration of marble such as brown colour, black spots and other stains are the result of (a) constant touching of the marbles by visitors, (b) growth of algae and (c) oxidation of iron used as dowels. The experts are also of the opinion that the concentration of pollution like SO₂ is lower than the permissible value recommended by the WHO and it is considered safe from the conservation point of view. They felt that it was the suspended particulate matter and the dust fall rate which is mostly responsible for the yellowishness of marble of the Taj. According to the report of the expert committee set up under the directions of the Supreme Court, the Taj Mahal is structurally sound and stable. The main materials of brick and lime mortar of the structure are in good condition and have not been affected.

EFFORTS TO SAVE THE TAJ:

By the early eighties, concern for environmental protection around the Taj had become serious and engaging. Decisions to set up big industries in the area, like Mathura Refinery heightened such concern. Thereafter, the Government of India identified the Taj Trapezium Zone (TTZ) in 1983 as a sensitive area from the point of view of pollution detrimental to the Taj. The Taj Trapezium is a defined area around the Taj Mahal designated as a sensitive zone. The area measuring 10,400 sq.km. encompasses districts viz. Agra, Mathura, Ferozabad, Aligarh, Etah and Bharatpur spreading in two states Uttar Pradesh and Rajasthan.

However, it was the judiciary which took the matter in its hands (M.C. Mehta Vs. Union of India in the Supreme Court) and passed a series of orders intended to protect the Taj. These orders included:

- a) A detailed survey to find actual industries and foundries in TTZ (Order dated 8 January 1993);
- b) Installation of pollution control devices in 511 industries (Order dated 5 May 1993);
- c) Direction to the Ministry of Petroleum to find out the possibility of providing gas as a fuel to glass and foundry industries TTZ (Order dated 19 November 1993);
- d) Direction to NEERI to examine the possibility of using propane or any other safe fuel instead of coal/coke by industries in TTZ (Order dated 11 February 1994);
- e) Direction to Ministry of Environment & Forests for setting up of the Green Belt Development Plan around the Taj to save it from effect of pollution (Order dated 11 April 1994);
- f) Direction to Ministry of Environment and Forests

to appoint an expert authority to undertake the survey of the Taj Trapezium and make a report regarding the source of pollution in the TTZ and the measures to be adopted to control the same (Order dated 29 April 1994);

- g) Direction to the Ministry of Petroleum to file an affidavit about progress in laying of pipe lines from Babrala and Dadri etc. (Order dated 8 August 1994);
- h) Direction to the Ministry of Environment and Forests and the Government of U.P. to come out with relocation scheme for all polluting industries (Order dated 3 August 1995);
- i) Direction to the GAIL, OIC and U.P. State Industrial Development Corporation to indicate the industrial areas outside the TTZ which would be connected with the gas supply network (Order dated 11 March 1996);
- j) Direction to the Planning Commission to consider sanctioning separate allocation for the city of Agra and the creation of a separate cell under the control of Central Government to safeguard and preserve the Taj, the city of Agra and other national heritage monuments in the TTZ;
- k) Direction for relocation of industries from the TTZ to outside the TTZ and supply of natural gas to the industries in Agra and Ferozabad.

As a follow up of the Court's order, the Central Ministry of Environment and Forests took the following actions:

- i) A trapezoidal area around Taj Mahal measuring 10,000 sq.kms. was declared as a restricted area where certain categories of polluting industries are not allowed to come up;
- ii) Set up a special cell for the purpose of developing a Green Belt around the Taj Mahal. The Forests Department have raised 2,31,850 plants in an area of 190.936 ha on the available land around the Taj Mahal;
- iii) Constituted an Expert Committee on 18 May 1994 to report about the sources of pollution in the TTZ, and the measures adopted to control the same. The Committee has submitted in its report, a survey which was undertaken to find out the actual industries and foundries in the TTZ. A total number of 511 industries including foundries, rubber industries, engineering industries, bangle and block glass industries etc. are functioning. All the 511 have been directed to install pollution control devices. A ban has been put on the use of furnace oil and diesel generators in industries in Agra;
- iv) Establishment of an Agra Development Authority to cover all pollution related matters and to effect several long term measures;
- v) Establishment of air monitoring stations in Agra's industrial areas and public display by electronic boards giving information on air

quality; Publication of annual report on atmospheric quality and on the state of monuments. A continuous sulphur dioxide monitoring station is being maintained at the Taj Mahal from January 1991 to obtain the trend of Sulphur dioxide and oxides of nitrogen concentrations in the ambient air. A total of 9 air monitoring stations have been set up in Agra District;

- vi) Setting up of the Taj Protection Fund wherein the central government has committed an allocation of Rs.300 crores during the 9th Plan (1997-2002) with a matching contribution by the state government i.e. a total of Rs600 crores (equivalent of US\$15 million approx. at the current rate);
- vii) The judgement of the Supreme Court delivered on 30 December 1996 lays down detailed instructions for relocation of industries, which do not upgrade the technology/manufacturing processes in order to eliminate pollution. The Court also laid down the assistance which had to be rendered by the state government to the industries in the process of relocation and the employees in these industries so that their continuity of service was maintained;
- viii) The implementation of the Yamuna Action Plan is under progress and under this project interception and diversion of domestic sewage to sewage treatment Plants is being attempted; shifting of the cremation ground at a further distance from Taj Mahal is being considered and the River Front is being developed.

In order to comply with the orders of the Supreme Court, the following steps have been taken by Sectoral Ministries:

a) Ministry of Petroleum and Natural Gas:

- i) 1.4 MMSCMD of natural gas has been allocated to Mathura Refinery and 0.6 MMSCMD to industrial units in the Taj Trapezium area. Natural gas will substitute fuels such as coal, fuel oil, diesel etc., which are now being used by the industrial units for their energy needs including captive power generation. GAIL has created necessary pipeline infrastructure network for distribution of natural gas to the industries falling in the core area of the trapezium. Currently 19 industries are drawing gas. In the surrounding zones work is in progress for laying the pipelines;
- ii) Supply of LPG gas to industrial units in the Taj Trapezium area and also domestic LPG connections to most of the waitlisted consumers in the city;
- iii) In order to supply natural gas for Agra, GAIL has

commissioned a 92 kms. Spurline from Gas Rehabilitation and Expansion Project (GREP) tap off at Bhajera, District Bhjaratpur, (Tajasthan) to Agra and charged the line with gas on October 24th 1997. The construction of the City Gas station at Agra is in progress;

- iv Cutting down the impact of SO₂ emission from Mathura Refinery to the Taj Mahal by setting up a Hydro Cracker Unit at the Refinery. The proposal is in the initial stages.

b) Ministry of Surface Transport:

- i Unleaded petrol has been introduced in the four metropolitan cities, and a few selected locations including Agra and Mathura w.e.f. April 1995;
- ii Steps have been taken for the provision of electrically/CNG powered automobiles in the area around the Taj Mahal;
- iii Stringent checking of vehicles for pollution;
- iv Non issue of permits by the Regional Transport Authority to any petrol/diesel driven commercial vehicles within 500 metre radius of the Taj Mahal;
- v A major step undertaken in the construction of a Bypass at the cost of Rs.100 lakhs (US\$2.5 million) approx. for connecting 3 National Highways viz, NH2, NH3 and A phased programme for the introduction of unleaded petrol in the country has NH11. This would promote a smooth flow of heavy traffic without it entering the city thereby leading to reduction of air pollution in this region.

c) Ministry of Power:

- i Two coal based thermal power plants in Agra have been closed since these were located very near to the Taj Mahal and the SO₂ released from the burning coal was having an impact on it.
- ii Power supply to Agra-Mathura Region will in the future be provided by dedicating one unit of Auraiya gas based station. Presently upgradation of the distribution system to receive and distribute power from Auraiya is underway.

d) Ministry of Railways:

- i Agra railway marshalling station yard, which was being operated by steam engine, has been dieselized.

e) Ministry of Human Resource & Development (Department of Culture)

- i Periodical chemical treatment, preservation is being carried out in phases for the monument.
- ii Abundant precautions being taken while considering any proposal for lighting and illumination of the Taj Mahal.

f) Ministry of Non conventional Energy Sources:

- i Operational of battery buses in the vicinity of Taj Mahal.

g) Ministry of Tourism:

- i Non-approval to construction of Hotels in the Vicinity of the Taj Mahal.

EFFORTS TO SAVE THE TAJ – LIKELY IMPACT AND FUTURE INITIATIVES:

The above detailed efforts on their conclusion are expected to restore the ambience quality around the Taj, as was obtained in previous years. Presently the situation is in a state of flux, although there are perceptible signs of improvement. It is however, concluded that the task of relocating industries and rehabilitating workers is not an easy one, especially as there are socio-economic, cultural and above all humane aspects of the whole exercise. Yet an important beginning has been made. And since there are a number of agencies involved in the exercise, their efforts are required to be coordinated and interwoven where necessary. To that end, the Government of U.P. has constituted a Mission Management Board for overseeing the implementation, monitoring and reviewing of the various programmes and schemes formulated for the protection of the Taj. The Mission was constituted on 9 May 1997 and has on it representatives of the Central Ministries of Environment, Power, Urban Development, Surface Transport, Water Resources, besides representatives of the State Government and the Planning Commission. For initiating the task with greater clarity and information and better perspectives, the Government of India has also taken technical assistance of the Asian Development Bank. The assistance is for the preparation of a feasibility study for environmental improvement and sustainable development of Agra, Mathura and Ferozabad trapezium of AUPL, including the restoration of Taj Mahal. The report is expected to constitute an important input to the efforts launched in saving the Taj.

The proactive role played by the judiciary and the follow up action taken by the authorities concerned will surely have the desired effect. However, given the dimension of the task, the efforts will conclude only over a period of time. However, people not only in India but all over the world are entitled to know the status of Taj from time to time. It will, therefore, be desirable to commission studies, say after 2-3 years, to ascertain the extent of improvement achieved. It will also be important to document the effort once those have concluded successfully so as to serve as a model or guidelines for similar efforts elsewhere.

FOREST FIRES IN INDONESIA

Presented by:

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I. BACKGROUND

Indonesia ranks third, after Brazil and Zaire, in its endowment of tropical rain forest. As such, forest resources are the backbones of the Indonesian economy as they provide income for local communities across the country. Timber for instance, is Indonesia's primary non-oil export. Forestlands provide a vast medium for Indonesia's production of agricultural commodities. The forests, however, are under threat by fires that have increased both in frequency and intensity over the past 15 years. If this valuable resources is destroyed, the sustainability of Indonesian development will be threatened. Economic, social, environmental and climatic factors have historically been responsible for causing forest fires.

The 1997 forest fires in Indonesia were considered to be the worst in the last fifteen years. The fires has caused tremendous ecological, social economic, as well as health impacts on societies affected by them.

II. CAUSES AND EFFECTS OF FOREST FIRES

It has been scientifically demonstrated beyond reasonable doubt that fire has been part of the natural ecosystem in Indonesia for many thousands of years, and burning coal have been part of the landscape in that time. However, it is clear that fire, as part of human action, has not previously been applied to the environment with the same vigor that was evident in the last two decades. As population levels have increased and shifted, there has been a rapid change in land use, and this has brought with it a different application of what has been a strong rural fire use culture.

During the dry season of 1997, an unprecedented level of smoke-haze impacted on parts of the ASEAN region contributing to economic, ecological and health-related costs in the region and broad-based concern among ASEAN and other countries. The source of this pollu-

tion was the forest fires burning on different islands in the Indonesia archipelago. These were mainly started by new agribusiness concessions not complying with existing land clearing regulations. The El Nino phenomenon was also partially to blame for this situation as the unusual weather and climatic patterns prolonged the dry season and contributed to the outbreak of the fires, that without rain, prove very difficult to control. It is estimated that over 620,000 hectares of forest in Indonesia had been razed by fires in 1997-1998, and concluded that the situation was effectively out of control.

Forest fires are caused by several complex factors such as unclear and poorly enforced policies, economic forces that push business to use fire to clear land, lack of technological alternatives, poor public participation and aggravated by climatic conditions such as the extended draught. Over the last two decades, the competition for forest resources has increased, and as a result indigenous forest communities find themselves in conflict with the logging concessionaires and industrial plantation owners often ignore the forest resources use practices of the local communities. The conflict between the indigenous communities, who are the traditional land users, and new users such as the logging concessionaires and plantation owners has been cited as one of the significant causes of 1997-1998 forest fires.

The forest fires that happened in 1997-1998 have caused a significant economic losses and considerable damage to ecosystems. Haze for instance, has polluted the air, threatened public health and obstructed transportation systems. The 1999 Asian Development Bank (ADB) study estimated the economic cost of 1997-1998 fires to be in the range of US\$8.8 and US\$9.7 billion with average of US\$9.3 billion. Social costs such as feelings of heightened insecurity, decline in health conditions as well as loss of workdays at the village level. Furthermore, forest fires will undoubtedly have a direct impact on the physical environment, namely on the forest ecosystems

as they disrupt forest functions, pollute watershed areas and reduce biological diversity, while at the same time pollute the immediate atmosphere.

Although many policies have already been formulated and special fire management agencies have been established, policy implementation remains weak, co-ordination is poor and the current system is ineffective. The 1997 forest fires were considered to be the worst in the last fifteen years. Since then, the government of Indonesia began to realize several important aspects: great portions of the fires were caused by large-scale land clearance for agricultural plantations and transmigration settlements; the government began to worry about the impact of haze on public health; the transboundary movement of haze to the closest neighbouring countries was far more serious than in previous years, for the first time, forest fires were declared as a national disaster.

III. COORDINATION EFFORTS TO CONTROL FOREST FIRES

The government and people of Indonesia have been deeply concerned about the forest fire disaster and resulting haze that blanketed some of Indonesia's neighbours. It is the intention of the government and people of Indonesia to take concrete steps at the national and regional level to ensure that this does not occur in the subsequent years. Efforts to control the forest fires have been carried out by Indonesian government officials, private sector and community groups. Although many of the coordination activities took place at the national level, fire-fighting activities also took place at the provincial levels. Efforts to mitigate the forest fires included mobilizing financial and technical resources, deploying personnel, and making use of the generous assistance provided from ASEAN, other countries and International Organizations as well as from Indonesian officials, private sector organizations and local citizens.

The government capacity in controlling and extinguishing the fires were limited and therefore, Indonesia's capacity to respond to forest fires continues to be augmented by regional and international cooperation. A Memorandum of Understanding (MOU) has been signed between Malaysia and Indonesia regarding disaster cooperation and assistance. The areas of mutual cooperation included: the exchange of expertise and information on latest technologies to improve fire fighting capabilities; training programmes for officers and personnel in disaster management; conducting seminars and conferences on disaster management; as well as collaborating on matters pertaining to the study and formulation of policies on environmental issues and protection matters. So far, the amount of funds allocated by the government for fire control is not sufficient. Therefore Indonesia would like to ensure the full support of neighbouring countries in

relation to the development of an inventory and programme to strengthen the fire fighting capabilities of individual and the region as a whole.

Indonesia is also undertaking a number of other projects to improve its knowledge of the cause of forest fires, the policy implications, and activities that can be carried out to prevent and control the fires in the future years. For example, the United Nations Development Programme (UNDP) has been working with the State Ministry for the Environment. It has made an assessment of the damage and developed an action plan to guide further studies and government activities. The European Union assisted the Ministry of Forestry by conducting a quantitative analysis of the areas burned. The World Conservation Union (IUCN) has also sent to field a multi-disciplinary team of scientists to Indonesia, analyzed the climatological and ecological causes of the fires, and made suggestion on the ways to ameliorate the impact and head off a repetition.

In order to further develop its fire fighting capacity, Indonesia has established forest fire organizations at national, provincial, district, sub-district and field levels. Their description is as follows:

- a) National Coordinating Team on Forest Fire Control, established by the decree of the State Ministry of Environment (Kep-40/MENLH/09/1997).
- b) National Forest Fire Control Centre, established by the decree of the Ministry of Forestry No. 188/Kpts-11/1995, as an internal body for the Ministry of Forest.
- c) Provincial Land and Forest Fire Control Centres, have been established in each province. Furthermore, each district has a Forest Fire Task Force as well as a Fire brigade as the sub-district level.
- d) Disaster Management Coordinating Board, Provincial Disaster Management Coordinating Unit, District Disaster Management Coordinating Unit.

There were many new lessons learned, related to the forest fires of 1997. These convinced the government and people of Indonesia of the need for early warning systems, and promoting community awareness of appropriate land clearing practices, improving the use of appropriate technologies related to land clearing and fire fighting to ensure that the country can quickly mobilize to mitigate a similar disaster.

IV. WEAKNESS IN POLICY, CAPACITY BUILDING AND THE VULNERABILITY OF FOREST ENVIRONMENT

Existing laws and regulations (the control and enforcement of permits and licenses), organizational and human resources, operating procedures and other mechanism related to the prevention and control of forest fires must be reinforced and operationally made more effective.

tive. This must be done at the central, provincial and district, sub-district levels to ensure that Indonesia is able to respond more effectively. However, the implementation and enforcement of the national policies/regulations on forestry and land clearing could not be effective, such as:

a) Fundamental Contradiction between the Agrarian Law and the Basic Forestry Law

Unlike the agrarian law, the basic forestry law does not recognize the customary rights of the communities over forest resources. The implementation of regulations arising from the basic forestry law completely ignores the interests of the local communities living in and around the forest areas. This has not only taken away the rights of local communities to access forest resources and thus constrained their involvement in forest monitoring, prevention and suppression but has also led to animosities between the local communities and the private sector allowing the spread of fire in case of fire incidents.

b) The Forest Utilization Rights of Communities Living in and Around the Forest Areas

The regulatory framework governing the utilization of forest stigmatizes the forest dwellers, severely restricts their use of timber, and limits access to other forest products. Such limited extraction can only be carried out by concession holders who may not be interfered with. These regulations completely ignore the customary ways of forest resource utilization that the indigenous communities have evolved over hundreds of years.

c) Lack of Emphasis on Building Management Capacities at the Local Level

Indonesia does not have a professional fire management organization. Fire suppression efforts are conducted on the basis of coordination amongst several related agencies. Over the last few decades there has been little emphasis on building capacities and awareness at the local level on different aspects of forest fire management. The system for reporting fires is too slow to be effective.

d) Lack of an Integrated Forest Management System and Adequate Inter-ministerial Dialogue

Current thinking is very sectoral wherein the Ministry of Forest is primarily concerned with the management of forest resources without taking into

account the communities that live in and around the forest, issues related to agriculture, food security and water resources management.

e) Erosion of Traditional Knowledge of Controlling Fire

One of the factors that contribute to the vulnerability of Indonesia's forests to large-scale fires, is the erosion of traditional knowledge of using control and safe fire for land clearance. In traditional communities such use of fires has been a part of a broader resource management practice. However, with the settlement of transmigrates and other spontaneous settlers, this knowledge is diluted and is not common among the communities living in and around the forest areas.

f) Continued Logging

Inappropriate logging techniques leave behind significant logging residue that provides additional combustible fuel for the fires making it even more vulnerable.

CONCLUSION

The magnitude of forest fires could destroy forest biological diversity and also potentially contribute to global warming/climate change and desertification. Therefore, UNEP, together with other international organizations and UN agencies, should continue to play a leading role in coordinating international assistance to combat and control the fires and haze. The economic crisis in Indonesia has severely reduced local capacities to maintain existing and implement new fire fighting operations.

All possible methods of fire suppression were tried, ranging from manual control on the ground to aerial water bombing and cloud seeding. All showed very limited success. The forest fires had drawn the attention of many non-governmental agencies. Many groups became concerned and provided assistance. NGOs and concerned individuals opened their own command posts to support the government's efforts. However, at the end the fires were finally extinguished by rains.

Urgent action should be taken to prevent the fires from again becoming an economic environmental and humanitarian threat. The lack of specialized fire fighting organizational infrastructure, equipment and expertise, and the most useful and urgent type of international aid would be to assist Indonesian institutional arrangements in mobilizing for emergency response, prevention and preparedness.

Environmental law is likely to or should address in the next 10 years:

Protection of the traditional knowledge

Traditional knowledge is part of the national pride and assets of the country. However, the application of the United Nations convention on certain issues (i.e. biological diversity) might affect the traditional knowledge of the local community of the country.

The international community has to realize that traditional knowledge need to be protected by law, otherwise, the global policy on protecting and managing the related environmental matters will override the other aspects of human life. So far, there is no legally binding instrument to protect the traditional knowledge.

Environmental Law on the Protection of the natural resources at the sea-bed and under the sea-bed from excessive exploitation

Most of the globe is covered by sea and ocean, and at the same time the world population keep increasing that make them finding difficulties in fulfilling their needs. The resources above the sea-bed will soon be limited and scarce. From this point, the people will turn to look at the sea-bed as a new source of finding alternative materials. The existing United Nations Convention on the Law of the Sea 1982 emphasized mostly on the issue of the protection and preservation of the marine environment and principles for the conduct of forest fires.

CASPIAN SEA ENVIRONMENT PROGRAM

*Presented by:
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I. INTRODUCTION

The Caspian Sea area, encompassed by Azerbaijan, Iran, Russia, Kazakhstan and Turkmenistan, prior to the collapse of the Soviet Union, had been subjected to two treaties between the Soviet Union and Iran in 1921 and in 1940. These treaties which are valid and enforced until a new legal regime is concluded, do not deal with environment of the Caspian Sea directly. But implicitly they have provided a specific mechanism through which it has been possible to find and set out ways toward preservation of the Caspian environment. In addition, people and governments of the Caspian littoral states have been conscious about the ways of conducting the environment. In this case several customs and rules have been created. After the Soviet Republic's disintegration, this region has attracted internal, regional and international attention. These tripartite levels have brought about complexity to the Caspian Sea region. Given the fact that elements and factors for this complexity cannot be enumerated in a short paper, I will try to summarise the main causes of the environmental problem:

1. GEO-STRATEGY OF THE REGION

The end of the cold war, in a peaceful fashion, has provided a unique opportunity to dismantle communism block. Therefore many players at all three levels have begun a gamble in order to take advantages, influence policies and avoid dangers.

2. CASPIAN LIVING AND NON-LIVING RESOURCES

Caspian living and non-living resources especially (oil, gas and Sturgeon) are of high economic importance. In this regard foreign investment in the oil and gas fields leads to critical environmental conditions.

3. LACKING RULES

Lacking rules, provisions, procedures and legal capacity dealing with environmental aspects and consequences of new economic and development processes in the region.

4. THE NEED AND NECESSITY FOR COOPERATION

The need and necessity for cooperation must be realised by the Caspian littoral states, so that the preservation of the Caspian Sea (marine) environment can be made a common aim.

This brief review paves the way for draw managerial profile of the Caspian Sea approach.

II. WHAT'S THE PROBLEM?

The Caspian Sea is a very fragile and sensitive ecosystem because of its high level of contaminants and its unique characteristics. The Caspian Sea is in fact a closed water body with many water sources which flow towards the basin. It is said that a high percentage of the Caspian Sea pollution comes from the Volga river, the only connection of the Caspian Sea to the high seas. With regard to the Caspian marine environment pollutants, major sources can be listed:

- Land based sources: chemical and toxic substances used in agriculture, besides, industrial wastes and cities sewerage;
- Pollution from oil and gas activities, during the exploration, extraction, transportation, and porting stages;
- Pollution from ships, incidents and emergencies (including sea level fluctuations);
- Radioactive pollution (including possible dumping and nuclear risks), plus climate change and acid rain;

We also can list a number of other factors, which result in the degradation of the Caspian environment. In this regard we need to refer to over-exploitation of natural resources, both living and non-living.

III. LOOKING FOR REMEDY

Prevention and slowing the worsening process of the Caspian environment degradation has been an important item of negotiating agenda of the Caspian riparian countries and has concerned international organisations. Pursuant to common statements, formal and informal

talks and meetings, concerned people and departments in each country now realise that establishment of an organisation or formulating a plan of action would be a necessary step toward Caspian marine environment protection and preservation.

Upon such understanding, the Caspian environment program (CEP) was initiated by the governments of the riparian countries, supported by international partners (including UNDP, UNEP, IMO, World Bank, EU/TACIS and others) in early 1998. However it came into effect only in mid June following a technical workshop on developing the structure and principles of a Transboundary Diagnostic Analysis (TDA) and Steering Committee Meeting held in Teheran and Ramsar-Iran, respectively.

The CEP umbrella covers 10 themes and a Program Co-ordination Unit (PCU). Centres involving the themes have close relationship with each other and internal sectors concerned with developing and implementing workplans and the CRTS's scope of activity. In this connection, National Focal Points (NFPs), generally the Department of Environment has the responsibility for organising and keeping close relations with domestic internal and regional organs.

Within the CEP context, littoral states and international donors, in particular UNEP, pay a lot of attention upon legal and regulatory instruments and framework convention preparation and adoption. Many other protocols and agreements are complementary and subject to the convention.

Some important points should be raised under the CEP project due to its function and continuation:

- First of all we have to reach to a clear viewpoint on the new legal regime of the Caspian Sea.
- Second, the framework convention should be concluded. This convention should have shown the strong willingness of the Caspian littoral states for protection of the Caspian (marine) environment.
- Third, the question of how long the CEP will last and act needs to be answered. Will fund and countries co-operation continue?
- Forth, how can we establish the Organisation for Caspian Littoral States co-operation?
- Finally, how would we be able to set up a compensation mechanism for the destruction and damages to Caspian state of environment?

OTHER VENTURES

While the CEP is getting implementing phases, five Caspian bordering countries follow some other specific programs for Caspian environment protection and preservation. In this field CASPAS is a program for Caspian Meteorology and Pollution Monitoring. CASPAS secretariat is located in Tehran and has regular meetings in any member state. WMO and EU have proposed some funds and co-operation to this program.

IRAN'S INTERESTS

Southern coastal areas of the Caspian Sea are vital for about 10 million people, who earn their living from the sea, from the land, from the rivers. And the government of the Islamic Republic of Iran has focused her attempts on the sustainable development of this green, populated, tourist and vulnerable areas. Public awareness and participation is the key for the problem. That's the concentration of our approach.

THREE MAJOR TOPICS ON THE NEXT TEN YEARS AGENDA OF THE INTERNATIONAL ENVIRONMENTAL LAW

1. Transfer of clean technology from the north to the south. Developed countries have the responsibility to provide the developing countries with environmentally sound technology and financial sources on a concessional basis. The main purpose of this legal and lawmaking conduct would be environment conservation and prevention of its degradation, through which the sustainable development is achieved.
2. Preparation and development of an international mechanism coping with destructing and degrading acts on the environment and earth's ecosystem. Working towards new agreements especially establishment of an international environment tribunal for punishment and compensation should consider the historic contribution of states to global environment degradation and thus the principle of differentiated responsibilities.
3. The genetic technology benefit sharing is another issue that international law should address in upcoming years. This process requires international co-operation in order to provide a solid basis for benefiting dually from biotechnology and genetic resources in a balanced way.

CASE STUDY ON AN IMPORTANT ENVIRONMENTAL PROBLEMS IN THE REPUBLIC OF KIRIBATI

Presented by:
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SOLID WASTE MANAGEMENT : AN IMPORTANT ENVIRONMENTAL ISSUE IN KIRIBATI

Country Background

The Republic of Kiribati is located in the central equatorial Pacific and is made up entirely of coral islands. Eighteen of the 33 small islands comprising the nation are atolls, with all but one (Banaba) of the remainder consisting of low coral islands. The 33 islands are grouped into three main islands scattering over an ocean area of 3.5 million km²: the 17 Gilbert Islands in the west, the 8 Phoenix Islands 1200km east of the Gilberts, and the 8 Line Islands 3000km east of the Gilberts.

The 33 islands of Kiribati add-up to a total landmass of 822km². Kiritimati (Christmas) atoll, in the Line group, alone contributes 321km² of the total land area. The remaining islands and atolls averaged 14km² in land area with the Gilberts larger and the Phoenix smaller than average.

Many of the atolls and islands are arid to semi arid, including the entire Phoenix, a few of the southern Gilberts, and all but the three most northern Line islands. Consequently, all the Gilberts, one of the Phoenix and three northern most Line atolls are permanently inhabited. The administrative center of the country is located in Tarawa, an island in the middle of the Gilbert Islands.

Kiribati is experiencing a dramatic increase in its population growth rate, rising from 0.4% in the 1940s to an average of 2.5% per annum in the 1990s. The result is a greater than doubling of the country's population from a mere 31,513 in 1947 to 77,853 in 1995. Of the latter number, 32,356 live on Tarawa atoll. Betio, a small island at the western tip of South Tarawa atoll accommodates 10,342 people. To a lesser extent this population trend is also occurring on other inhabited islands of Kiribati.

Retrospect

Prior to the arrival of westerners, Kiribati people are known to have lived in harmony with their environment. The then predominant traditional subsistence lifestyle played a vital part in the conservation and consumption of natural resources throughout the country that sustained a relatively low but steadily increasing population. Accordingly, the concept of waste in the context of the I-Kiribati (people of Kiribati) traditional lifestyle is almost non-existent since almost all material waste produced was usually organic biodegradables which were usually reused for other purposes such as firewood and composting.

The increased injection of foreign cultural and religious beliefs arrived with early explorers, missionaries, whalers and the subsequent control under the British. In the early 18th and 19th centuries the lifestyle rapidly changed from a subsistence, egalitarian lifestyle to one based more on a competitive cash economy. This is reflected in a shift to depending more on external rather than local resources for survival. This phenomenon is more evident on the increasingly urbanised capital island of South Tarawa. Unfortunately, such a tempting lifestyle is gradually reaching out to the outer rural islands.

This newly perceived easy and attractive lifestyle, coupled with poor urban planning and management resulted in an uncontrolled internal migration into the administrative center of South Tarawa. This led to a high population density witnessed by a high number of illegal squatters residing on South Tarawa, particularly the small island of Betio. Consequently, such a large population on one island has created overcrowding and associated environmental problems. These include one major and persistent challenging issue, the lack of proper solid waste management.

Overview of Current Waste Management Situation

Despite the many past reports and studies depicting the seriousness of waste management or the lack of it, ignorance still persists on the part of the I-Kiribati. Amongst other complex reasons, is the fact that the I-Kiribati still advocates to his/her intrinsic belief that solid waste doesn't create problems. Simply said, waste is perceived differently by the I-Kiribati and the I-Matang (foreigner). However, the emergence of the many environmental and health related problems associated with poor solid waste management has significantly raised the awareness of the public at large. Consequently, there is a gradual change in the people's perception towards waste.

A recent analytical study on the typical waste stream has identified three major sources. These include residential, private and government commercial wastes. This highlights the aforementioned shift in lifestyle from subsistence to a cash-based economy. The new waste stream is mainly artificial and permanent in contrast with the original natural and biodegradable waste.

There is no effective waste management system in operation in the urban areas of South Tarawa. Rapid urbanisation has compounded problems associated with solid waste management. The limiting landmass due to urbanisation and foreshore erosion is restricting the number of possible or suitable sites for landfills. The land tenure system makes it difficult for the government to use privately owned lands for dumping. The current few designated open-landfill sites are not only poorly located but are also improperly managed. This encourages pests and disease-carrying vectors. Often, concerns are raised regarding the uncontrolled disposal of hazardous and toxic wastes.

Institutionally, the framework for solid waste management is currently not well developed. The two local governments, Tarawa Urban Council (TUC) and Betio Town Council (BTC), are currently responsible for waste collection and disposal. Yet they are crippled by a limited technical and financial capacity to effectively implement a waste management system. The lack of legislative control mechanisms or the lack of implementation of existing ones is another issue affecting waste management improvement.

The establishment of the Environment Unit under the auspices of the Natural Development Department in 1991 expressed the government's worries with regards to climate change. That was the sole responsibility of the Environment Unit then. However, growing internal and external pressures have mandated the Environment Unit to look after environmental issues in general. No specific direction was provided for the Environment Unit until the production of the National Environmental

Management Strategy (NEMS) in 1992/3. This document sets out strategic programmes on environmental issues considered important to the country. It includes a programme on solid waste management.

Previous Approaches Targeting Waste

Prior to 1993, the government had no formal programmes in existence to promote waste management, source reduction or recycling initiatives on South Tarawa or elsewhere in Kiribati. In 1994 the Ministry of Finance and Economic Planning (MFEPP), in collaboration with the Environment Unit, commissioned Snowy Mountain Engineering Corporation Limited (SMEC) to undertake a recycling project feasibility study (EU Doc No: 50940.020). The project was funded by the European Union and is a component of the NEMS. Unfortunately, the report was completed and we are still awaiting to hear of approval for the actual project implementation.

In 1995, the Ministry of Environment and Social Development executed an Institutional Strengthening of the Environment Unit Project (ADB TA: 2199-KIR), a Technical Assistance (TA) in the form of direct technology transfer to local counterparts. This was undertaken by MBA International Consultancy. Waste management is a component of this TA. The outcome was a recommendation of appropriate plans ranging from waste reduction at the source to institutional development/strengthening thought to eradicate waste issues. It's been two years since the production of the final report of this TA and things are still rolling very slowly.

In 1996, the Sanitation and Public Health Project (ADB TA: 2497-KIR) was carried out by Royds Consulting Limited and sponsored by Ministry of Home Affairs and Rural Development (MHARD). The project aims to commence late 1999 or early 2000. All recommendations are a combination of the possibly impending EU recycling project and the ADB TA: 2199-KIR project. The TA stressed the need and importance of public education from both government and non-government organisations followed by a waste minimisation, collection and disposal hierarchy.

At the non-government organisation (NGO) level, the Foundation for the People's of the South Pacific (FSP) is instrumental in influencing the public in relation to the composting aspect of waste management. The FSP is enjoying a close working relationship with the Environment Unit's Waste Management staff. This is evidenced by a number of coordinated pilot projects on waste. Although other NGOs are prominent when it comes to clean up activities, they seem to take the implementation role while FSP has the capacity to do both the advisory and implementation role.

It is clear from the above analysis that technical assistance is ambiguously overlapped with regards to waste

management. Although each individual project is objectively different, each has its own degree of success or failure. Obviously, the different executing Ministries could have achieved better and more useful information on the waste subject if only they had coordinated their efforts. It seems the ADB TA: 2199-KIR project is more successful compared to the EU Document No: 59940.020 project since direct transfer of technology is still ongoing with the trained staff becoming a permanent officer of the Environment Unit. The Environment Unit and the FSP joint waste management programmes are yet to be determined for their success. However, composting of plant materials (leaves) for fertilizer has showed acceptance throughout South Tarawa. Lastly, but not least is the Sanitation and Public Health Project. This is rather an ambitious project but the waste management aspect should have no major constraint since a lot of similar studies have been critically analysed and even amended to make it work.

Two further projects have received funding in the past year from the South Pacific Regional Environment Program (SPREP). These will be coordinated by staff from the Environment Unit and will work at a national level, while still providing an emphasis on South Tarawa. The first is the Solid Waste Education and Awareness Program (SWEAP) while the second is the Kiribati Waste Minimisation and Management Program (KWMMP).

The SWEAP will focus on education and awareness at the community level while also providing an analysis of community attitudes and the waste stream itself. The KWMMP will provide a forum for discussion of the waste management situation and possible solutions at the ministry level while also training council staff in proper waste collection, disposal and landfill management techniques. The KWMMP has also been designed to assist with the coordination of all waste management projects within the country.

Approaches in the future

What should environmental law address in the next ten years in the Republic of Kiribati?

The following highlight some of the areas where environmental law will be required in the next ten years. They are expressed in no order of preference as each is important to ensure the protection of the natural environment within the Republic of Kiribati.

1. Environmental Impact Assessment (EIA)

The nature of a fragile coral atoll means that it does not respond well to impact from development. Therefore, legislation to cover EIA will be vital to ensure that sustainable development activities are practiced.

2. Pollution Control

Related to waste management, pollution control will be important to ensure both environmental and public health. As development and industry increases and western lifestyles become more prominent, strict regulations on pollution will be important. This is especially so as many people will still rely on a subsistence lifestyle to some degree.

3. Biodiversity Protection

Protection of the biodiversity within Kiribati is already an issue on South Tarawa as a result of overcrowding. This issue will continue to pose problems for food security, local medicines and other facets of the I-Kiribati lifestyle as the remaining biodiversity reserves are exploited further.

OZONE DEPLETION IN NEW ZEALAND

Presented by:

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I THE PROBLEM

The earth is protected from harmful ultraviolet rays by the ozone layer, a shield of gas in the upper atmosphere. Emissions of man made substances have damaged this stratospheric ozone layer. More than 170 countries worldwide have committed themselves to action to phase out the production and use of these substances. The goal is to stop depletion of ozone in the atmosphere and restore the stratospheric ozone layer.

II IDENTIFICATION

A link between increasing emissions of synthetic chlorine compounds and decreasing amounts of stratospheric ozone was suggested as early as 1974, with scientists warning that the increasing use of ozone depleting substances would cause degradation of the earth's ozone layer. But the 1985 discovery of the "ozone hole", which develops over Antarctica in spring, confirmed that there had been global depletion of ozone in recent years, and that this depletion was increasing.

III THE INTERNATIONAL RESPONSE

International concern about ozone depletion sparked by the discovery of the "ozone hole" led to the negotiation of *the Vienna Convention for the protection of the Ozone Layer (1985)*. This provided a framework for scientific cooperation on the reduction of ozone depletion. Subsequent to this, *the Montreal Protocol on Substances that Deplete the Ozone layer (1987)* was negotiated. The Montreal Protocol identifies progressive cuts in the production and consumption of ozone depleting substances.

The scientific community has identified several hundred substances that are capable of causing damage to the ozone layer. However, scientists consider that there are only a small number of these substances in use that are likely to cause significant damage. These substances are:

- chlorofluorocarbons (CFCs);
- halons;
- 1,1,1-trichloroethane;
- carbon tetrachloride;
- hydrobromofluorocarbons (HBFCs);
- hydrochlorofluorocarbons (HCFCs);
- methyl bromide.

The Montreal Protocol initially targeted just two substances, CFCs and halons. However, as scientific evidence has been presented showing a continuing decline in the state of the ozone layer and the growth in the size of the Antarctic ozone hole, the Parties to the Agreement have met and agreed to tighter controls. International controls now cover all the above ozone depleting substances.

The Protocol recognises that, although it is the emission of ozone depleting substances that is important, it is not practical to implement controls on emissions at an international level. Instead the Protocol focuses on reducing the production and consumption of the substances. Under the Protocol, consumption (defined as production plus import less export) of controlled substances is being progressively phased out. The Protocol also recognises the different status of development in developing countries and grants them a grace period of 10 years before they have to implement phase out schedules.

Since it was first signed in 1987, the Protocol has been amended three times: in London in 1990, in Copenhagen in 1992, and again in 1997 in Montreal, and adjusted in Vienna and Montreal.

In *the 1987 Montreal Protocol*: the Parties agreed to:

- A fifty percent cut in the production and consumption of CFCs by the year 2000;
- A freeze in production and consumption of halons by 1992; and
- The facility for further controls linked to assessment by experts.

The **1990 London Amendment**: the Parties agreed to:

- Completely phase out CFCs by the year 2000;
- A phase out of halons by 2000;
- A phase out of carbon tetrachloride, and of 10 other CFCs, by 2000;
- A phase out of methyl chloroform (1,1,1-trichloroethane) by 2005; and to
- Establish a Multilateral Fund to assist the developing countries.

The **1992 Copenhagen Amendment**: the Parties agreed that:

- Halons would be phased out by developed countries by 1994;
- The developed countries would phase out HCFCs by 2030;
- Methyl bromide would be frozen at 1991 consumption levels by 1995;
- The phase out of CFCs would be brought forward to 1996;
- The phase out of methyl chloroform would be completed by 1996,
- Carbon tetrachloride would be phased out by 1996, and
- Hydrochlorofluorocarbons would be phased out by 2030.

The **1995 Vienna Adjustments**: Parties Agreed to:

- A phase out of HCFCs by 2020 in developed countries; and
- a phase out of methyl bromide by 2010 by developed countries.

The **1997 Montreal Amendment**: Parties agreed that:

- Developed countries would phase out Methyl Bromide by 2005;
- Developing countries will phase out Methyl Bromide by 2015; and
- The import and export of controlled substances would be licensed.

As of October 1999 the original 1987 Montreal Protocol has been ratified by 172 countries. The 1990 London Amendment has been ratified by 136 countries. The 1992 Copenhagen Amendment has been ratified by 100 countries, and the 1997 Montreal Amendment has been ratified by 25 countries.

The London Amendment entered into force on 10 August 1992. The Copenhagen Amendment entered into force on 14 June 1994. The 1997 Amendment to the Montreal Protocol will enter into force on 10 November 1999.

IV NEW ZEALAND'S RESPONSE

New Zealand is among the countries most at risk from ozone depletion and has always adopted strong policies to phase out ozone depleting substances, and in many areas New Zealand's domestic policy has been ahead of international timetables. Since 1985 New Zealand has passed a number of pieces of legislation to restrict the trade in ozone depleting substances. A list of this legislation is attached as an Annex to this paper.

At the domestic level New Zealand now implements its international commitments through the **Ozone Layer Protection Act 1996**, which replaced the Ozone Layer Protection Act 1990 as the legislative tool to phase out ozone depleting substances. The purpose of the Act is to:

- Help protect human health and the environment from adverse effects resulting from, or likely to result from, human activities which modify, or are likely to modify, the ozone layer;
- Phase out ozone depleting substances as soon as possible, except for essential uses; and
- Give effect to New Zealand's obligations under the Vienna Convention and the Montreal Protocol.

As New Zealand does not produce ozone depleting substances the main focus of legislative controls are on the import of these substances. Domestic controls are designed to reduce New Zealand's reliance on ozone depleting substances by progressively restricting the volumes that are imported.

Each substance, or group of substances, has its own phase-out schedule with interim targets for reductions which must be met. In compliance with our international obligations under the Montreal Protocol and our domestic legislation under the Ozone Layer Protection Act 1996, imports of all ozone depleting substances into New Zealand ceased on 1 January 1996, with the exception of HCFCs and Methyl Bromide.

The date for complete phase out of HCFCs has been set at 1 January 2015, five years ahead of the international deadline of 2020 set out in the 1995 Vienna Adjustments to the Montreal Protocol. The phase out for the use of methyl bromide in New Zealand has been set at 2005, in line with the agreements made in the 1997 Adjustment with interim reductions in advance of those agreed internationally.

But we recognise that ozone depletion is a global problem and there is little that New Zealand, by itself, can do to solve it. Even at its peak, New Zealand consumption of ozone depleting substances was only 0.2% of the total global consumption. It is therefore clear that even the complete phase out of all ozone depleting

substances by New Zealand will not affect the state of the ozone layer. Any response must have both a domestic and an international component.

New Zealand has therefore been at the forefront of both scientific and political efforts internationally to understand and preserve the ozone layer. Our scientists contribute to scientific work on the ozone layer. We are a strong voice in negotiations on international agreements to protect the ozone layer and we have made considerable efforts to encourage our Pacific Island neighbours to support these treaties.

Internationally, New Zealand is Party to the Vienna Convention and the Montreal Protocol, and to all three of its Amendments. We were the sixth country to ratify the Montreal Protocol and the second country to ratify the London Amendment. We were the first developed country to ratify the Copenhagen Amendment. We signed the Vienna Convention in 1986 and ratified it in 1987. We contribute to the Montreal Protocol Multilateral Fund, which provides assistance to developing countries to enable them to switch from ozone depleting substances and processes to more benign alternatives.

V THE RESULT

The scientific community has predicted, with increasing certainty, that the implementation of the Montreal Protocol has led to a dramatic drop in the consumption of ozone-depleting chemicals in the last ten years. Scientists now predict that, with the complete implementation of the Montreal Protocol and its associated amendments and adjustments, the ozone layer will begin recovery in the next decade and will be restored by the year 2050.

VI FURTHER ACTION

The predictions from the scientific community about possibilities for repair to the stratospheric ozone layer are based on the full implementation of the 1987 Montreal Protocol on Substances that Deplete the Ozone layer. To ensure that these provisions are met, we will need to address a number of issues within the next decade. These include:

- Promoting mechanisms to stop illegal trade in controlled substances;
- Encouraging all countries to ratify and implement all-of the amendments to the-Montreal Protocol - especially the 1992 Copenhagen Amendments and the 1997 Montreal amendments;
- Encouraging, and where necessary assisting, developing countries to implement their obligations under the Montreal Protocol and associated Amendments;

- Encouraging donor countries to continue to pay their contributions to the Montreal Protocol Multilateral Fund.

ANNEX

- **The Customs Prohibition (Chlorofluorocarbons) Order 1988**, introducing an import permit system for CFCs.
- **Ozone layer Protection Act 1990**, introducing measures to meet the requirements of the Montreal Protocol.
- **Amendment to the Ozone Layer Protection Act 1991**, adding a further 12 controlled substances to the act, and a reduction timetable in respect of methyl chloroform, carbon tetrachloride and other CFCs.
- **Amendment to the Ozone Layer Protection Act 1992**, making the Chemical C₂F₂Br₂ (halon 1201) a prohibited substance in New Zealand, and subject to the same controls as other halon gases under the Act.
- **Ozone Protection Amendment Act 1993**, implementing the 1990 London Amendment preventing trade in bulk controlled substances with countries that are not Parties to the Montreal Protocol.
- **Order in Council (116) May 1993**, amending phase out schedules for existing controlled substances and requiring that imports of CFCs, methyl bromide and carbon tetrachloride cease by 31 December 1995.
- **Order in Council (117) May 1993**, prohibiting trade in specified goods with countries which were not party to the Montreal Protocol.
- **Ozone Layer Protection Amendment Act 1994**, amending the prohibition on the importation of halons in line with the 1992 Copenhagen Amendment and made administrative changes to allow for the importation and exportation of recycled substances.
- **Import Control (Methyl Bromide) Conditional Prohibition Order 1994**, capping the level of imports of methyl bromide into New Zealand at 1991 levels from 1 January 1995, with exceptions for "quarantine and pre-shipment" applications.
- **Import Control (hydrochlorofluorocarbons) Conditional Prohibition Order 1995**, and HCFCs became a controlled substances from 1 January 1996, to be phased out by 2015.
- **The Ozone Layer Protection Act 1996**, and
- **The Ozone Layer Protection Regulations 1996**, replacing the 1990 Ozone Layer Protection Act 1990 and all other Amendment to it.

CASE STUDY REGARDING THE DISPOSAL OF OUT-DATED/ OBSOLETE PESTICIDES STOCK IWFP, PAKISTAN

Presented by:
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Pakistan

Pakistan holds one of the largest stocks of obsolete pesticides in the world. The stock accumulated until 1980, when the Government withdrew the policy regarding subsidized aerial spraying, except in Baluchistan. From that time on, the private sector has been responsible for the distribution of pesticides. Due to change in the policy, pesticides in government stores were no longer distributed free of charge to the farmers.

The expired stocks are now no longer saleable or useable with the result of a countrywide accumulation of obsolete pesticide stocks. According to a 1997 estimate, the quantity of obsolete pesticides in Pakistan was up to five thousand tons, stored in more than 1900 stores throughout the country. Studies undertaken by GTZ in 1998, however, put the total quantity of obsolete pesticides in Pakistan between 1700 to 2000 tons.

EPA, NWFP, GTZ AND BAYER COOPERATION

Based on a survey, undertaken to establish an inventory of obsolete pesticides in NWFP, there are 185.8 tons of obsolete pesticides stored in 150 stores all over the province of NWFP. The corresponding stock in the Federally Administrated Tribal Area (FAT) amounts to 12.6 tons. The main quantity is stored in Peshawar and Nizampur. In early 1990s the residents of the area in close proximity of the pesticides store house at Jamrud Road Peshawar started to complain about the foul smell and the issue was brought to limelight by the media.

In a joint venture of the Environmental Protection Agency (EPA) and the Department of Environmental Planning and Management of the University of Peshawar, the chemical detoxification of these pesticides was initiated in 1995/96, but the project could not achieve the desired results. To improve the situation 250 drums of obsolete stocks of Dimethoate were shifted by EPA to Nizampur, away from residential areas.

In June 1996, the PE&D Department of the Provincial Government requested support from the GTZ. One month later, the "Improvement of Urban and Industrial Programme" (UIEP) started with the planning for safeguarding and disposal of these pesticide stocks in the two main storehouses of the province. An activity is initiated for proper disposal of hazardous/toxic obsolete pesticides and safeguarding in such a manner that the activity can be further replicated to other parts of NWFP and Pakistan.

The UIEP management has, from the very beginning, involved the GTZ headquarters and the German company BAYER in the "Pesticide Disposal Project", because some steels were manufactured by BAYER. In January 1997, a OTUDAVEN team evaluated the situation in both the storehouses of Peshawar and Nizampur. Samples of the obsolete pesticides, and soil and water were taken for analysis to Germany to obtain more information such as extent of contamination, and to identify the pesticides formulations. At the same time the project management, UIEP, initiated all preparatory steps for the safeguarding and disposal activities.

At Jamrud Road store, the drums as well as the floor were covered with a thick layer of pesticides, dust and dirt, due to the leakages from rusted drums. The project started with a cleaning programme in this store in November 1997. The contaminated soil was stored in 140 plastic drums and weighed about eight to ten tons.

Meanwhile GTZ purchased all the required equipment for cleaning and safeguarding of the pesticides from Germany including drums and containers and shipped to Pakistan. Finally in May/June 1998, UIEP started with packing of the Gusathion at Jamrud Road store under the guidance and supervision of a German expert. The whole activity of packing was carried out by the local staff and lasted for three weeks. In March 1999 the pes-

ticides in the storehouses of Nizampur were packed in the new drums, the building was cleaned and decontaminated. Now the obsolete Gusathion and Dimathoate of both stores are ready for incineration. Gusathion will be disposed of in Europe and the shipment to Europe is planned for July 1999. The German manufacturer BAYER has agreed to finance the process and carry out the incineration in the United Kingdom. For Dimathoate, a product of an Italian manufacturer, an incineration solution is being investigated. The Ministry of Food and Agriculture of the Government of Pakistan, the original owner of the stock transferred the ownership of the Dimathoate to EPA to enable it to initiate the disposal process. The Ministry of Food and Agriculture, however, has recently withdrawn the decision. EPA-UIEP has now requested the Federal Ministry of Environment to take up this issue with the Ministry of Food and Agriculture.

The pilot project has demonstrated a safety system for removal and handling of pesticides, which can be replicated whenever needed. It is expected that the expe-

riences gained by the concerned departments, such as the Plant Protection Department and EPA will enable them to handle such situation.

Based on the fact that the generation of hazardous/ biomedical waste is on the increase in NWFP, a new project proposal "Hazardous Waste Management Centre" was developed and presented for approval to the concerned authorities. The purpose of proposed project is as follows: "A functional centre is established, which serves for hazardous waste collection, training of personnel, creating awareness, conducting required research work and which has functional facility for the disposal of hazardous/toxic waste in NWFP".

The project will work in close coordination with other relevant Government and Non-Government agencies particularly Local Government and Rural Development Department, Health Department and Plant Protection Department. EPA is optimistic that this project will be financed by the Government of the Feral Republic of Germany.

POGERA MINE RIVERINE TAILINGS WASTE DISPOSAL IN PAPUA NEW GUINEA

Presented by:
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EXPLANATION OF THE PROBLEM

The developers of the Porgera Gold Mining Project (in the highlands region of Papua New Guinea) were initially given an approval (in the highlands region of Papua New Guinea) in 1989 to discharge the mine's treated tailings and soft waste rock into the Porgera – Laigap river system. These approvals were granted in accordance with the Environmental Planning Act and the Water Resources Act (i.e. through issuance of Water Use Permits) after consideration of the developer's Environmental Plan and the proposal for riverine tailings waste disposal. Riverine tailings waste disposal was considered to be environmentally sound and therefore the best option for tailings waste disposal given the unstable geological structure of the mine area and the difficulties of constructing a tailings retention dam in such unstable geological structures. Since the mine began its operations in 1990, the mine's tailings waste have been disposed onto erodible waste dumps which have overtime eventually eroded into the nearby river system. This has contributed to sediment build-up along riverbanks down stream and water discolouration.

Although the developer has argued that it had at all times been in compliance with the State's approval conditions, local villagers (landowners) have - on separate occasions - petitioned the government and the developer, claiming that chemicals discharged by the mine into the river system had affected the water quality (for drinking, washing, fishing etc) and had further resulted in skin diseases and food or fish poisoning resulting in some deaths among the villagers and their domesticated animals. Compensation claims have also been made against the developer of the mine for environmental damage down stream, and also for the loss of landowners opportunity to undertake alluvial gold mining down-stream and which had been hampered by the increased sedimentation build-up along the river-banks.

HOW THE PROBLEM WAS DISCOVERED

The problem referred to above began, once the mine began operating and physical changes started occurring, then various claims by landowners groups referred to above concerning the various impacts of the mines riverine tailings waste disposal started emerging. Petitions were made by various landowners groups to the Government and developer to investigate and take some action.

The mine presented a situation where the local villages, who had not been exposed previously to such form of modern development, had difficulties in trying to comprehend the impacts of the mine development on their lives. This resulted in the landowners having different perceptions of - what they thought - were dangerous or harmful effects or impacts of the mine riverine tailings waste disposal on their livelihood and well-being, and therefore the need to be properly compensated as compared to the developer's perception of what were harmful impacts of the tailings waste disposal on people near the mine area and further down-stream of the mine site was expressed.

APPROACHES TAKEN BY VARIOUS ACTORS TO DEAL WITH THE PROBLEM

As part of PNG Government's initial approval conditions the developer of the mine was required to develop an Environmental Management and Monitoring Programme (EMMP) for the mine, which was approved by the Department of Environment and Conservation. Porgera mine maintains a comprehensive environmental monitoring programme which assess hydrological, biological and environmental chemistry issues. Where complaints or claims have been made (as referred to above), the developer has carried out its own investi-

gations into such claims to confirm or otherwise and has submitted reports of its findings to Office of Environment and Conservation.

In 1995, the developer also commissioned an independent review of its down stream impacts (CSIRO of Australia), to determine how good the predictions made in the original Environmental Plan had been and to answer concerns, that had been raised about the impacts on the local people and the environment, which confirmed inter alia low chemical impact on rivers and low sediment build-up in rivers. The developer also carried out awareness programmes among the people. Monthly meetings are held between senior management of the landowners and councils (i.e. Community Issues Committee) to discuss relevant issues affecting the mine. In addition, the developer holds quarterly meetings with national, provincial and community representatives to report on and discuss various issues concerning the mine including environmental and social impact issues.

Furthermore, in response to concerns expressed by communities and special interest groups about the impacts on the environment and communities living downstream of the mine's riverine tailings disposal outlet, the developer formed the Porgera Environmental Advisory Komiti (PEAK) in 1996. PEAK is an external advisory group comprised of representatives from government, the developer, Australian and Papua New Guinea community interest groups and independent technical experts. PEAK's primary role is to oversee the developer's implementation of CSIRO's (Australia) report's recommendations. It also among other things, reviews the Mine's Annual Environmental Monitoring Reports and addresses environmental concerns of external stakeholders including community and environmental groups for consideration by the developer.

Government agencies (particularly the Office of Environment and the Conservation and Department of Mining) have also carried out separate investigations to verify claims by affected villagers in relation to the effects of the mine's riverine tailings waste disposal. In some instances, government agencies have been able to refer to outside technical expertise to verify the reports and various studies undertaken by the developer. However in some cases, the government has not been able to verify the reports submitted by the developer due to financial constraints or lack of resources personnel. The government agencies have also tried to carry out awareness among the people to improve their level of understanding about the environmental issues related to the mine, however this has been hampered by financial constraints.

WHETHER ACTIONS TAKEN WERE SUCCESSFUL OR UNSUCCESSFUL

Actions taken by the developer have been successful in so far as it has allowed proper investigations to be car-

ried out about the impacts of the mines riverine tailings waste disposal (which confirmed low chemical impacts on rivers and low sediment build-up in rivers) and for the information to be shared with concerned parties including landowners. We believe these actions, have improved the level of understanding among the affected people of the environmental impacts or issues associated with the mine development. However there have been instances where communities down-stream of the mine site have refused to accept the findings of the investigations conducted by the developer and its consultants. They have thus insisted that the government carries out independent reviews of the developer's findings (i.e. to verify developer's reports). The government (through the Office of Environment and Conservation) has, on several occasions, been able to carry out such independent reviews by technical experts where funds have been made available for such purposes. However, in most cases it has not been possible for the government to do so, due to financial constraints. Where investigations have confirmed impacts on the lives of the people in the mine area and down-stream from the mine site, appropriate compensation has been negotiated and paid by the developer. In one case people living downstream have rejected the compensation package offered by the developer for water related impacts and have referred the matter to the Minister for Environment and Conservation to determine the compensation in accordance with the procedure under the Water Resources Act.

In this instant, the Minister determined the amount of compensation for the developer to pay to the lower Porgera river land owners; however, the landowners were dissatisfied with the Minister's Determination and instituted judicial review proceedings in the National Court (i.e. appellate Court) to review the Minister's Decision on the compensation. This matter is the subject to further Supreme Court proceedings instituted by the developer (i.e. highest Court of Appeal in PNG).

ANY FOLLOW-UP WHICH IS TAKING PLACE OR NEEDED

As referred to above, the Minister's Determination of the compensation package for landowners of the Lower Porgera River system (for the impacts from the mine tailings waste disposal) is the subject of separate Court Proceedings in the National Court (i.e. appellate Court) and the Supreme Court (i.e. the highest Court of Appeal) in PNG. The cases have been argued before the appropriate Courts and decisions are still pending.

In the meantime, the developer continues to undertake its environmental monitoring program in accordance with the Government's approval condition.

Including other additional studies (over and above the state's requirements) for early detection of mine-derived

impacts. These additional studies relate to measuring metal residuals in village foods, which were not previously analyzed, to enable better assessment of potential exposure pathways, a risk assessment for the Lower Strickland and Lake Murray to be undertaken (i.e. further down-stream from the mine site).

The developer also continues to make compensation payments, where necessary, to landowners affected near the mine site and further downstream, which is subject to confirmation of mine related impacts. Compensation payments for landowners further downstream, who are currently involved in court proceedings, are being paid in accordance with the Minister's determination on compensation and put into a trust account by the devel-

oper, which is pending and awaiting the outcome of the Court proceedings.

The government agencies (i.e. Office of Environment and Conservation and Department of Mining) need to continue to carry out independent awareness programme among the people in the affected area and independent studies to verify the developer's reports to reassure the affected people that the government is also doing something on its part to verify the reports presented to it by the developer. (Note: the government agencies have, on previous occasions, been accused of collaborating with the developer to produce reports which are favourable to the developer. Hence, there is the need for government agencies to carry out its own independent investigations).

THE EXAMPLE OF WATER POLLUTION IN THAILAND

Presented by:
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THE NAM PONG – THE EXAMPLE OF WATER POLLUTION CASE IN THAILAND

In Thailand, urbanization and industrialization have resulted in a deterioration of the natural resources in the country. The government policy to promote industrial growth began in the late 1950s. At the beginning, more than half of the registered factories concentrated in and around Bangkok (the capital of Thailand), which caused problems of environmental degradation in such areas. Therefore, the government has emphasized decentralization of industries away from Bangkok. They hoped that this would solve pollution problems and help increasing family income in the countryside. Khon Kaen, the province in the northeast of Thailand, has been chosen as one of the centres for the development. The Nam Pong Basin in Khon Kaen is a suitable area for industry because it provides water for industrial processing. Furthermore, the Nam Pong Basin is an agricultural area, meaning that the industries can easily find raw materials for their productions. Consequently, many factories have been located in the Nam Pong area, and pollution problems have become more and more serious there.

The major water pollution incident in the Nam Pong Basin occurred in 1993 when the Nam Pong was severely polluted from the Huay Chote Swamp, the tributary of Nam Pong, all the way down to Nongwai Weir since the dissolved oxygen in the water was so low. This caused a large number of fish to die and discolouration of tap water in Khon Khan area.

There were four theories on the cause of the incident, the release of water in small amounts from Ubon Rat Dam (a multi-purpose dam which is a large reservoir upstream), the stirring up by heavy rain of the accumulated pollutants deposited on the bed of Huay Chote Swamp and later released to the Nam Pong, the pollutants from communities upstream and finally the discharge of large quantities of pollutants, probably by the pulp and paper factory (hereinafter called "the factory")

into the Huay Chote swamp. In this event, there was a controversy among related government agencies about the cause of the incident. Some officials pointed out that the heavy rain was the cause of the incident while others believed that the real cause of the incident was the pollutants discharged from the factory. The conflicts between the concerned government bodies arose since one wanted to promote industry but another wanted to protect the environment. Nevertheless, the factory was temporarily closed for 30 days pending the investigation by the Department of Industrial Works authorities. The factory was also ordered to reduce the quantity of wastewater discharged into Huay Chote canal, and must use oxygen, not chlorine, in pulp bleaching to prevent dioxins from forming in the wastewater.

Prior to the incident in 1993, the factory had been ordered to close for 60 days for causing water pollution in 1992. At that time it admitted that the closure of factory was justified because its wastewater did not meet the standards required by the law and finally the factory was fined by the court 10,000 baht (approximately US\$250). However, in the 1993 incident, the factory denied that it was the real cause of pollution in the Nam Pong because it complied with all standards. So far, the public prosecutor decided to bring a criminal action to court, and the case is still pending.

One reason that there was no precise action taken against the factory was the economic impact on a large group of people living in the areas if the factory was ordered to close. About 1,200 full time workers and 800 contract workers, mostly from villages near the factory, who were employed by the factory would lose their jobs. More-over, about 50,000 farmers, who were eucalyptus and bamboo growers, with contracts with the factory to supply raw materials, would get into trouble as well. The closure of the factory might also have led to the closure of at least ten paper factories, due to shortage in the pulp market, leading to an increase in the price of paper as well.

To avoid environmental problems, and to reduce the conflict between the factory and the people owning land along the banks of Nam Pong, the factory introduced an incentive for landowners and farmers. In return for using its treated wastewater, conveyed by pipeline to their lands, for growing eucalyptus, the factory would give them 500 baht (approximately US\$ 12.5) per rai a year. There were several problems arising from this project, such as crop damage caused by the wastewater.

After the incident in 1993, the Nam Pong pollution still occurred frequently. However, no stringent action has been taken against the factory, due to many reasons such as the controversy of the cause of pollution. Until December 1997, villagers in the Nam Pong Basin Area made complaints to the government agencies that a large number of fish were found dead in the Nam Pong. The factory agreed to pay 2,950,000 baht (approximately US\$ 73,750) to the villagers, and the complaint was stopped after that. However, in May until July 1998, the pollution problems occurred again. For example a large number of fish was found to be dead on three occasions in the same area as had happened in 1997. The Khon Kaen's provincial committee had concluded that the death of fish had been caused by a very low dissolved oxygen level. These come from the combination of the following factors; the quality of the water in the Nam Pong river, the water released from the Ubon Rat Dam, the dissolved oxygen in the water and the crowded fish in the pond. Notwithstanding, the affected people had made a complaint to the government and later the investigation of the cause of pollution has been taken by many committees and government bodies concerned. After the inspections, they held the opinion that the factory failed to improve its water treatment system to comply with regulation as promised. Consequently, the factory was temporarily closed for 180 days from July 23 1998. This was in order to repair the water treatment facility, as certain conditions for re-opening the water

treatment system were that its water treatment system must be improved. For example, the factory has been monitored 24 hours a day by the Department of Industrial Work officials.

In September 1998, the Royal Irrigation Department notified the Khon Kaen police to bring a criminal action into court. This is because the wastewater from the factory discharged into the irrigation watercourse, did not meet the standards. Moreover, the related government agencies have made progress in order to prevent the problems. For instance, the Ministry of Science, Technology and Environment, which set up the committee for ecological rehabilitation of Nam Pong and the Department of Fisheries, has announced that the fishermen who obtain their fish in the Nam Pong must receive consent from the department.

In conclusion, it can be seen that water pollution in the Nam Pong is likely to be a chronic problem. In order to solve the problem, the government must take action to protect the environment seriously. Without environmental protection measures, the policy to promote industrialization will not be able to accomplish. Additionally, the existing laws should be revised for more effective enforcement, for instance, the penalty in environmental laws should be more stringent in order that it will have an effect upon the factory's operation. Another way to protect environmental degradation is promoting environmental awareness among people, particularly among the youth.

THE ISSUES OF ENVIRONMENTAL LAW WHICH IS LIKELY TO OR SHOULD ADDRESS IN THE NEXT 10 YEARS

1. The global permit system of pollution discharge;
2. The use of recycled materials in industrial production;

DEALING WITH DEFORESTATION IN VIETNAM

- A CASE STUDY -

Presented by:

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Vietnam

Vietnam currently faces critical environmental problems, such as deforestation, industrial pollution, and rapid population growth. All these aggravate poverty and lead to a worsening quality of life. The government has recognized the urgency to develop a sound environmental framework as part of its path to sustainable people-centered development. However, there is still a lot of work should be done. In this paper, I would like to introduce one of the important environmental problems in our country - DEFORESTATION. This paper is of my personal point of view, and it should not be deemed as an official statement of Vietnam on the issue.

INTRODUCTION TO THE PROBLEM

The forest cover of Vietnam has been reduced to alarming levels. Forest quality in the remaining forested areas has significantly declined. The destruction of forest vegetation leads to a rapid impoverishment of the soil and a loss of stored nutrients, inducing drastic changes in the physical and biological characteristics of the ecosystem. Such a situation makes Vietnam, which is alleged to be one of the most disaster-prone countries in the world, suffer more serious natural catastrophes especially flood, drought and the eroding biological diversity.

From 1943 to 1991, forest cover in Vietnam has fallen from 45% of the country's total land area to below 28%, of which only 10% was primitive forests. Northern Vietnam experienced the greatest decline, with forest cover dropping from 95% to 17% in 48 years. In some provinces, the coverage remains very low, for example: Lai Chau has just 7.88%, Son La 11.95% and Lao Cai 5.38%. The decrease in this region was caused by the rapidly growing population's demand for forest products and agricultural land. The remaining forests in the Northern mountains are degraded, poorly stocked, and scattered in small non-continuous plots.

The result was the formation of large areas of unproductive barren land. Some 35-42% of Vietnam's land area is considered barren, reflecting its low productivity. Such lands were once mostly forested but now comprise either grasslands or shrublands.

To people in a less-developed agricultural country like Vietnam, floods and drought are something more than terrors. The 1996 flood season was particularly devastating: typhoons, tropical storms, whirlwinds, landslides and floods affected almost every province in the country, causing US\$655 million in damages and costing more than 1,000 human lives. In 1998, Vietnam faced not only typhoons and floods, but also severe droughts that spread nationwide and lasted until May 1999. In this period, millions of square meters of cultivation land remained uncultivated.

Mass deforestation also creates enormous threats to the existence of forest biological diversity, especially forest animals. Since the beginning of this year, wild elephants have killed 30 people and destroying many houses and property of farmers in Binh Thuan province. The only reason that makes those elephants be more brutal is the deforestation - the natural living environment for them has been destroyed. There is a warning from biologists that the Vietnamese elephant faces extinction.

HOW THE PROBLEM WAS DISCOVERED

Deforestation did not receive much attention by the Vietnamese society until the Government officially acknowledged the issue in the early 1990s. Since then it has done a lot to solve the problem.

Understanding the seriousness and urgency of the deforestation problem to the environment as well as the economy, in 1992, the law on forest protection and de-

1 The Law on Environment Protection was promulgated in 1994, two years later.

velopment¹ was promulgated. This was done together with the Directive Document No.90-CT, dated 19 March 1992, by the Prime Minister on implementing urgent measures to prevent deforestation. According to this document, forest protection and development is the concern of the whole nation, and it should be carried out by all industries as well by the State management mechanism.

The mass deforestation in Vietnam originates from the following reasons:

1. The old law on forest protection and development was out of date², there were a lack of specific regulations;
2. The people's knowledge of forest protection was limited: they focussed on the benefits from deforestation, while the bad consequences were less obvious or appeared to be none of their business;
3. The booming population in forest areas caused a dramatic rise of demand for forest products, such as wood for constructing homes;
4. Because of the difficulties in earning a living, farmers had to clear forests for cultivation. This was the greatest reason that cause forest fires destroying thousands of acres of forest per year.

ACTIONS TAKEN BY VARIOUS ACTORS TOWARDS FOREST PROTECTION AND DEVELOPMENT

There were a lot of actors involved in the cause of forest protection and development in Vietnam. The main actions were of the four following series:

1. To build a systematic policy/law on forest protection and development.

From 1992-1997, 47 prime-ministerial legal documents (including decrees, directives, decisions) on forest protection and development were promulgated.

The Ministry of Forestry (and later The Ministry of Agriculture and Rural Development) with the cooperation of other industries concerned (such as the Ministry of Justice, Ministry of Police) promulgated 44 documents to give instructions realizing the prime-ministerial above-mentioned documents.

2. Propagandizing the law and rules on forest protection and development; educating people, why and how they should take part in the cause of forest protection and development.

Mass media and the Ministry of Education and Training took an important role in this kind of activities.

Dozens of movies were made on the theme of forest protection and development. Hundred of thousand copies of books, leaflets, etc...with the content of forest protection and development were issued. Newspapers regularly covered news and live-stories on the subject. A lot of the publications were translated into ethnic languages.

The Ministry of Education and Training put the subject of forest protection into the education program at elementary schools.

3. Projects of economic development were carried out to upgrade the living standard of people in forest areas. Foreign-supported projects were very important in this kind of actions.

The allocation of land³ and contracting for forest protection to households was considered as a key factor and pushed up in order to encourage them with direct benefits from forest protection and development. Farmer households were also provided with seeds, techniques and other services from the Government.

Participating households could also enjoy indirect benefits, for example from physical infrastructure created in the projects' area (roads, small scale irrigation schemes, health and education services).

4. The enforcement mechanisms of law were strengthened. The forest guard forces were at the focus in this kind of actions. However, the government also paid attention to the army, the police, courts, and the cooperation of those forces.

RESULTS

Though a lot of efforts have been made, achievements are still limited. The coverage rate has been gradually rising from 27.8% in 1991 to 28.2% in 1995 and about 33%⁴ in 1998. However, the rate is still slowly increasing, there are still many serious cases of forest-fire and deforestation.

According to a report to the National Assembly made by the Council of Mountainous Ethnic Minorities in May 1999, the factors leading to such slow progress are as follows:

2 The old law on forest protection and development was promulgated in 1972 in the war time.

3 Under Vietnamese law, land is of State possession.

4 Source: MARD.

1. The present system of law, policy and implementation mechanism does not create sufficient motivation to attract all resources for the cause of forest protection and development. At the moment, forest cannot provide the main income for forest farmers. For example, the income from an acre of PAM forest⁵ in Hoa Binh province is equivalent 50% of the income from an acre of sugar cane. Thus, many people rush to deforest in order to have land for coffee or fruit-trees .
2. Because of a dramatic increase in population, demands for food, furniture and energy rise up quickly leading to massive deforestation for cultivation land, wood for house-making, etc.
3. The ownership is still clearly defined by law leading to the relationship between the forest owner (employer) and the forest manager (employee) gray.
4. State management of forest is overlapping; there is sometimes a case that no one is responsible for because all parties concerned think the others should take care of the forest.
5. The forest guard force is still not strong enough. There is a lack of employees, tools, and equipment. The income of the guards is so low, that some of them give arms to the men carrying out deforestation in exchange for money

In conclusion, deforestation is still a serious environmental problem in Vietnam, which has to make more efforts, with international assistance, to progress towards sustainable development.

5 A project funded by the World Food Program

C. CENTRAL AND EASTERN EUROPE

PROTECTION OF HUMAN RIGHT TO FAVOURABLE ENVIRONMENT IN BELARUS

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My report concerns the mechanism protecting the human right to a favourable environment in the Republic of Belarus. I will describe an environmental problem, which is typical for our country, and suggest ways for its possible solution.

Article 46 of the Constitution of the Republic of Belarus provides: "Everyone has the right to favourable environment and to compensation for damage caused by the violation of this right".

The legislation of the Republic of Belarus does not define the term "favourable" environment. However, to my mind, it should be determined as the environment, the parameters of which meet the standards for ensuring the protection of life, the health of mankind, flora and fauna, and the preservation of the genetic pool. Hence the right to a favourable environment is wider than the right to a healthy environment.

The system of the environment quality standard comprises:

- the standard of the dangerous, substances concentrations in air, water, soil and etc.;
- the standards of noise, vibration, magnetic field levels and other harmful physical influences;
- the standards of radiation levels.

The standards are established to evaluate environmental situation for the sake of people's health protection, the preservation of genetic fund, the protection of flora and fauna, and the aim of securing environmental safety.

In general, the juridical construction of the human right to favourable environment includes:

1. the warrant to use natural environment quality of which is suitable for the normal life;
2. the warrant to require from other persons the discharge

3. of the environmental protection obligations; and
3. the warrant to require from other persons the discharge of the environmental protection violated human right.

The objection to the violation of the human right to favourable environment, is found in public relations, which are concerned conservation and providing with the environmental secure life conditions.

In accordance with our legislation citizens can use the following remedies to protect human right to the favourable environment:

1. Everyone is guaranteed judicial defense of his right to favourable environment before a competent, independent and impartial court within periods of time established by law (art. 60 of the Constitution). Legal proceedings assure sound and timely judicial settlement of such cases as well as judicial control of the authority actions legality. The procedure of access to courts is regulated by the Civil Procedure Code 1999;
2. Everyone has the right to submit personal and collective addresses to State bodies, their officials and the entrusted with the fulfillment of state functions. Such persons are expected to consider an address, and to give an answer on its merits within a period of time set by the "Special law on Citizen Addresses", 1996;
3. Administrative (intra-departmental and inter-departmental) control and supervision is realized according to the Law "On President of the Republic of Belarus" 1997 and the Law "On the Council of Ministers of the Republic of Belarus and State bodies subordinate to it" 1998;
4. The representative State bodies control over the executive authority in accordance with the Law of

the Republic of Belarus "On the status of the Deputy of the Representative Chamber of the National Assembly of the Republic of Belarus" 1998, taking into account the principle of division of the legislative, executive and judicial powers;

5. The Prosecutor supervision (general supervision by the Public Prosecutor) over the strict and uniform observance of laws by all ministries and other subordinate to the Council of Ministers bodies, local representative and administrative bodies, enterprises, organizations and institutions, public associations, officials and citizens. The jurisdiction, administration and powers of the Public Prosecutor Office and its territorial bodies are determined by the Law "On the Public Prosecutor Office and the Republic of Belarus" 1993;
6. the Constitutional Court control over the constitutionality of the regulatory enactment of the State bodies and public associations, international agreements and other obligations of the Republic of Belarus in accordance with the special Law "On the Constitutional Court of the Republic of Belarus" 1994.

It is necessary to define, more precisely, internal arrangement of the warrants. The warrant to use natural environment which quality is suitable for the normal life denotes an aim as well as the warrant to require from other persons the discharge the environmental protection obligations and the warrant to resort in the case of necessity to state or public protection of the violated human right mean the ways of the achievement such aim. Thus each of them is included in the frame of the legal right as necessary unit, without which the sense of all concept is lost.

This classical trend of warrants constitutes working model in the Republic of Belarus. This is by means of the attendant potentialities forming the active side of law. On the basis of the international legal document content analysis, the following groups of the international standards are selected in the field of the human right to favourable environment.

1. the right of every person to live in an environment satisfactory to one's health and well-being (art. 46 of the Constitution);
2. the right to require from the State bodies adequate organizational, economic and legal measures for ensuring the implementation of the human right to favourable environment (Art. 2, 21, 59 of the Constitution);
3. the right to address to the human right protection, including international legal protection, in case of the violation of the right to favourable environment (Art. 37, 40, 60 of the Constitution);

4. the right to compensation for damage caused by violation of the right to favourable environment (Art. 46 of the Constitution);
5. the right to receive, retain and disseminate complete and reliable information on the state.

It must now be clear that citizens can directly realize the right to favourable environment in three basic forms:

1. the observance established environmental standards and prohibitions;
2. the fulfillment of their duties in the field of environment; and
3. the application of the legal right to favourable environment.

Let us focus on the ordinary citizens' remedies to protect their rights, in case they should be violated by businesses or the government. It is often claimed that our legislation is almost perfect and it is due to "inactivity" and the "lack of awareness" of citizens that their environmental rights are not protected. The confirmation for this statement is sought in the statistics for the Court of Appeal. These show that, in the past years, only a few Belarus citizens have brought the suits claiming compensation for "environmental" damage. Moreover, no one has attempted to protect his right to environmental information or to participation in environmental decision-making.

It can be illustrated by the following situation, which recently occurred in one of the Belorussian towns. This story begun in the small Belorussian town Borisov (the Minsk region) in 1998, but it is very common for our country.

The town authority gave one dweller the authorization to build a car garage in the middle of the residential area without an agreement of the other dwellers. Then another car garage was built in this way. The owner of these garages started his own business activity and made parking place for trucks and supply depot. On the 9th of April 1998, the dwellers of the adjacent houses submitted a collective address to the deputy of the local representative body with the request to put off this parking place as a parking place for trucks and supply depot. However, the citizen's address did not have any effect. So, they presented a complaint to the town Executive Committee (a local administrative authority). This situation was examined by the officials from the sanitary and environmental protection bodies who confirmed the violation of the environmental standards by the owner of this parking place for trucks and supply depot. But the violation of their right to favourable environment was not interrupted. The aggrieved dwellers forwarded the petitions to the President's Administration and to the State Supervision Committee. These petitions were passed to the local authority. The necessary measures

to suspend the violation of the people's right were not taken again.

At the same time, the owner of the parking place for trucks and supply depot received the authorization to build his own house on the place of the small park, which was situated near the houses of the same dwellers whose right was violated. On the 26th of April 1999 this park (10 rowans, 6 poplars, 6 pussy willows and oaklet) was destroyed.

The ultimate attempt to resolve this problem was undertaken by the people. They addressed to the Constitutional Court of the Republic of Belarus, which has received it on the 30th of September 1999. The copy of this complaint was sent to the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus for consideration and settlement of the conflict.

In this connection, I would like to admit that:

- a) the previous complaints were not addressed to the Ministry of Natural Resources and Environmental Protection;
- b) the previous complaints were sent by the higher bodies to the local authority which did not take the necessary measures from the beginning; and
- c) it is a well-known fact that success in the realization of the human right to favourable environment depends on the public participation in the decision-making process in the field of environment.

According to the Law "On Citizen Addresses" 1996, the Ministry of Natural Resources and Environmental Protection will carry out a special examination of the facts and demand of additional materials from the territorial body of the Ministry located in Borisov. In case that this complaint is recognized as justified, the necessary measures will be taken to restore violated right of the citizen. In addition the persons found guilty of such violation will be brought to liability.

It is quite possible that this conflict would have been resolved quicker if the dwellers, who suffered from infringement of their right to favourable environment, had used the warrant to bring the suit against the owner of the parking place for trucks and supply depot to stop his activity or against the local authority to stop the illegal actions and force them to take necessary measures to protect citizen's right. However, special environmental legal assistance does not exist in the Republic of Belarus. That is why people could not receive any legal advice free of charge.

Nevertheless, the interests of the people to live in a clean environment, and the interest of the state to fulfil its ecological function, are the same. It was intended that the legal norm of the Constitution establishing the human right to favourable environment would be the constitutional norm of direct effect, as it happened in the Russian Federation and Ukraine.

At the present time the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus participates in drafting the National Programme of the Actions on the Human Rights and Freedom Protection. This is done according to the initiative of the Council of Ministers of the Republic of Belarus. This National Programme will contain actual measures to improve NGOs activity in the field of the human rights protection, which means to support special public environmental initiatives, specialized in consulting environmental laws and in the protection of the right to a favourable environment and other environmental rights.

I would like to introduce some issues, which environmental law should address in the next 10 years:

1. harmonization of national laws and national policies in the field of environmental protection and achievement of sustainable development;
2. the drafting of a common scheme of strict liability for damage resulting from transfrontier pollution and other activities dangerous to the environment, but not prohibited by international law; and
3. the legal regulation of the waste management and waste treatment, including waste disposal.

ENVIRONMENTAL POLLUTION CAUSED BY DRILLING IN KAZAKHSTAN

Presented by:
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Drilling recently began on the Northern Caspian Sea for development of petroleum deposits of the Caspian Shelf. A number of problems were discovered, connected to the legal regulation of protected waters from petroleum pollution.

As a result of the analysis of wastewater after drilling had begun the local regional authority of the Ministry of Environment Protection established that there was an infringement of standards for the contents of harmful substances in wastewater run-off into the Caspian Sea.

The tests were taken directly on the drilling barge, therefore all measurements and results of tests met hygiene parameters, though it was required to determine them according to ecological parameters. Hygienic tests were selected on the barge because of the absence of an ecological baseline survey. The standards for fish reservoirs were used for comparison, instead of drinking water standards, as it was stipulated in the license on special water use. As a result the drilling was suspended.

The company, submitting the appeal to the Government, explained that prior to drilling they had executed all requirements of environment legislation of the Republic of Kazakhstan. The company had carried out the analyses of wastewater in an independent laboratory and found the polluting substances did not exceed allowable limits. However, subsequently it was found that the procedures of analysis were not followed and the data was not accurate. In the opinion of the experts of the company, the requirements of PDS for fish reservoirs is not relevant, as these norms are the former Soviet specifications and are not registered in the Ministry of Justice, and therefore have no legal force. In addition, the wastewater met all requirements of wastewater run-off drinking water reservoirs, as it was stipulated in the license on special water use. But the company had not completed the PDS project, which is required by

environment legislation, before drilling can begin.

A special commission of the MNREP (natural resources and environment protection) was organized to address this problem. After a detailed study of the situation the commission has made the following decisions:

- To permit a renewal of drilling in strict observance of the ecological requirements;
- The company is obliged to complete the PDS project;
- Until the registration of the results of the analysis of chemical structure carried out by the company in an independent laboratory cannot be accepted for a determination of quality of wastewater, since the procedures for analysis were not followed earlier.

The action of the local environment authority was first focused on prevention of pollution of the reservoir and then they used all available opportunities to assert legal authority. It was difficult not to resort to extreme measures because of the imperfect legal framework.

The interaction between various environmental authorities, control functions and inspections, ecological standards is problematic, as licensing is dispersed between various authorities.

Obstacles to establishing standards are: the unanswered questions of the control for use and protection water resources; The imprecise mechanism for licensing of nature-users and finally, the absence of experience in petroleum/water issues.

It is necessary to mention the importance petroleum extraction to the economy of Kazakhstan, and how the decisions will affect the huge interests of other states and large international petroleum companies in con-

tinuing drilling at present scales.

The final decision of a commission was objective from the point of view of existing environment legislation in Kazakhstan, but not from the point of view of the environment.

Currently, all former Soviet standards are being registered with the Ministry of Justice of Kazakhstan. The company has hired experts to execute PDS project and agreed to a monitoring and control program with the local authority.

Issues to be addressed by environmental law in the next 10 years:

1. The compensation of damage according to the "Polluter Pays" principle.
2. Non-corresponding environmental water legislation of the Republic of Kazakhstan, and the integration

ENVIRONMENTAL PROBLEMS IN KYRGYZSTAN

Presented by:

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INTRODUCTION

The Kyrgyz Republic - is a sovereign, unitary, and democratic republic, established on the principles of the legal state. The day of independence is considered to be August 31, 1991. The capital is Bishkek, with a population of around 1.2 million.

In terms of the administrative-territorial distribution, Kyrgyzstan is divided into 6 areas, 43 regions, 51 cities and settlements, 1,780 ayils and villages.

Kyrgyzstan is located in the epicentre of Central Asia or to the north-east - with China. The territory of Kyrgyzstan spreads from the west to the east for 900 km., from the north to the south for 110 km. Its territory is situated on the height from 391 to 7,349 m above sea level. The square of the Republic amounts to 199,900 km² what is equal to the total square of Belgium, Netherlands, Portugal and Switzerland.

Kyrgyzstan is an unique country in terms of its natural resources. Although the relief of the country is mainly mountain - almost all types of landscapes are represented in Kyrgyzstan. The slopes of mountains are covered with subalpine and alpine meadows, steppes, forests of Tyan-Shan fir-trees and relic walnuts, the greatest in the world. Flat syrts and hollows with lakes follow mountain ridges. 5.5% of the territory of Kyrgyzstan is occupied by forests, 4.4% - by arable lands and 36.6% is other types of land.

Flora and fauna of the country are diverse and interesting. Around 4,000 kinds of plants, 80 kinds of mammals, more than 330 kinds of birds and around 50 of fish, 30 kinds of reptiles and amphibious can be found in Kyrgyzstan. The average annual income per capita in Kyrgyzstan amounts to US \$830, which makes it one of the poorest in the CIS. 50% of its population live below the poverty level. The rural population consists of more than 64% of the country's population.

The national economy specializes mainly in agriculture (production of cereals, potato, tobacco, cotton, wool, etc.), which accounts for more than 40% of the GNP and also on production of non-ferrous/rare metals, automatic and semi-automatic lines, blacksmith's machines, metal-cutting tools, electric-technical equipment, etc. Within the period of 80 years for the first time in its history, Kyrgyzstan has worked out and adopted the "National Concept of Ecological Security", in which the internal problems of Kyrgyzstan, as of a full-valued member of the UN, were considered within the general context of the current global ecological changes and processes taking place in the world.

REVIEW OF KYRGYZ REPUBLIC LEGISLATION ON ENVIRONMENTAL PROTECTION

Deterioration of water supply to the population, degradation of pastures, salification, desertification, deterioration of soil fertility and soil erosion, deforestation, poaching, reduction of species' biodiversity, etc. In these socio-economic conditions there has arisen problems related to environment protection.

In spite of the fact that there have been passed a law of the Kyrgyz Republic on "Especially protected natural territories" (1562 - XII dated May 28, 1994), normative provision of especially protected territories status still remains insufficient. Many of the difficulties in arrangement of the network and operation of especially protected territories are conditioned by absence of special environmental category of lands in the land legislation. The Natural-reservation department must be given a special status with obligatory budget funding for project-research works and maintenance of protection. The principle of agricultural land use priority or extraction of ore raw material above environmental use negatively affects both the state of reservations protection and maintenance of protection of endangered species.

In conditions of sharp crisis there is a need in development of new types of regimes of protection and territory use, protection of habitats of endangered species and their reproduction. There is a need in radical reform of the system, adapted to urgent demands of the population.

EXISTING ENVIRONMENTAL LEGISLATION, ITS APPLICATION AND ROLE OF GOVERNMENTAL FRAMEWORKS IN ENVIRONMENTAL PROTECTION OF THE KYRGYZ REPUBLIC

Basic principles of environmental protection are found in the following environmental legislation:

The Constitution of the Kyrgyz Republic identifies the rights of citizens for environment, favourable for life and health, and for compensation of threats incurred to health or property by activities in the field of natural use. Obligations of the citizens on careful attitude to environment, natural resources and historical monuments are defined in Article 25, item 2.

Article 11 of the law on "Environmental Protection" defines economic mechanisms of environmental protection, establishment of payment standards for the use of natural resources, wastes, air pollution substances, physical and other harmful affects, distribution of wastes in environment.

Possession and use of natural resources

Provision of natural resources for possession, use and lending (conclusion of agreements, issuance and registration of authorizations) falls under the competence of local Councils.

In line with the law of the Kyrgyz Republic on "Environmental Protection", a charged principle of use of natural resources has been established. Charges for the use of natural resources are also stipulated by Articles of the "land Code", "Forest Code", "Law on Water", "Law on Depths". Normative and order of charges for the use of natural resources are certified by regulation of the Government.

Management of natural resources in the Republics is implemented by several agencies. The Ministry of Geology and Mineral Resources issues certificates for the right to use land depths, and controls elaboration of depths.

Management of especially protected areas is implemented by four bodies:

- The Ministry of Environment is in charge of reservations: Sary-Chelek biosphere, Issyk-Kul, Besh-Aral, Naryn, Karatal-Japyryk, Sarychat-Ertash;

- The President Administration is in charge of one National Park "Ala-Archa";
- State Forest Agency is in charge of natural parks: South-Kyrgyz, Kara-Shoro, Karakol, Besh-Tash, Kyrgyz-Ata, Chon-Kemin, forest and botanic reserves;
- The Chief Department of Hunting, Farming and Hunting Monitoring, is in charge of hunting reserves and natural monuments.

Control and monitoring of the state of the environmental protection.

Implemented by local councils, special governmental bodies on environmental protection in line with provision on state control. A constituent part of the state control is in monitoring of the environment

Order, outputs and objectives of ecological expertise are defined in Articles 22-24 of the law. The Ministry of Environment and its local bodies and local Councils are in charge of general control of the state environmental protection. However, the direct state of particular resources and natural components is controlled and monitored by other agencies.

Atmospheric air

Protection of atmosphere from pollution, organization of control and monitoring are regulated by Articles of the law on "Environmental Protection".

Control for works of gas cleaning and dust catching facilities is realized by state inspection.

Protection and use of depths

Special bodies of management of the Depths Department of the Ministry of Geology and Mineral Resources of the Kyrgyz Republic are in charge of control for the state and use of depths, including underground thermal waters is completely in charge. However, exploratory works and establishment of organizations on elaboration of depths and thermal sources are implemented only after ecological expertise by the Ministry of Environment.

Protection of Water resources.

Water resources are controlled by special authorized bodies in the field of water related matters at the Ministry of Agriculture and Water Economy. Monitoring of surface water pollution is undertaken by State Agency of Meteorology, using normatives of Admissible Limited Concentration (ALC). Ecological standards in water supply are also used by sanitary services of the Ministry of Health of the Kyrgyz Republic.

Protection of land resources and soil cover

Protection of land resources and soil cover is implemented by the Ministry of Agriculture and Water Economy and by Land Organization and Use Agency under the Government of the Kyrgyz Republic. The order and standards of land use and protection of land resources are regulated by Land Code.

The state agency of meteorology is in charge of control for soil cover and agricultural lands contamination by dangerous chemicals.

Protection of Forests

The state forest agency, and its regional departments, is in charge of protection of forest resources in line with Forest Code.

Protection of flora and fauna

The Ministry of Environmental Protection, and its regional departments, is in charge of the general control of the state of flora and fauna protection. This is in line with the law on "Environmental Protection" of the Kyrgyz Republic, approved by the regulation of the Government dated 1994.

Protection of biodiversity and natural territories

The Ministry of Environmental Protection, and its regional departments, is in charge of control of endangered and threatened species of plants and animals, monitoring of condition of environment on reservation areas in accordance with the law on "Environmental Protection". Protection of endangered and threatened species is realized by rangers of hunting farms, forest protection of forestries and security of reservations, parks and reserves.

Threats compensation assessment

For the infringement of the legislation on environmental protection the citizens can institute disciplinary, administrative, civil and criminal proceedings.

Environmental legislation of the Kyrgyz Republic, at the present time, is being actively reformed and adjusted to fit within the new economic order.

COMPENSATION MECHANISM FOR RESTRICTIONS ON THE USE OF LAND SITUATED IN SPECIALLY PROTECTED NATURE TERRITORIES IN LATVIA

Presented by:
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According to Article 13 of the Law on Specially Protected Nature Territories of Latvia¹ the Parliament, Cabinet of Ministers or Municipality shall establish specially protected nature territories (e.g. nature reserves, national parks, biosphere reserves, etc.). The goal of such establishment is "to protect and preserve natural diversity".²

Some of the territories have been established before Soviet occupation; the biggest part was during this period, and only two after the regaining of independence from the Soviet Union.

There have been problems with legal sources for the protection of these territories as most of the legislation was adopted in the Soviet time and until January 1, 2000 it should be changed by new Acts. A big amount of the work has been done, but the real problem arises from some of the statutes adopted in the 1990s.

In the following passages I will describe a real case that has not been solved so far, and comment it by giving description of legal provisions for the situation in question.

There is a biosphere reserve, which was established in 1997. The law regulating this territory provides that ownership and land use rights obtained before the establishment of this territory remain the same, however, ownership restrictions may be set up.

An application from a landowner (let us call her Mrs Apple), having a real property in this recently established biosphere reserve, has been received. Mrs Apple is an owner of a real estate of 128 hectares, 102 hectares of which is forests. The whole property is situated in a restricted area, with significant restrictions for economical activities. As Mrs Apple wants to make profit from the forest, she asks the Ministry of Environmental Protection and Regional Development for compensation for the restrictions. The desired compensation would be an exchange of the property to an equivalent one.

The above mentioned Law on Specially Protected Nature Territories of Latvia provides that the legal owner of land in a specially protected territory can be the state, municipality, as well as natural persons and legal entities.³ Activities that are limited or prohibited in these territories are described by Regulations of the Cabinet of Ministers on General Provisions for the Protection and Use of Specially Protected Nature Territories⁴.

The Law provides that landowners can claim for compensation or tax reduction for detriment of economic activities from imposing the requirements of the Regulations.⁵

In order to receive the compensation the landowner or land user presents a detriment count to the municipality. In two months the municipality examines the appli-

1 Adopted by Saeima (Parliament of the Republic of Latvia) on March 2, 1993, in force since April 7, 1993

2 Article 2, Law on Specially Protected Nature Territories

3 Ibid, Article 33

4 Adopted by the Cabinet of Ministers on October 21, 1997, in force since October 25, 1997

5 Article 29, Law on Specially Protected Nature Territories

cation, taking in consideration an expert's opinion and together with the applicant and an authorized official of the Ministry of Environmental Protection and Regional Development, agree on the amount, form and financial source of the compensation.

If an agreement cannot be reached, the landowner or land user has the right to apply to the court.

The legal problem of the mechanism is that there are no legal provisions for the procedure of compensation. Thus there is no regulation on how the amount of the compensation should be calculated, what the forms of possible compensation (money, exchange of property etc.) are, and where the finances should come from. From one point the situation might be called as very flexible as there are no real legal restrictions for the procedure. On the other hand, lack of legal prescriptions causes uncertainty: who will give the money, where an equivalent property can be found, what are the other possible ways of compensation.

The situation with Mrs Apple is also complicated, because there is another law establishing compensation also for protected forests. Article 18 of the Law on Management and Use of Forest provides that an owner of a forest has rights to be compensated if change of regime in the forest causes damages to the management and use of that forest.

The management authority of that biosphere reserve does not object that Mrs Apple changes the woodlands, but the border of the territory not covered by forests stays the same. As there are no objections from the Ministry of Environmental Protection and Regional Development (supervisor of that Management Authority) Mrs Apple is asked to apply to the State Forestry Service, as it is the managing authority of all state forests in the country. The main argument is that there is no need for Mrs Apple to change the whole property, as economical activities can be carried out in that part of the property not covered by forests. Mrs Apple agrees on the decision of the Ministry and appeals to the State Forestry Service. The State Forestry Service answers that

forest can be exchanged to an equivalent territory, however, this procedure will call for other activities: survey of the forest, registration in the land register and preparation of normative acts for exchange to be legal. The state forestry service refuses to carry out these activities due to lack of money. The last but not least argument of the Service, is that the exchange of specially protected forests for state owned forests causes tremendous losses to the State Forestry Service.

If there was legal procedure of the compensation prescribed - the responsible authority, the mechanism of financing etc. - the problem might exist as there is always lack of finances, but it would not be caused by legislation being partially silent about this issue.

The conflict in the case with the property of Mrs Apple is also a consequence of imprudence of the drafters of the legal text. The base for the rights to be compensated exists, but the legislation is silent about the procedure and financial cover of these rights.

Allegedly Mrs Apple will have to appeal to the court because bureaucracy, even excused by defective legislation, does not release the state from the obligation to arrange this issue.

There have been some similar situations within the same biosphere reserve, where other landowners have been compensated. Unfortunately every such situation shows the complexity of the problem. There is no prescription as to which State agency is responsible for the whole situation. Nature protection is one of the tasks of the Ministry of Environmental Protection and Regional Development, while the State Forestry Service is the managing authority of forests. Every problem like this incurs extra expenses for any or both of the State institutions.

The problem is also that private interests, at the moment of establishing a new protected area, have to be considered and compared with the value of protected nature territories. If there is a decision to create a new protected territory, it should always be based on thorough calculations of possible consequences.

THE OHRID LAKE PROTECTION

Presented by:

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1. INTRODUCTION

The Republic of Macedonia is placed at the central part of the Balkan Peninsula. It is a country without exit to any sea, covering an area of 25.713 km². About 80% of the total territory are mountain areas. About 2% of the territory of the country is covered with water, with 35 bigger or smaller rivers, 3 natural lakes and more than 100 artificial lakes. There are about 2 million inhabitants.

The Republic of Macedonia, as well as the other countries in transition from Central and Eastern Europe, started the reform process towards a market economy. The Republic of Macedonia, as a part of its economic development programme, creates environmental policy and determines the priority activities for environment and people's health protection, as well as sustainable use of national wealth. Among those priority activities is the one that refers to the better water quality and total protection of the natural lakes, in particular the protection of the Ohrid lake.

Covering the area of 357 km², the Ohrid lake is one of the oldest lakes in the World. It is estimated that this lake is older than 2 million years. As a natural resource is full of unique flora and fauna and is one of the biggest biological reservoirs in Europe and in the World.

UNESCO, as a specialized agency in the UN organization, has declared the Ohrid lake as a world cultural and natural heritage, in 1980.

2. IDENTIFICATION OF THE PROBLEM AND STARTING THE ACTIVITIES FOR THE PROTECTION

The ecological stability of the Ohrid lake is endangered nowadays, because of the incompatible management of the environment on the both sides – Macedonian and Albania. About 100.000 people are living in the lake area, but because of the coming tourists during the summer time, this number increases by about 50%. About

25% of the waste waters that are going into the lake are presently treated. However that is not sufficient, because the lake has also been polluted by the surrounding agricultural areas, where agrotechnical means with toxicity exceeding the maximum limited concentration, are used. Because of the exceptional worth of the Ohrid region as well as because of the threat of dangerous misbalance of its eco-stability, the initial talks with the World Bank were started in 1994. The World Bank has shown great interest for realization of the project for protection of the lake. The same year, the Republic of Macedonia and the Republic of Albania have signed a protocol for joint access and adjustment of joint activities in this sphere. That trend of activities continued in the following 1995 year. The World Bank in cooperation with the Swiss Government determined a consultant company for preparation of a feasibility study for the project concerning the lake protection and financially supported it. For that purpose, a Swiss expert mission in cooperation with the Macedonian and Albanian expert teams, determined the goals and protective measures for preservation of the eco-stability of the Ohrid lake, that same year.

The study supposes 4 phases, in which 75 protective measures are included, which should be realized step by step, both from the Macedonian and from the Albanian side, involving national and foreign experts for that purpose. The first two phases refer to establishing and enforcing the institutional, frame of the project, then establishing the joint monitoring of the lake, increasing the public awareness to a higher level regarding the project goals, undertaking some priority activities for collecting the solid waste, and managing the fishing. Taking into account, that the strategy for protection of the Ohrid lake must be based on the principles for cooperation between the two governments and on the joint management of the lake and surrounding resources, the "Memorandum of Understanding" for the project for protection of the Ohrid lake was signed.

With this Memorandum both countries agreed to establish joint steering board on a parity basis – one high

official from the appropriate ministry, the major cities that are in the lake area, one ngo, coordinators of the expert teams on the both sides, and an external expert consultant for both countries without the right to make decisions) and the decisions are made on the basis of consensus. Both sides have agreed to establish an executive unit for project implementation; determination and adjustment of the legislative acts for protection of the lake, both referring to the prevention of the pollution and usage of the waters and managing the fishing in accordance to the international laws and standards. Besides, with this Memorandum, both sides have agreed to develop long term plan for decreasing the impacts that degrade the lake to act together or separately in front of the international financial institutions and other donor associations to establish monitoring services and own projects. The priority for undertaking certain activities for solving concrete problems, the realization of certain projects is determined by each country in consultation with the other country.

At the same time, the First Donors Conference for the Ohrid lake was held in Ohrid, coordinated by the governments of the two countries and with support from the so-called Committee for Preparation of Projects, which is part of the Action Ecological Programme for Central and Eastern Europe. Representatives from many European countries as well as from the specialized agencies and associations, like FBOR, EIB, EC, GEF, UNDP and the World Bank, were present at this Conference. A large number of Macedonian, Albanian and cross-border projects were presented at the meeting.

3. REALIZATION OF THE PROJECT

The project was approved for financing in May 1997 from the Council of GEF and in August 1998 the Macedonian side signed the Contract with the World Bank for a grant from the GEF.

The duration of the Project is determined to 3 years and in that period will be implemented step by step. Besides the approved funds, domestic investments are included in its realization. In accordance with the included activities, a Unit for Project Implementation was established in Ohrid but in the framework of the Minis-

try of Environment. The Contract for establishing a monitoring programme for the Ohrid lake, in the framework of the Agency in Ohrid, is in its final phase. The Regional Eco-Center in Budapest will be responsible for the participation of the public and raising public awareness, in cooperation with NGOs, so that the protection of the Ohrid lake is expected to become everyone's concern in the coming period.

As part of the bilateral Swiss assistance, a special boat-laboratory has arrived in Macedonia together with modern laboratory equipment. It will be used for examination of the water on the basis of modern scientific methodology, giving evidence of any possible pollution.

As part of the financial assistance from Germany, some of the funds are used for additional technical equipment of the Wastewater Treatment Plant, widening of the secondary wastewater net in the urban areas (first of all in Ohrid City), and the decrease of wastewater from the industry. As part of the institutional strengthening of the Public Water Supply Enterprises in Ohrid and Struga, one Public Enterprise was established and it will work on water supply and wastewater treatment and at the same time on several projects for protection of the Lake.

In the framework of the priority activities on the realization of the Ohrid Lake protection, efforts have been made for domestic financing of the projects, which will enable the final solution of the problems in this sphere. In that sense, part of the construction of the Wastewater Treatment Plant was financed to protect the sources that supply Ohrid city with drinking water. Certain activities to change the direction of the water flows, being the biggest polluters of the Ohrid Lake, are also included.

The Project for Protection of Lake Ohrid is the first bilateral project between the two countries (The Republic of Macedonia and the Republic of Albania) which - with joint efforts from both sides and with international support - will enable complete protection of the Ohrid Lake as a rare natural reservoir, which besides the Bajkal Lake in Asia and the Titikana Lake in South America is unique in its flora and fauna.

THE PROBLEM OF AIR POLLUTION IN POLAND

Presented by:
Mr. Myc Piotr
Ministry of Environmental Protection
Poland

In the 1980's, air pollution in Poland reached a critically high level, making my country one of the most polluted in Europe. The emissions of sulphur dioxide in Poland (4 million tons per year) constituted approximately 10% of the total emissions of sulphur dioxide in Europe. Even more strikingly, the emissions of dust in Poland (approximately 3 million tons per year) constituted 12.5% of the total in Europe.

A particularly serious situation existed in the large industrial areas of Poland, where the levels of emitted air pollutants were most concentrated. Without doubt, the worst situation was in the Katowice voivodship, where an area constituting 2.1% of the territory of Poland emitted as much as 20-25% of the national totals of sulphur dioxide (SO₂), dust, and nitrogen oxides (NO_x). Allowable concentrations of major atmospheric pollutants have been exceeded for many years in the Katowice voivodship. In addition to the atmospheric pollutants, allowable concentrations of aliphatic hydrocarbons, benzo-a-pyrenes and heavy metals, which are harmful to human health, have also been in excess. The mean concentrations of all of these substances exceeded the allowable concentrations 2-10 times, in the area of the Katowice voivodship where approximately 4 million people live. It is no surprise, that the constant emission of these harmful substances has posed a large threat to human health. The average life span of men and women in this area is one year shorter than in other parts of Poland, and the death rate for men, aged 30-59, exceeds the national average by 40%. In the Katowice voivodship, children are usually born underweight and the occurrence of birth defects is up to 60% more common. In the areas with the highest concentrations of pollution, cases of individuals with altered genetic codes have also been noted.

Near Upper Silesia, unusually high concentrations of main atmospheric pollutants were noted in the years 1988/1989 in Cracow, Walbrzych, and in such places as the copper basin region (Legnica, Lubin, Głogow), Plock (petrol refinery), Tarnobrzeg (coal mines, and sulphur

refineries), and also in the areas of all the major Polish cities.

A particularly severe situation of atmospheric pollution exists in the area known as the "black triangle". This "black triangle" is the point where the borders of Poland, Czech Republic, and Germany meet. This region was home to the largest basin of brown coal in Europe, where approximately 200 million tons were produced per year (25% of the total production in Europe). The coal was burned on the spot, in one of the 16 large power plants, producing enough energy to heat the homes in Saxony and northern Czech Republic. As a result, in this area, which is hardly 1/4 the territory of Holland, 3 million tons of SO₂, and approximately 1 million tons of NO_x were emitted each year. The emission of excessive amounts of pollutants into the atmosphere resulted in acid rain. The acid rain created an ecological disaster, practically destroying the mountain forests, and acidifying the soils in the Karkonosze and the Izerskie Mountains.

The sources of the severe ecological situation, in the industrialised regions of Poland, are related to the use of coal for electrical power and heat, in industry and in the municipal sector. The sources of air pollution are also, and perhaps most certainly related to the fundamental characteristics of the communist economy, such as:

- domination of extraction and heavy industry, which characterises itself as being the most harmful to the environment;
- building of gigantic industrial compounds, which usually house the greatest concentration of threats to the environment;
- low energy prices, which encourage wastefulness in industry as well as in the private sector;
- lack of reflection of the true costs of production with respect to the products, which keeps old, exploited factories in operation, these being particularly harmful to the environment.

Moreover, the former communist government, as the sole owner and caretaker of industrial plants, was not interested in providing rigorous laws which would force the use of environmentally safe technology. Instead, the government directed its funds and energies into technology which solely existed for production purposes.

The effect of this type of politics was a pollution of the atmosphere which depended on and related to the potential of production in Poland.

After the political changes in 1989, the most important and critical goals for the protection of the atmosphere were:

- an increase in energy prices so that there would be an initiative to economise;
- introduction of allowable limits of SO₂, NO_x, and dust emissions;
- eradication of old industrial plants, which were harmful to the environment, especially those in Upper Silesia and in other large industrialised areas of Poland;
- building of installations which would lower the amount of sulphur and dust in hard coal, as well as building of installations which would de-sulphurize fumes;
- liquidation of the so-called "slightly emitting sources" of atmospheric pollution (small boiler rooms and tile stoves) in the centres of the large Polish cities, as well as in health resort areas;
- lessening of emissions of gases which cause changes in the earth's climate (the so-called "greenhouse gases") by limiting the methane emitted from the coal mines and city landfills, as well as elimination of freon used as a cooling agent in industry.

All of these goals were included in "The Political Ecology of the Nation", which was approved by the government and parliament in 1992, becoming the basis for effective measurements, which will be taken to make up for the many years of environmental neglect in the shortest possible time.

The revolutionary changes which took place in 1989 signalled the beginning of a serious economic crisis for Poland. Upon the liquidation of the Council for Mutual Economic Aid, Poland lost its main export market. Suddenly, there was a decrease in the demand for heavy industry's products, thereby significantly diminishing the use of natural resources and energy in the country. In the years 1989-1991, Polish industrial production decreased by over 35%. It is no surprise, that along with the decrease in industrial production, a decrease in energy consumption was apparent (approximately 25%), as well as a decrease in the emission of the main atmospheric pollutants (about 25-33%). Since 1992, completely opposite trends in industrial production and polluting emissions have become evident. Production, again, began to increase, in the beginning just slightly (4% in

1992). Later, the increase in production was dynamic (10% a year in 1994 and 1995). This increase in production, however, occurred alongside stable energy consumption, which was approximately 27% lower than in 1989. In this time period the effectiveness of Polish energy consumption dramatically improved and costs of production decreased, due mainly to the inevitable pressure exerted on Polish production by their foreign competitors. Most of the old, ineffective factories in which much energy was wasted, were eliminated and many other factories were modernised and equipped with the newest energy saving technology, taking advantage also of the so-called "excess" energy. In recent years, a rapid increase in the number of energy saving initiatives have been observed in the municipal sector. These initiatives include the elimination of coal heated stoves and small ineffective boiler rooms, the thermo-insulation of buildings, and the introduction of thermostats and energy meters in centrally heated buildings. Due to these effective initiatives, Poland's economy is growing without an increase in energy consumption. However, there is much yet to be done. In future years, the success and further development of my country will depend on cost and quality effective energy consumption.

Saving energy is certainly the cheapest method of protecting our atmosphere, and limiting the amount of coal fuel used in industry and in the private sector greatly diminishes the emission of atmospheric pollutants. It is worth noting, that 90% of SO₂ and NO_x, as well as 70% of the emission of dust are the result of the burning of fuels for energy purposes in industry, and the municipal and transport sectors. Saving energy is also financially advantageous to investors. Regardless of all the improvements mentioned, Poland still is behind in atmospheric protection. Besides the above mentioned advantageous modifications, connected to the modernisation of industry, the building of new environmentally safe installations in certain factories and power plants, should be noted. Since 1994, increasing financial investment in installations for desulphurization of fuels, for reduction of dust emission, nitrogen oxides and other toxic substances, has been observed. More frequently, these installations represent the highest standards in the world. In Poland's two largest power plants, Belchatow and Turow, and in power plants located in Upper Silesia, Jaworzno, Rybnik, Lagiesza and Siersza, particularly noteworthy investments have been made to reduce SO₂ emissions. In 1995, investments in the area of air quality protection were 4 times as much as in 1992, reaching 1.7 billion zlotys. This amount constituted 54% of the total yearly investment in environmental protection in Poland. It is worthwhile to note, that in previous years, investments in air quality protection were much less significant, constituting only 35-40% of the total investment in environmental protection. Despite Poland's rapid economic growth, the above mentioned modernisation of industry, the employment of energy saving technology, and direct investment in air quality control,

contribute to a constant decrease in the emission of main atmospheric pollutants. As a result, the emission of SO₂ and dust in 1995 were approximately 40% and 50% respectively, lower than in 1989. These accomplishments are already indicative of the goals which were made for the year 2000, in terms of air pollution, in the "Political Ecology of the Nation." This is a great success in environmental protection for Poland, which is still in the process of transforming its economy.

An equal amount of success, in reducing emission of gases which change the climate of the earth, known as the "greenhouse gases", has also been noted. Even greater success has been noted in the area of eliminating freon gases from production processes, cosmetics, and cooling equipment. In 1994, the use of the two most harmful freon gases (R11 and R12) represented only 16.5% of the total emission of these gases in 1988. Further improvements were made in the following two years and it is safe to say that today the use of freon gases has been almost entirely eliminated in my country (according to the Convention on Ozone Protection, which Poland ratified). However, the problem of eliminating freon from old, ineffective cooling equipment when it is repaired or replaced, remains unsolved. Within the next two years, a system to recover freon from the above mentioned archaic equipment, will be organised on a national level.

There exists a sector, however, where in the last few years, a significant increase in emission of main atmospheric pollutants has occurred - the transport sector. After 1989, an unusually dynamic rise in the number of cars, especially personal automobiles, was observed. In the years 1989-1995 the amount of personal automobiles skyrocketed by approximately 70%, while the number of trucks increased by approximately 40%. It is no surprise, that with the rise in the number of cars, the amount of CO₂, NO_x, and even hydrocarbons must increase, if most of the cars are old, inexpensive and not equipped with environmentally safe technology. The only noteworthy success of the transport sector, in the recent past, was the introduction of unleaded gasoline. The emission of lead in the years 1990-1994 decreased by 67% and is constantly continuing to decrease. However, in the near future, an increase in NO_x, CO and black smoke emission from the transport sector can be expected, although the introduction of catalysers and fuel burning substances should level this trend.

In conclusion, Poland's entrance to the market economy in 1989, enabled many mechanisms which were beneficial to environmental protection and thus, also to atmospheric protection. Due to the many measurements taken to decrease air pollution in industry, it has decreased by 30-50% and is constantly on the decline. Industry continues to be less of a contributor to air pollution, while the transport sector seems to be contributing the most, this being particularly true in large cities and on major roadways.

ACCESS TO THE INFORMATION ON ENVIRONMENT

Presented by:
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Ministry of Environment
Slovak Republic

EXPLANATION OF THE PROBLEM

The 40 years of the communist regime in former Czechoslovakia have imprinted their traces in all areas of the society. One of the characteristics of this regime was general limitation of the access to the information, not only to environmental issues. After the collapse of the regime in 1989 the practices of the former structures survived, especially in the sphere of state authorities. On the other hand the demands of the public were not sufficiently developed. Next there were notable events, namely the splitting of Czechoslovakia and the founding of the Ministry of the Environment. Together they have prepared a suitable set of circumstances, aimed at solving these problems. For example action was taken to guarantee free access to information on the environment to support the public in its right of free access to the information on environment, and 'to force' the state and municipal bodies to release this kind of information. One of the planned outputs of this action was to increase the public awareness in its right to the information on its environment, and thereby deepen its involvement in solving of serious environmental problems. The other one was to achieve higher level of compliance with the relevant regulatory acts at international level.

THE STAKEHOLDERS

The stakeholders in this action are described as:

- Ministry of Environment (responsible for the preparation of the Act);
- Public (including the NGOs taking part in the preparation of the Act, and the general public benefiting from the Act);
- State Administration Bodies and Municipalities (obliged to provide information on the environment).

APPROACHES OF THE STAKEHOLDERS

The approaches of the stakeholders were converged to one aim: preparation, adoption and implementation of

the Act on access to the information on environment. This was the tool chosen for the solution of the situation in compliance with the Constitution of the Slovak Republic, which would guarantee the free access to information.

PLANNED ACTION AND ITS REALISATION

First, the preparation of the Act was realised first in close co-operation with representatives of the public - the ngos. The preparation of the act started in the year 1996. The result of the whole process is the Act No. 171/1998 on the Access to Information on Environment.

DESCRIPTION OF THE ACT

The Act No. 171/1998 on the Access to Information on Environment was adopted 14.5.1998, and is in force since 1.9.1998.

In the first part it sets the area of the regulation (Art. 1), gives definitions of the information on environment (Art. 2) and the access to the information on environment (Art. 3).

In Art. 4 the subjects obliged to provide the information on environment are defined. They are state administration bodies and municipalities as well as legal persons established by law, legal persons established by or under the body of state administration or municipality, which both fulfil tasks in the area of environmental protection, natural persons which hold the business licence and legal persons who fulfil tasks in the area of environmental protection on the base of agreement with the state administration body, and within the scope of this agreement (hereafter 'organisation').

According to Art. 5 everybody has the right to the environmental information without showing legal interest or reason. Art. 6 gives the reasons for rejecting of request or limiting information on the environment, Art. 7 deals with the protection of commercial secrets, and

Art. 8 deals with the protection of the third person's interests.

Art. 9 states the forms and other necessities of request for the environmental information, Art. 10 defines the forms of making information on environment accessible, and Art. 11 states the terms and conditions of making information on environment accessible. Art. 12 sets out the procedure when the information is not made accessible (Art. 6-8).

Art. 13 gives details on payment of expenses (the requesting person is obliged to pay only the costs needed for making the information accessible, not for obtaining information)

Art. 14 sets the obligation of natural persons who are holders of business licence or legal persons which are - according to special regulations and according to decisions taken on the basis of these regulations - obliged to measure the quantities of determined kinds of released substances (emissions) to the air or to the water and/or to monitor other influence of their installations on environment to publish the results of measurements and monitoring. This article contains also other provisions on the other forms of active dissemination of the environmental information.

The penalties for the breach of obligations set in this act are defined in Art. 15.

Art. 16 sets the obligation for the Ministry of the Environment to publish every year the Report on the State of Environment.

IMPLEMENTATION OF THE ACT

For the practical implementation the Ministry of the environment has taken following steps:

1. It has issued the Ministry order No. 273/1998 on Payment for Making the Information on Environment Accessible in compliance with the Art. 13 paragraph 7.

The Order details the calculation of the payment and the way of its paying.

2. It has issued the methodological guidelines to the Act No. 171/1998 on the Access to Information on Environment. These guidelines describes the international base as well as national documents on which the Act is built:

- EU Directive;
- Lugano Convention;
- The 1992 Rio Declaration;
- Constitution of the Slovak Republic;
- Other regulatory documents.

Further, the guidelines describe the basic principles of the Act. They also give the text of the Act with comments, the text of the implementing order with comments, and provide the register of possible providers of information on environment. Further, they provide examples of relevant requests, notifications and decisions as well as the translation into Slovak of basic documents or their parts.

3. The Ministry of Environment has established this year the Department for Contact with Public. The people within this department are dealing with the demand of the members of public for the information on environment. The Department also manages the web site – <http://www.lifeenv.gov.sk>. This is where information on the Ministry and various fields of its activities are available.

4. The Ministry of the Environment publishes every year the Report on the Status of the Environment in the Slovak Republic. The publication is free of charge and it provides various data ordered in following areas:

- Complex monitoring and information system;
- Environmental media and their protection;
- Nature and landscape conservation;
- Environmental regionalisation and threatened areas;
- Reasons and consequences of the environment status;
- Risk factors;
- Others (economics, law, EIA, eco-labeling, EMS, education);
- International co-operation.

5. In the beginning of this year the Environmental Law Department has managed to send the questionnaire to 100 subjects, and aimed at the implementation of the Act No. 171/1998 on the Access to Information on Environment in practice during the period November 1998 - March 1999. The results of the questionnaire are referred below:

	District offices	Regional offices	Ministry of Environment	Slovak Environmental Agency
Number of cases	503	20	661	366
Prolongation of the deadline	1	0	0	0
Rejections of the request	6	0	0	2
Decision on the rejection	0	0	0	0
Judicial review	0	0	0	0

GABCIKOVO-NAGYMAROS PROJECT CASE

Presented by:
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Department of Foreign Assistance
Slovak Republic

The present case arose out of the signature by Hungary and Czechoslovakia of a treaty "concerning the construction and operation of the Gabčíkovo-Nagymaros System of Locks", which entered into force on 30 June 1978.

It provides for the construction and operation of a system of locks by the parties as a "joint investment". According to its preamble, the barrage system was designed to attain the broad utilization of the natural resources of the Bratislava-Budapest section of the Danube river, for the development of water resources, energy, transport, agriculture and other sectors of the national economy of the contracting parties. The joint investment was thus essentially aimed at the production of hydro-electricity, the improvement of navigation on the relevant section of the Danube and the protection of the areas along the banks against flooding. At the same time, by the terms of the treaty, the contracting parties undertook to ensure that the quality of water in the Danube was not impaired as a result of the project, and that compliance with the obligations for the protection of nature arising in connection with the construction and operation of the system of locks would be observed.

The Danube is the second longest river in Europe, flowing along or across the borders of nine countries in its 2860 kilometre course from the Black Forest, eastwards to the Black Sea. For 142 kilometres, it forms the boundary between Slovakia and Hungary. The sector with which this case is concerned is a stretch of approximately 200 kilometres, between Bratislava in Slovakia and Budapest in Hungary. Below Bratislava the river gradient decreases markedly, creating an alluvial plain of gravel and sand sediment. This plain is delimited to the north-east, in Slovak territory, by the Maly (Little) Danube and to south-west, in Hungarian territory, by the Mosoni Danube. The boundary between the two countries is constituted, in the major part of that region, by the main channel of the river. The area lying between the Maly Danube and that channel, in Slovak territory, constitutes the Zitny' Ostrov (Zitny Island); the area between

the main channel and the Mosoni Danube in Hungarian territory, constitutes the Sigetköz. Cunoovo on the right bank and further downstream, Gabčíkovo on the left, are situated in this sector of the river on Slovak territory. Further downstream after the confluence of the various branches, the river enters Hungarian territory and the topography becomes hillier. Nagymaros lies in a narrow valley at a bend in the Danube just before it turns south, enclosing the large river island of Szentendre before reaching Budapest.

According to the relevant articles of the 1977 Treaty the project comprised from following constructions: a reservoir upstream of Dunakiliti, in Hungarian and Slovak territory; a dam at Dunakiliti, in Hungarian territory; a by-pass canal, in Slovak territory, on which was to be constructed the Gabčíkovo system of locks (installed capacity: 720 Mw); the deepening of the bed of the Danube downstream of the place at which the by-pass canal was to rejoin the old bed of the river; a re-enforcement of flood-control works along the Danube upstream of Nagymaros, the Nagymaros system of locks, in Hungarian territory (installed capacity: 158 Mw); and the deepening of the bed of the Danube downstream. The two series of locks, at Gabčíkovo and at Nagymaros had to constitute "a single and indivisible operational system of works".

Thus, the project was to have taken the form of an integrated joint project with the two contracting parties on an equal footing in respect of the financing, construction and operation of the works. Its single and indivisible nature was to have been realized through the Joint Contractual Plan which complemented the treaty. In particular, Hungary would have had control of the sluices at Dunakiliti and the works at Nagymaros, whereas Slovakia would have had control of the works at Gabčíkovo.

Works on the project started in 1978. On Hungary's initiative, the two parties first agreed, by two Protocols signed on 10 October 1983, to slow down the work and postpone putting into operation the power plants, and

then by a protocol signed on 6 February 1989, to accelerate the project.

As a result of intense criticism which the project had generated in Hungary, the Hungarian Government decided on 13 May 1989 to suspend the works at Nagymaros pending the completion of various studies which the competent authorities were to finish before 31 July 1989. On 21 July 1989, the Hungarian Government extended the suspension of the works at Nagymaros until 31 October 1989 and in addition, suspended the works at Dunakiliti until the same date. Lastly, on 27 October 1989, Hungary decided to abandon the works at Nagymaros and to maintain the status quo at Dunakiliti.

During this period, negotiations were being held between the Parties. Czechoslovakia also started investigating alternative solutions. One of them, subsequently known as "Variant C", entailed a unilateral diversion of the Danube by Czechoslovakia on its territory some 10 km upstream of Dunakiliti. In its final stage, variant C included the construction at Cunovo of an overflow dam and a levee linking of the dam to the south bank of the bypass canal. The corresponding reservoir was to have a smaller surface area and provide approximately 30% less storage than the reservoir initially contemplated. Provision was made for auxiliary work, namely: an intake structure to supply the Mosoni Danube; a weir to enable flood water to be directed along the old bed of the Danube; an auxiliary shiplock; and two hydroelectric power plants. The supply of water to the side arms of the Danube on the Czechoslovak bank was to be secured by means of two intake structures in the bypass canal at Dobrohost and Gabčíkovo. A solution was to be found for the Hungarian bank. Moreover, the question of the deepening of the bed of the Danube at the confluence of the bypass canal and the old bed of the river remained outstanding.

On 23 July 1991, the Slovak Government decided to begin construction in September 1991 "to put the Gabčíkovo Project into operation by the provisional solution". That decision was endorsed by the Federal Czechoslovak Government on 25 July 1991.

Discussions continued between the two parties but to no avail, and, on 19 May 1992, the Hungarian Government transmitted to the Czechoslovak Government a Note Verbale terminating the 1977 Treaty with effect from 25 May 1992. On 15 October 1992, Czechoslovakia began work to enable the Danube to be closed and, starting on 23 October, proceeded to the damming of river.

On 23 October 1992, the International Court of Justice was seized on the "Application of the Republic of Hungary v the Czech and Slovak Federal Republic on the Diversion of the Danube River". In the meantime, the Commission of the European Communities had offered

to mediate and, during a meeting of the two parties with the Commission, held in London on 28 October 1992, the parties entered into a series of interim undertakings. They principally agreed that the dispute would be submitted to the International Court of Justice, that a tripartite fact-finding mission should report on Variant C not later than 31 October, and that a tripartite group of independent experts should submit suggestions as to emergency measures to be taken.

On 1 January 1993 Slovakia became an independent State. On 7 April 1993, the "Special Agreement for Submission to the International Court of Justice of the Differences between the Republic of Hungary and the Slovak Republic concerning the Gabčíkovo-Nagymaros Project" was signed in Brussels.

The parties have according the Article 2 of the aforementioned Special Agreement requested the Court "to decide on the basis of the Treaty and rules and principles of general international law, as well as such other treaties as the court may find applicable:

1. a) Whether the Republic of Hungary was entitled to suspend and subsequently abandon the works on the Nagymaros Project and on the part of the Gabčíkovo Project for which the Treaty attributed responsibility to the Republic of Hungary in 1989;
 - b) Whether the Czech and Slovak Federal Republic was entitled to proceed, in November 1991, to the "provisional solution" and to put into operation this system (damming up of the Danube at river kilometre 1851,7 on Czechoslovak territory and resulting consequences on water and navigational course) from October 1992 ;
 - c) What are the legal effects of the notification, on 19 May 1992, of the termination of the Treaty by the Republic of Hungary;
2. The Court was also requested to determine the legal consequences, including the rights and obligations for the parties, arising from its judgement on the previous questions.

The International Court of Justice held a first round of ten public hearings from 3 to 7 March and from 24 to 27 March 1997, and a second round of four public hearings on 10, 11, 14 and 15 April 1997, after having made the visit of the area from 1 to 4 April 1997. On the 25 September 1997 the International Court of Justice made the following findings.

- a) Hungary was not entitled to suspend and subsequently abandon, in 1989, the works on the part of Gabčíkovo Project for which the Treaty of 16 September 1977 and related instruments attributed responsibility to it;

- b) Czechoslovakia was entitled to proceed, in November 1991, to the "provisional solution" as described in the terms of the Special Agreement;
- c) Czechoslovakia was not entitled to put into operation this "provisional solution" from October 1992;
- d) The notification of the termination of the Treaty of 16 September 1977 and related instruments by Hungary in May 1992 did not have the legal effect of terminating them;
- c) Unless the Parties otherwise agree, a joint operational regime must be established in accordance with the Treaty of 16 September 1977;
- d) Unless the Parties otherwise agree, Hungary shall compensate Slovakia for the damage sustained by Czechoslovakia and Slovakia on account of the suspension and abandonment by Hungary of works for which it was responsible; and Slovakia shall compensate Hungary for the damage it has sustained on account of the putting into operation of the "provisional solution" by Czechoslovakia and its maintenance in service by Slovakia.

And made following determinations of legal consequences arising from the decision:

- a) Slovakia, as successor to Czechoslovakia, became a party to the Treaty of 16 September 1977 as from 1 January 1993.
- b) Hungary and Slovakia must negotiate in good faith in the light of the prevailing situation, and must take all necessary measures to ensure the achievement of the objectives of the Treaty of 16 September 1977, in accordance with such modalities as they may agree upon;
- e) The settlement of accounts for the construction and operation of the works must be effected in accordance with the relevant provisions of the Treaty of 16 September 1977 and related instruments, taking due account of such measures as will have been taken by the parties in application of points B and C as mentioned before.

D. LATIN AMERICA AND THE CARRIBBEAN

MC KINNON'S POND IN NORTHEAST COAST OF ANTIGUA

Presented by:
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Ministry of Justice and Legal Affairs
Antigua and Barbuda

The Mc Kinnon's Pond is a 45 hectare hypersaline salt pond located on the north eastern coast of the island of Antigua.

Once an important wetland teeming with red and black mangroves and various species of crabs, fish and shrimp, this pond is now in a very serious condition.

The attempts to develop the area where the pond is located caused the developers to neglect and/or ignore the well-being of the Mc Kinnon's Pond.

After years of neglect and abuse by the public, there is now an offensive odour emanating from this once vital wetland that threatens the very existence of the hotels and guesthouses that abound in the immediate vicinity.

A recent study commissioned by the Government of Antigua and Barbuda suggests that this pond is doomed for extinction if remedial measures are not implemented immediately.

HISTORY

Research has confirmed that prior to 1950, Mc Kinnon's Pond was an ecological wonderland. Locals reminisce on the abundance of red, black and white mangroves in and around the periphery of the pond. The Mc Kinnon's Pond was a haven for nesting egrets, ducks, such as the Blue-winged Teal, whistling duck and wading birds. It was also stocked with a variety of flora and fauna including shrimps and various species of crabs and fish.

In the early 1950's, the Government commenced an intensive investment programme in the Tourism Industry. Several hotels were constructed along the panoramic Northeast coastline.

In 1968, an embankment was built across the Mc Kinnon's Pond area to facilitate the linkage of the two feeder roads that served the Dickenson Bay and Runaway Bay

areas. This embankment blocked seawater access to the pond and the Pond's seawater access was thus limited to occasional over-washes during storm events. As a result of this piece of engineering, the Mc Kinnon's Pond hydrological cycle was severely disrupted. The Pond was thus only able to receive water from the intermittent stream at its southeast corner and from the few intermittent gullies that drained the nearby areas during heavier rains. The natural outflow of the Mc Kinnon's Pond was blocked since the road blocked its western perimeter and there were no culverts placed at the average water level. This piece of development robbed the Mc Kinnon's Pond of a vital water exchange. As the years progressed, it became evident that the civil engineering resulting in the constructing of the embankment was unsuccessful. The Pond became stagnant and began to deteriorate. The situation of the Mc Kinnon's Pond was considerably worsened by land-side pollutants such as oily wastes and the inflow of sewage escaping from improperly managed sewage treatment facilities at neighbouring hotels.

Mc Kinnon's Pond continues to deteriorate and by 1987, the stench emanating from the pond caused such a nuisance that the Government was forced to seek viable solutions to the evidently worsening problem. To alleviate this problem, the Government proposed a plan to help develop the Mc Kinnon's Pond into a marine facility, with a channel leading to the sea. This plan never proceeded past the first phase which was completed in 1987. That first phase had entailed the filling of an embankment and the laying down of the link road over temporary metal culverts.

The changes in the Pond's hydrology were compounded by increased inputs of sewage, occasional oil spills from the nearby refinery and waste oil outputs from a nearby power plant. The Mc Kinnon's Pond eventually became a retention pond for waste with almost no flushing. There were several fish kills in the Pond in 1989 and 1990. Water levels continued to decrease. There were occa-

sional red blooms of algae or dinoflagellates. The odours emanating from the Mc Kinnon's Pond continued to be a problem.

One solution employed was to pump seawater into the Pond in an effort to combat the high rate of evaporation in the Pond. This practice still continues today. The organism utilising the Pond were now limited to mostly brine shrimp and brine fly larvae.

The survey conducted in July 1998 found that the Mc Kinnon's Pond had very low water levels. The investigators also found that the bottom of the Pond was coated in an algal mat, clusters of red and some kind of organic detritus and oil in some places.

Recently, a dyke has been constructed for about 500m along the mouth of the intermittent stream. The mouth of the stream at the southeast corner of the Mc Kinnon's pond is now very littered by car wrecks and other sorts of waste.

In recent years, the prevalence of drought, the reduction of soil percolation and water retention and the increased demand for water and the efficient use thereof has led to a reduced flow into the stream that feeds the Pond. The flora and fauna once abundant in the Pond have all but disappeared. Mangroves are sporadic and those that exist are confined to the edge of the Pond.

FACTORS CONTRIBUTING TO MC KINNON'S POND DEGRADATION

- (1) The odours emanating from the Pond have become so unbearable an offence to guests at nearby hotels and guesthouses, that the owners of those hotels installed a pump to transfer water from the sea into the Pond. During the drier months between May to September, this has aided in reducing the overpowering stench from the Mc Kinnon's Pond.
- (2) When the occasional sea access to the Pond near Corbison Point was blocked in 1968, this severely reduced the frequency of sea water access to the Pond. This act has led to reduced tidal influence, reduced flushing rates, increased evaporation, stress and increased imperatives and salinity in the Pond. As a result, there has been a marked reduction in marine and brackish water species in the Pond.
- (3) The construction of the pipeline across the Mc Kinnon's Pond in 1996 and the building of the embankment blocking the seawater access to the Pond have encroached on the area of the Pond would

severely undermine efforts to rehabilitate the area.

- (4) The increase in the number of hotels and residential development in the area has caused the surrounding tree and bush cover in the Pond's vicinity to be significantly reduced. This reduction in the greenbelt around the Mc Kinnon's Pond has contributed to the sedimentation problem in the Pond.
- (5) The use of the area around the pond as illegal dumping grounds by locals has affected the aesthetic value of the Mc Kinnon's Pond as a part of the country's tourism product.

VIABLE OPTIONS

There are three options to solving the crisis that presently exists at the Mc Kinnon's Pond

- (a) filling in the pond to facilitate hotel development;
- (b) development of a Marina;
- (c) restoration of the Pond.

The consultants who undertook the recent assessment of the Mc Kinnon's Pond clearly favour the rehabilitation of the Pond to its previous state as a wetland. It is felt that at present the Mc Kinnon's Pond acts as a natural buffer to trap sediments that flow from the mountains during heavy rains and hurricanes. The Pond prevents those sediments from entering the sea where such sediments would inevitably damage the near-shore habitats such as coral reefs and sea-grass beds.

The recommendations of the survey team are yet to be implemented by the Government. To successfully rehabilitate the Mc Kinnon's Pond would necessitate the cooperation of all landowners in the area. The Government and landowners must be prepared to make a financial investment to revitalise this area.

It is to be hoped that the environmental benefits to be derived from the Pond's rehabilitation would encourage the relevant bodies to implement the consultants' recommendations, that would enable the Mc Kinnon's Pond to be a productive mangrove ecosystem once again.

ISSUES THAT SHOULD BE OR ARE LIKELY TO BE ADDRESSED IN THE FIELD OF ENVIRONMENTAL LAW

- (1) Rising sea/ocean levels;
- (2) Overfishing;
- (3) Offshore sand mining;
- (4) Long term climate/temperature changes.

FOREST RESOURCES IN BRAZIL

Presented by:

Ms. Maria Dolores Penna de Almeida Cunha

Division of Environment

Ministry of External Relations

Brazil

INTRODUCTION

One of the most serious challenges Brazil faces today is certainly the use of forest resources including biodiversity. This challenge is particularly acute in the Amazon area, where social, economic and geographical factors make it more difficult to put sustainability into practice. The obstacles derived from those factors give an incentive to predatory patterns that advance deforestation, in spite of efforts deployed by the government to control it.

Most of the difficulties encountered by those committed to reducing deforestation stem from the fact that the exploitation of forest resources, of which wood is the most important, is the main economic activity in that region of Brazil: timber industry alone provides jobs for a very significant part of the local population (only Government investment creates more work opportunities than the said industry) and also represents a very important source of tax income for local authorities.

This does not mean, however, that timber industry is contributing to raise the standards of living prevailing in the region or assuring significant revenues for the local population. Much to the contrary, this industry has developed thanks to the possibility of adopting very low cost, predatory patterns of production. Investments are attracted by the enormous occurrence of wood supplies of relatively easy access combined with the existence of a significant unqualified, low-income labour force. It is easy to hire workers who will accept to work for 6 to 8 months, receiving as little as US\$ 2.50 per abatted tree. Such lumberers will cut as many trees as they possibly can, in order to increase their own revenue. This practice results in huge waste of wood (60% to 70% of the cut trees are wasted). This is the general pattern of illegal extraction of wood which, nonetheless, is the only source of income for a great number of people living in the Amazon area.

The challenge posed by this situation to the Brazilian Government and civil society is: how to make managed, sustainable production more attractive and competitive than the above described pattern? How to make it more compensating to preserve the forest than to put it down? In other words, how to discipline forest related economic activities in the region so as to promote sustainable development and improve standards of living?

In order to provide answers for these questions, there is a number of issues that must be considered, both at national and international levels, as pointed out below.

ISSUES TO BE ADDRESSED AT NATIONAL LEVEL

Management of Forests

The "National Policy on Forests" will be launched by April 2000, with a view to meet the following objectives: (1) promotion of sustainable development in forest areas; (2) protection of biodiversity in forest ecosystems; (3) institutional development of governmental agencies and civil society institutions involved with the issue of sustainable development in forest areas; (4) last but not least, development of mechanism of early warning and control of deforestation and forest fires. In short, the NPF seeks to respond to the need to define a model of sustainable management for Brazilian tropical forests, in particular for the Amazon.

Assessment of Forest Resources, Mapping of Forest areas and Dissemination of Related Information

The structuring of a comprehensive geo-referenced data-bank about the different ecosystems existing in the country is being completed by the government. The objective here is to provide local producers, land owners and rural communities with useful, accessible informa-

tion, so as to support their efforts to reconcile environmental protection with economic development. Within this context, a national inventory of forest resources will be the next step.

Agriculture

Agricultural patterns prevailing in the Amazon region are intimately related to the pattern of exploitation of forest resources, in particular of wood. As a general rule, unsustainable patterns of agriculture, based on extensive use of land as a means to assure profitability, have resulted in deforestation and degradation of vast areas of land. There is a need to design new agricultural policies that will promote environmental friendly agricultural practices, including efforts to restore degraded areas.

Investments

In the last ten years, foreign investment in the region has grown significantly. There was also investment from national companies. These investments, however, have not contributed to reverse the pattern of environmental degradation.

Within the framework to be provided by NPF, it will be possible to address the urgent need for the adoption and implementation of basic standards of production, which will imply :

- (a) regulation of access to land property and, consequently, to wood supplies;
- (b) development of a Programme on Quality and Productivity for wood and timber industry;
- (c) adoption of a Basic Process of Production for the whole industrial sector (forestry, as well as wood and timber).

ISSUES TO BE ADDRESSED AT INTERNATIONAL LEVEL

Methodologies for Valuation and Pricing of Forest Products and Services

This is a crucial issue, since proper evaluation and compensation of market prices are essential to assure the feasibility of managed production. In fact, the low international market prices combined with deteriorating terms of exchange tend to encourage predatory exploitation of wood and other forest resources, as discussed above.

Criteria and Indicators for Sustainable Forest Management

Reliable indicators are essential for planning and policy making, as well as for accurate evaluation of results and assessment of future needs.

Trade of Forest Products and Services

Trade barriers also constitute a major hindrance to proper management of forests. They tend to foster all kinds of illegal activities, including smuggling and bio-piracy. Therefore, market access for forest products and all related issues need to be understood and addressed as a component of sustainable forest management.

CONCLUSION

Brazil is engaged in a major effort to reverse predatory exploitation of her forests which has led to deforestation and loss of biodiversity. Historically speaking, unsustainable patterns of forest use can be traced to the extensive occupation of the territory, which was part of the colonial heritage. The survival of forests is clearly connected with the position occupied by the country in the international market, as exporter of commodities and raw materials. Despite the fact, that the process of industrialization started in the 1930's, agriculture, cattle-breeding, mining fishing and exploitation of biological resources (notably wood, rubber and nuts) still remain very important economic activities for both the country and the populations involved.

Since the 1970's, however, there has been a growing awareness among Brazilians about the potential of their natural capital for the social and economic development of the country, as well as about the need to explore the country's natural resources in a sustainable manner. There is a growing awareness of the potential returns hidden in the huge biodiversity existing in Brazil. Thus, the actual challenge for Brazil is to promote a shift both of mentality and of historical patterns, which the country cannot achieve all by herself. This means to say that, from the Brazilian point of view, the most crucial issues to be addressed by international environmental law in the next 10 years are : (a) development of international trade rules that reduce tariff and non-tariff trade barriers and help create an adequate international economic environment that enhance the competitiveness of SFM; (b) equitable sharing of benefits resulting from the exploitation of biodiversity and, in particular, genetic resources; (c) protection of intellectual property rights related to the traditional knowledge of traditional communities and indigenous peoples concerning usage of biological resources.

A CASE STUDY OF THE RIO BANANITO (LITTLE BANANA RIVER) WATERSHED

Presented by:
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1. LOCATION

Costa Rica is one of the six Central American Republics, located between Nicaragua and Panama, the Caribbean Sea to the east and the Pacific Ocean to the west. The territory is mountainous, with a land expanse of 51,100 square kilometers. The climate is a tropical humid climate, and there are 34 hydrographic basins. Its precipitation cycle is formed by two well defined areas, first by the cycle formed by the Pacific Watershed, which is defined by the rainy and dry seasons, and the Caribbean Watershed, where during the year the rain remains constant, varying from light to heavy. Costa Rican biodiversity is some of the richest in the world, and although its territory is small, it harbours 5% on a world-wide level.

Costa Rica is the oldest democracy in Latin America. During the middle of this century the army was abolished, also the death penalty. Education is obligatory and free. In the years between 1970 and 1980, the majority of the National Parks, Biological Reserves, Protected Zones and Indigenous Reserves were created for a total of 116 protected areas that cover a total of 25% of the national territory.

In connection with this development of environmental protection, during the last three decades a series of laws have been created, such as, the Code of Mining, Forest Law, Law of Conservation of Wildlife, and the Organic Law of the Atmosphere. These laws were created to guarantee, by law, a healthy and ecologically balanced atmosphere (being the greater contribution, the reformation to the Political Constitution of) Article 50, which came into effect in 1994, which states as follows:

"Article 50 – The State endeavours to procure the greatest well-being for all inhabitants of the country, organizing and stimulating production for the most adequate division of wealth.

All citizens have a right to a healthy and ecologically balanced environment. For this reason, it is acceptable to denounce any acts that infringe upon this law and to claim the repair of any damages caused.

The State guarantees, defends and maintains this right. The law will determine the responsibilities and corresponding sanctions."

2. PAST HISTORY

In the year 1991, the Caribbean Coast of Costa Rica was shaken by an earthquake with an intensity of 7.0 on the Richter Scale. This natural disaster caused landslides and loss of the forest cover in an important zone in this territory, where a great percentage of the drinking water originates for many nearby cities. Resulting from this tragedy, diverse public and private institutions solicited the government to prepare a declaration to prevent deforestation, which, in some cases, arises from permits which has been granted, and, alternatively, from lack of control and illegal cutting.

Technical studies which have been carried out have established that exploitation of the forest has taken place in this area, and if urgent measures are not taken, there will be a serious environmental impact in the very near future, especially in the quality and quantity of water for human consumption, resulting in damage to top soils, and finally in the destruction of the quality of life.

For a concrete example, the community of Bananito Viejo is cited. This community is comprised of 500 families who would be affected by flooding of the Rio Bananito (Little Banana River). The flooding would be constant and continuous with only 3 to 4 hours of continuous rain. This flooding would also cause increased sedimentation with the formation of banks of mud and sand and would cause giant dams, which would alter the course of the water (hydraulic) behaviour and that of

its volume. Overall, this would affect the potability of the water by horrendous contamination of springs and wells, which would cause a significant decrease in the amount of available drinking water. This would cause total suspension of service in order to carry out maintenance and cleaning out of water tanks due to murky water.

3. LEGAL ASPECTS:

With the loss of forest cover and contamination of the waters used by the surrounding communities, a Costa Rican foundation presented a legal claim to the Supreme Court of Justice, claiming that the zone in question had suffered severe deforestation, due to the approval of logging permits in areas, where they meet the flows of surface and underground water. This had affected the water sources of the neighbouring communities.

In response, the forest administration, a state institution, stated that large parts of the area was privately owned property. Consequently, one could not suspend these activities, without affecting the constitutional right to the inviolability of the private property. The authorities of the same zone argued in front of the tribunal that the appreciations of the adversary were subjective and founded on biased scientific grounds. It added that the legislation no longer obliged the forest administration to visit the logging sites. Nevertheless, logging permits were not authorized from 4 September 1998.

The Constitutional Chamber based its judgement on the fact that in the past natural resources were considered inexhaustible. In addition their industrialization was seen like a desirable objective, neglecting the impact on the atmosphere at that time. Nowadays one can notice a distinction between renewable and non-renewable natural resources. This was not considered in the classical economic approach, since wastes and deterioration of the atmosphere were not accounted for. The natural resources should be understood as a potential for development, taking into account their natural cycle, socio-cultural, technological and political aspects. Otherwise the productivity at present would be degraded, putting the patrimony at risk for the coming generations in the future.

The judgement indicates that the right to health as well as to an atmosphere free of contamination, which are inter-connected, are fundamental laws. Consequently the state has to fulfil its obligation towards the fulfilment of this goal. Since the goods that man extracts do not occur in isolation, they form part of an open system, in which each part of the ecosystem is related with the rest. By virtue of the symbiotic relationship between the water resources and the forest cover, one of the most effective measurements in order to maintain the natural quality of the water is the preservation of the forest, especially those with regulatory value to hydrological zones and those which prevent change of chemical and physical conditions of water and erosion. The forest cover helps the rainwater to fall slower and less forcefully as it reaches the ground. Thus it avoids the washing away and erosion of the top soils.

The area, being the object of the legal action, the Rio Bananito (Little Banana River) watershed, had not been declared a Wild Protected Area, because it is privately owned property. The argument put forward by the authorities was not very accepted by the tribunal, since Article 34 of the Forest law prohibits deforestation even in those areas. The judgement stated that it is the obligation of the Forest Office to protect these areas adequately, and should act with greater caution in authorizing forest exploitation that causes the least possible damage to the environment. Environmental law, although it contains a sanctioning device, should have a fundamental preventative objective, since most environmental damages are irreversible and not even penalties could compensate, once the damage has occurred. To the Supreme Court the sanction could have some type of ethical effect, however there is a certain danger that the effect of sanctions are very weak, since the polluter that harms the environment, would - in some cases - rather prefer to pay the fine instead of ceasing the illicit conduct. According to the judgement of the tribunal, the behaviour of the Forest administration was not enough in order to carry out the protection of the natural resources. Because of this, the judgement 04758-99 welcomed the resource and orders carried out during the technical studies to enable the prohibition of logging in the Rio Bananito (Little Banana River) Watershed.

IMPACTS OF THE PETROLEUM INDUSTRY

Presented by:
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Ecuador is a small country located in South America, whose western coastal region limits the Pacific Ocean and half of its territory descends the Andes and forms part of the basin of the high Amazon River.¹ Ecuador is one of the seventeen richest countries in biological diversity of planet Earth as well as of plant and animal endemism.²

Within this context, I will present for study the most critical environment problem of Ecuadorian Amazon Region: the dangerous growth of pollution caused by the common territories. The main reason for this problem resides in the risks that implied the petroleum development in Ecuador: the lack of application of environmental sound technology and the total absence of adequate environment controls in this matter. The severe environment impacts are produced by oil spillage and hazardous wastes discharges that have affected human health, the tropical rainforest, biodiversity, and, finally, the Amazon Basin.

During the past two decades, international petroleum companies led by TEXACO and PETROECCADOR, the national Ecuadorian petroleum company, have extracted more than one billion barrels of petroleum from the Amazon Region. Because of the occurrence of accidental risks, the Trans-Ecuadorian Pipeline System has pro-

voked the spillage of four hundred thousand petroleum barrels in Ecuador's territory. Most of them have been made in the Amazon Basin.³

In this important region of the planet, the petroleum development, a very lucrative industry, is producing an increase of the poverty between the indigenous peoples, the colonists, and a severe environment impairment. These damages will not only affect the actual generations, they will affect the future ones because of: a) the persistence of environment pollution; b) the deforestation and degradation of natural resources and its capacity to sustain the economic development of the region and the whole country⁴; c) the negative impacts to human health and the socioeconomic of the inhabitants of the Amazon region.

HISTORY

In 1911, Ecuador started the development of the petroleum industry, when an oil well was perforated in the Santa Elena's peninsula, in the Pacific Coast. Some decades later, the petroleum search was guided to the East. In 1939, the Shell Oil Company worked hard in exploratory labors, which did not bring a commercial advantage. Since 1950, this multinational company decided to leave the country.

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- 1 The Ecuadorian Amazon Region includes more than thirteen million hectares of tropical rainforest. The colonization highways built by the petroleum companies in his region have deforested approximately one million hectares of tropical rainforest. (KIMERLIN, 1993).
 - 2 While the tropical forests cover only 7% of the surface of the planet, they contain half of all the existent species. Although Ecuador is a small country, it includes 10% of all the plant species of planet Earth. (KIMERLING, 1993).
 - 3 This amount does not include the oil spillage of secondary pipelines (NATIONAL DIRECTION OF ENVIRONMENT press Bulletin, 1989).
 - 4 Ecuador depends in a high percentage in its petroleum exports to finance its National Product Income. 25 years later of the discovery of great amounts of petroleum in Ecuadorian Amazon Region, and we still need the help of foreign capital stocks and technology for the localization and development of our oil reserves. Moreover, currently the Ecuadorian economy stays vulnerable to the external markets and the international price fluctuations of the oil barrel as it was before the petroleum discovery.

In 1967, the Texaco-Gulf Association received a concession of 5 million acres of tropical rainforest, which gave positive results; a rich oil field of crude in the base camp of Lago Agrio was discovered. Texaco installed a refinery in Ecuador and opened its operations to the big oil fields of Shushufindi and Sacha. The real petroleum exploration and exploitation fever was finally initiated.

In 1969, Ecuador took 2/3 of the territory given in concession to the Texaco-Gulf Association; it increased its royalties; changes in its politics about the State participation in the petroleum industry, created a territorial tax for the multinational companies, and finally demanded from these companies to invest more in the construction of highways, other projects, and infrastructure.

In 1972, the Texaco-Gulf Association finished the construction of the Trans-Ecuadorian Pipeline System, which has a total extension of 498 kilometers, and a cost of one hundred and fifty million dollars.

The current oil production in the Ecuadorian Amazon Region is made in an extension of almost a million hectares. It includes more than three hundred active oil wells and more than thirty production stations. These installations produce now almost two hundred and fifty thousand oil barrels a day. The Trans-Ecuadorian Pipeline System transports the majority of the crude produced through the Andes to the Pacific Coast. There, two local refineries exist in Shushufindi and Lago Agrio; in the latter, where a gas field was installed.

THE SOCIAL ACTORS

The indigenous peoples and others that live in the Ecuadorian Amazon Region are affected by the petroleum activities which have taken place in their communal territories and in the natural protected areas.

They have been accustomed to live with the daily toxic wastes discharged from more than four million of gallons from the nearby the oil wells, which are disposed of in the environment without any previous treatment. These practices caused the pollution of rivers, streams and estuaries, the only source of fresh water for the neighboring communities.

Moreover, the gas and oil burns pollute the air with volatile organic compounds that come from the discharge pools, the oily flooded highways, and the oil spillage.

The petroleum development, led by multinational companies, has been the moto of pollution, destruction and impairment of the Ecuadorian tropical rainforests. The style of this kind of development has affected the human health of the indigenous peoples and the colonists. It has caused the appearance of health problems such as, skin sicknesses, fever, stomach problems, headaches, cancer, and other sicknesses derived from the pollution.

The deforestation of the tropical rainforest has produced the destruction of food, medicines, trade timber, the loss of fish and hunting animals.

In many cases, the survival of the indigenous peoples is menaced by the loss of its territories, and the pollution caused by the petroleum exploration and exploitation activities. The colonists that live near the oil production fields suffer from poverty and health problems.

THE SOLUTION OF THIS ENVIRONMENT PROBLEM

Ecuador has laws and regulations for the control of the petroleum industry. The state Politic Constitution warrants the right to live in a clean environment, free from any kind of pollution.⁷ The problem is not the lack of existence of environmental and energy laws. It is a matter of politics. There is not any Government will to establish significant control and surveillance mechanisms and regulations to the most powerful industry of the country.

As a developing country, Ecuador does not have the possibility to depend less in the foreign investment capitals and appropriate technology sold by the developed countries. At least, on July 31 1999, the National Congress approved the Environment Management Law, which includes harder regulations related to the control of petroleum activities and establishes the obligation of elaborating an environment impact report before the approval of any kind of these pollution activities.

5 This region is the home of five hundred thousand inhabitants that share this territory with eight indigenous peoples as well with the colonists that have come from the Sierra and Coast regions (KIMERLING, 1993).

6 KIMERLING, 1993.

7 Politic Constitution of Ecuador, 1998. The English tradition has been made by the author.

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1. The implementation of the mechanisms established in the United Nations Framework Convention of Climate Change, especially the Clean Development Mechanism (CDM) and its relation with the conservation of forests as a means to reduce the external debt of the developing countries.
2. The compliance and enforcement of the multilateral environment agreements and soft law regulations.
3. The synergies between trade and environment, especially in relation with biotechnology, protection of plant and animal innovations, ecological labeling, and the recognition and protection of traditional ecological rights by the International Trade Organization.

MARINE ENVIRONMENT IN JAMAICA

Presented by:

Mr. Bertrand Smith

Maritime Authority of Jamaica

Jamaica is the third largest country of the Greater Antilles and is located at 18 degrees north latitude and 77 degrees west longitude. The island lies south of Cuba and has to its east the Republic of Haiti. The land area is approximately 11,00 km sq with a 795 km coastline which is highly irregular with diverse ecosystems, including bays, beaches rocky shores estuaries, wetlands and coral reefs. Over 180 km designated as recreational beaches and 110 km as fishing beaches.

The marine resources at risk includes the fragile coral reefs, mangroves, fish, other flora and fauna and the white sandy beaches. These resources are under severe pressure from pollution and overuse, resulting from population growth especially on the coastal zone, as well as increased tourism activities.

The small semi-enclosed bays also accommodate other industrial activities including fisheries, port development, shipping. Tourism has grown in the post independence period to be the sine qua non of the Jamaican economy contributing to 20% of the GDP of the country with earnings exceeding US\$900 and the creation of several linkages in the agriculture and small industry sector.

The growth of the watersports sector and nautical tourism involving the attraction of pleasure yachts as well as the development of marinas will continue to put undue stress on the capacity of the marine and coastal resources to sustain itself.

A drastic decline in tourism following a major pollution incident can therefore have severe effects on the economy and therefore, it is of paramount importance for the marine resources to be protected and generally managed in a sustainable way.

At present there is no cohesive system for the development of a legal and administrative framework for the management of the ocean space and the coastal zone. While the posture of the country is very high at the regional and international level (UNCLOS, UNCED etc) a similar level of importance and commitment is not apparent in the implementation stage and especially

for matters which are not directly addressed by the international conventions, but specifically affect Jamaica.

Legislation in the pre-independence period was primarily focussed on the maximization of the exploitation of the natural resources. A single ocean use, that of merchant shipping was the basis for coastal and marine policy in general with marine legislation being limited to shipping, harbours and the regulation of fishing.

Currently there are over 15 agencies in Jamaica with marine related functions; this has resulted in overlaps in jurisdiction where marine pollution, wildlife protection, mineral exploitation, and marine archeological research are concerned.

The present administrative system encourages the decentralization of decision making where quasi government agencies are given powers to develop their own micro policy with a marine environment component. The result has been several closely related but disjointed policies and attendant legislation. Each agency has its own regime for establishing standards, issuing licenses, enforcement and monitoring regimes, protected or special areas, offences and fines.

As a result of the above circumstances the legal basis for the regulation and management of Jamaica's marine environment is found in a number of pieces of legislation including:

- Maritime Areas Act;
- The Exclusive Economic Zone Act;
- The Morant and Pedro Cays Act;
- Harbours Act;
- Shipping Act;
- Beach Control Act;
- Natural Resources Conservation Act;
- Wildlife Protection Act;
- The Port Authority Act.

The Harbours Act and the Port Authority Act which are presently being revised do not focus of on the development of the natural resources of the harbour, but facili-

tates the development of a single ocean use, that of commercial shipping.

The Fishing Industry Act although also under revision governs the regulation of fishing and not necessarily the protection of the marine environment. The Wildlife Protection Act also seeks to protect specific wild life and not necessarily the marine environment which forms its habitat.

The Shipping (Pollution) Bill, as its title suggests, will concentrate of vessel source pollution. The Bill incorporates the major IMO Conventions on prevention response and compensation for pollution damage caused by ships covered by the conventions. Special attention will however have to be given to the regulation of pollution from small "non convention" vessels. Additionally, while prevention provisions can be drafted, provisions related compensation for pollution damage as indicated is more difficult.

The chief environmental legislation, the NRCA Act, governs the protection of all natural resources including our "waters" however the provisions related to marine pollution relate to the control of land based, point source pollution.

As indicated above the decentralization of decision making has resulted in conflicts, and inappropriate use of scarce resources. In the case of marine pollution the standards set by the NRCA for discharge from land based facilities is not consistent with those from ships although the same marine environment is being affected.

Both legislation and others facilitate the development of special or protected areas governing the same marine spaces but with different monitoring and enforcement regimes as well as the different discharge standards mentioned above.

The EEZ Act goes some way in providing for the establishment of an Advisory Council for administration of licenses granted for activities in that maritime area. A similar framework is, however, not present for other sea areas such as the territorial sea and the internal waters, the latter where most activity and the likelihood of pollution damage will take place.

In the absence of international pressures and obligations which arise from treaty obligations, it is not unlikely that there will be some inertia in dealing with pollution in especially in Jamaica's internal waters.

The Cartagena Convention and its related Protocols thereto provide the broad legal framework for protection of the internal waters but implementation which involves rationalization of the institutional framework for the man-

agement of land based and vessel source pollution is difficult. No legislation has therefore been developed.

While several studies have addressed the need for an integrated policy for management of the coastal zone, this has not been forthcoming. A National Council on Ocean and Coastal Zone Management has been formed and a green paper on coastal zone management is being prepared but there is some amount of inertia in the process.

There is therefore a regulatory lacunae and the absence an identifiable institutional framework for the management of the coastal zone, especially for the semi enclosed bays (internal waters), which accommodate resort areas, settlement and industry.

As indicated above serious physical or economic damage to a resort area from land based or vessel source pollution or the rapid deterioration of major natural tourist attraction can cause untold damage to the fragile tourism industry.

Recovery for damages for pollution of the resources in the coastal zone is extremely difficult. The legislation which touches and concerns the resources, deal with a particular activity or resource to the exclusion of others. The statutory provisions treat pollution offences as crimes attracting fines and penalties.

Civil liability for pollution damage is still based on the common law principles of negligence, nuisance, trespass and Rylands and Fletcher. The principles governing these causes of action are inextricably linked to the ownership of property while the persons most likely to be affected have no interest in the property that has been damaged, namely the foreshore, the sea and the living and non living resources lying therein. Recovery of compensation is therefore extremely difficult.

The protection of the natural resources especially in the internal waters of Jamaica is critical for the continued existence of its "life support industries". The weakness of the common law and existing legislation in granting such protection as well as providing compensation for the users of the resources in the event of pollution damage is also evident and needs to be addressed.

Land based and vessel source pollution presently fall under two distinct but overlapping regimes and it is necessary for legislation to be developed to regulate the development of the coastal zone as a single regime with an identifiable institutional framework.

Provisions should be made in the statute for establishing locus standi for persons who suffer from pollution damage, but because of the common law principles relating to pure economic loss, would not otherwise be

able to claim. The precautionary and polluter pays principles should also be incorporated .

The development of such legislation and the institu-

tional framework to administer it in the face of scarce resources and the current government policy requiring agencies to meet their own budgets and find their own sources of revenue will be a serious challenge.

FOREST FIRES (RESTORATION AND PREVENTION)

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Mexico

INTRODUCTION

In 1998, Mexico had the worst season of forest fires history ever recorded. During that year in its first seven months, 14,445 forest fires were registered affecting a total of 849,639 hectares, each fire covering an average of 58.8 hectares. The fires included ancient fir stands in central Mexico, where the North American monarch butterflies migrate in mass numbers over the winter, pine-oak woodlands throughout the Sierra Madre mountain range, and tropical "cloud forests" at Chimalapas, Oaxaca in southern Mexico.

Severe meteorological conditions attributed to the "El Niño" phenomenon last year more than doubled the average incidence of forest fires registered during the previous five years from 1992 to 1997. As a result of this phenomenon, spring rains were unusually late on that year and the jungle and forests were drier and more vulnerable to sparks from unintentionally set fires that leaped out of control.

The impact of the 1998 environmental disaster due to forest fires can hardly be measured, however, it is estimated that an approximate 2 percent of the nation's forests were damaged and about 4 percent of the damaged area was completely incinerated in a single season; thus affecting adversely one of the world's most biologically diverse landscapes, where pine-studded mountains blend into misty cloud forests and lowlands jungle so rugged that it has never been explored. Tropical rain forest in the southern part of Mexico, home to plants that grow nowhere else on the planet and endangered animals such as jaguars and the green-plumed quetzal bird, were also severely threatened.

DESCRIPTION OF THE PROBLEM

Every year Mexico loses 400,000 to 500,000 hectares of forest land for several reasons. The principal causes responsible for these losses are the change in uses of forest land for the expansion of agricultural activities, urban and service use, forest fires, plagues and diseases.

Forest fires have several causes among which are the following can be easily identified:

- Intentional fires to transform forest land into agricultural and grazing land, as well areas suitable for urban settlements;
- Negligent use of fires as farming techniques such as slash-and-burn and land clearing for cattle pastures;
- Carelessness of excursionists and forest visitors who often do not put fires away;
- Natural causes during prolonged dried seasons that provoke spontaneous fires (lighting bolts).

APPROACHES TO DEAL WITH THE PROBLEM

The magnitude and seriousness of the event in 1998, urged the government and society to take the necessary measures to revert this damage and prevent the occurrence of similar future ecological disasters.

Although the Mexican Government has taken the leading role in activities to solve this problem, society in general, local communities and non-governmental organisations, including international ngo's like the World Wild Life Fund, have played a significant role in these efforts.

Immediately after the problem arose, the government established in the framework of the National Protection Programme against Forest Fires, an Ecological Restoration Campaign against Land-Use Change in areas affected by the 1998 forest fires. This campaign had several objectives among which were:

- Facilitate the process of regeneration of the vegetation for recovering and reestablishing the natural conditions of the affected areas; thus allowing for the continuity of the natural cycles traditionally involved;

- Preserve forest land by not permitting the change in the use of the land through activities of protection of reserved areas and surveillance;
- Allow the organised participation and collaboration of public and private institutions in the tasks of restoration of the affected areas;
- Promote through an education and culture programme, training and guidance to restore the ecological environment as well as the prevention of forest fires.

The strategies followed to attain these objectives were:

- Promote the institutional coordination between the federal government and other levels of government as well as social participation to supervise and follow up the activities of the campaign;
- Issue by decree ecological restoration zones for areas affected by forest fires in accordance with the Law of General Ecological Equilibrium and Environment Protection;
- Carry out specific restoration programmes for each selected area;
- Foresee restoration activities that prevent the land-use changes;
- Coordinate with universities and research centres their participation in the tasks of diagnosis, training, evaluation and follow-up of this campaign;
- Promote the participation of the private sector in this campaign;
- Promote complementary activities with other institutions that can offer alternatives in the short term to communities directly affected by forest fires; Focus on those activities to minimise the risk of land-use change and encourage the substitution of farming practices that represent a risk for forest fires;
- Promote information, communication and education campaigns.

Actions carried out:

- Selection and characterisation of the areas affected by forest fires classified as severe or relevant, according to a criteria of biodiversity, ecological importance and magnitude of the biomass resources affected and the risk of land-use change in order to declare them Ecological Restoration Zones;
- Delimitation and preparation of justification studies in the areas affected;
- Publication of the decree by the Executive Power
- Issuance of the restoration programmes for every declared zone;
- Promotion of the participation through coordination reunions to implement the programme;
- Application of a particular restoration programme to every zone:
 - Reforestation and revegetation
 - Prevention and combat of forest fires
 - Promotion of natural regeneration

- Forest management in contingency situations
- Wildlife management
- Land and water recovery
- International cooperation
- Private participation
- Diffusion, training and environmental education
- Evaluation and follow-up

RESULTS ATTAINED

Although the campaign was mainly issued as a result of the environmental disaster due to the 1998 outstanding season of forest fires, these events have been occurring for long in Mexico and most likely will continue to occur in the foreseeable future. Until this campaign, no comprehensive programmes had been issued in the past and only minor actions were carried out by the parties involved, government and local communities, to mitigate some of the most adverse effects of these events.

- The campaign has declared 85 Ecological Restoration Areas covering a surface of 188,288 hectares in 21 States;
- It commenced to restore 48 polygons in 19 protected natural areas with a surface of 120 thousand hectares;
- It has commenced to reforest 33,835 hectares of damaged forest land;
- It has recollected 10 metric tons of germplasm and has commenced to produce 40 million species of plants native to the affected areas;
- It has established a fund for private participation and;
- It has commenced to elaborate 85 specific restoration programs.

Most important of all, the campaign has helped to raise the concern on the importance to prevent forest fires by the general public due to its major impact on biodiversity and the surrounding environment. Moreover, the communities directly affected by the 1998 forest fires have been more willing to rely on more sustainable forms of agricultural farming that prevent the setting of fires that leap out of control and produce adverse effects, and this could only be done thanks to the introduction of new and more efficient farming techniques, brought about through education and technology transfer programmes.

By July 1999, thanks to the actions taken by the campaign, 7,886 forest fires were registered, 45 percent less than last year during the same period. Although this decrease in number can not be attributed entirely to the campaign, since the country has face unusual rainfall this year, the average damage by fire decreased to 30 hectares per fire, which means that fires were put away faster thus preventing future damage.

SOLID WASTE MANAGEMENT – BACKGROUND AND IMPLICATIONS FOR ENVIRONMENTAL LAW AND POLICY DEVELOPMENT IN ST. LUCIA

Presented by:
Mr. Christopher Corbin
Ministry of Finance and Planning
St. Lucia

A. INTRODUCTION

Saint Lucia is one of the Windward Islands located in the Eastern Caribbean, lying approximately 62 degrees west and 13.6 degrees north. It is a small country in terms of both size and population. St. Lucia has a land area of 616 square kilometres and is of volcanic origin, with a rugged and mountainous topography, particularly in the central area. The island has a population of about 150,000 of whom 60,000 live in the capital city of Castries. The rate of population growth has been around 1.6% in recent years. The country's natural resources are its people, beaches, climate, scenic beauty and fertile valleys.

St. Lucia gained its independence from the United Kingdom in 1979, and is a member of the Organisation of Eastern Caribbean States (OECS) and the Caribbean Community (CARICOM). St. Lucia also belongs to the Eastern Caribbean Central Bank (ECCB) which operates a fixed exchange rate regime, with the Eastern Caribbean Dollar tied to the United States Dollar at a rate of EC\$2.70 to US\$1.00.

The economy is highly open and heavily dependent on foreign trade. The economy, which was heavily oriented towards agriculture in the 1970's and 1980's has made some progress towards diversification. In particular, the growth of the services sector spurred primarily by the growth in tourism has contributed to the structural transformation of the economy from one based mainly on primary commodities to one based more on services. Operations in the banana industry are being rationalized to enable it to compete effectively on the global stage with greater focus on alternative uses of the banana product. The banana industry still represents one of the major employers and accounts for 40% of the total exports.

The main economic constraints facing the country include: (1) problems confronting the banana industry; (2) deterioration in the merchandise terms of trade; (3) slow down in the pace of the construction industry; (3) sluggish performance of the manufacturing sector and (4) diminishing aid from donor agencies.

B. WASTE MANAGEMENT - A HISTORICAL PERSPECTIVE.

Poor solid waste management has been a serious environmental problem, which St. Lucia shares with her neighbors in the Caribbean. The capacity to improve the waste management system was constrained by a fragmented institutional framework which led to duplication of roles and responsibilities. In addition, several pieces of legislation addressed certain aspects of waste management and there was no one piece of legislation which dealt exclusively with solid waste management.

Disposal in the past was characterized by open dumping with periodic burning or by dumping into rivers and the sea. Some of the main issues contributing to the problem were:

- Scarcity of public land suitable for sanitary landfill siting, with some or all of the following characteristics: (1) capacity (2) accessibility (3) relative remoteness (4) hydraulic isolation to protect water supply (5) proximity to suitable cover material and (6) reasonably well-drained (not flood prone);
- Change from traditional combustible and biodegradable packaging materials used for consumer products to non-combustible/non-biodegradable materials, which persist in the environment and are more difficult to dispose;
- Inadequate number and inappropriate type of storage and collection facilities, further contributing to

the problems of litter, proliferation of disease carrying vectors and pollution of water systems;

- Ageing collection equipment experiencing frequent breakdowns, and inability to service many areas because of terrain/limited access;
- Inadequate mechanical equipment at disposal sites; and
- Low public awareness on solid waste issues.

C. OECS WASTE MANAGEMENT PROJECT

The OECS Solid and Ship Generated Waste Management Project is a US \$50.5 million, 5 year regional project which commenced in 1995 and is aimed at reducing the amount of garbage generated in homes and businesses, and improving the collection and disposal of domestic and ship-generated wastes. The project was originally conceived under the International Waters component of the Global Environment Facility (GEF), which recognizes that the marine environment is heavily polluted with garbage, which threatens marine life, as well as being unsightly, when it washes up on the beaches of tourism dependent countries of the region.

The primary objective of the project was to reduce public health risks and protect the environmental quality of OECS countries, by improving domestic solid waste management facilities and facilitating compliance with the Special Area designation of the Caribbean Sea for MARPOL Annex V wastes (Garbage). The project objectives are being achieved through:

- Institutional strengthening and improved policy, regulatory and incentive frameworks to manage solid waste.
- Addressing critical deficiencies in the domestic waste collection, treatment and disposal sectors;
- Provision of suitable reception, collection, handling, treatment and disposal facilities for ship-generated waste;
- Enhancing opportunities for waste recovery and recycling at the national and regional level; and
- Encouraging improved cost recovery for waste management services.

CURRENT ACHIEVEMENTS

- Establishment of a national Solid Waste Management Authority to oversee all aspects of solid waste management;
- Improved municipal waste disposal site operations to higher environmental standards, under improved contractual arrangements;
- Extended and improved collection services through privatization and increased surveillance;
- Accession to several relevant conventions including - Basel Convention; London Convention and the Cartagena Convention. Consideration being given

to the ratification of the MARPOL 73/78 Convention;

- Heightened public awareness and increased participation of private sector in waste management;
- Increased donor sensitization of waste management issues in the region;
- Development of sub-regional strategies for recycling of wastes including used oil;
- Development of comprehensive legislation (now under review);
- Proposed port reception facilities for ship-generated wastes to be shortly established.

Project implementation has therefore resulted in significant improvements in solid waste management especially in the area of collection and disposal services, and institutional strengthening. However, several deficiencies have recently been identified within the existing policy and legislative structure, which will affect the institutional and financial sustainability of the project.

DEFICIENCIES

- No legislative framework for minimizing the amount of wastes generated or the conversion of waste into a resource through the application of reuse, recycling and composting;
- Inadequate legislative framework and/or capability to enforce existing regulations to ensure that waste management facilities are themselves protective of human health and the environment;
- Legislation does not exist to guide the formulation of a national solid waste management plan or contingency plans in the event of a natural disaster (e.g. hurricane) or operational emergency (e.g. a spill of waste);
- Legislation is silent on how several categories of solid waste, most notably those that are hazardous, should be managed;
- The monitoring, enforcement and penalty provisions of existing legislation are either inadequate or inadequately implemented;
- Inadequate administrative, legal and technical capacity to effectively implement the obligations of selected international conventions.

D. THE WAY FORWARD FOR POLICY AND LEGISLATIVE DEVELOPMENT

The proposed policy and legislative framework will resolve these deficiencies by:

- (i) Establishing licensing and permitting procedures and standards for all waste management facilities and operators whereby effective regulatory control can be exercised to ensure sound waste management practices;
- (ii) Establishing timing and technical parameters for

- the creation of a national solid waste management plan/strategy;
- (iii) Providing the legislative framework necessary to support the minimization of waste generation and the diversion of waste from disposal by reuse, recycling and composting;
 - (iv) Establishing a procedure for: (a) undertaking of environmental impact assessments and environmental plans to identify both potential negative impacts of waste management facilities and measures to mitigate negative impacts; and (b) ensuring that measures to mitigate potential negative impacts are adhered to by waste management facility operators;
 - (v) Identify general performance and operating standards that should be adopted by the range of waste management facilities;
 - (vi) Clearly delineating institutional roles associated with waste management;
 - (vii) Providing for the preparation of contingency plans associated with waste management facilities and equipment, and coordinating the preparation of such plans with the national disaster preparedness organization.
 - (viii) Providing for the preparation of plans for managing hazardous wastes generally, and the used oil, waste/unwanted agricultural chemicals, and pollutants associated with recycling activities specifically.
 - (ix) Establishing monitoring, enforcement and penalty provisions consistent with the requirements of a modern solid waste management system.
 - (x) Identifying public education as a duty of the national entity responsible for waste management operations.
 - (xi) Identifying training of staff as an activity that will be undertaken by the national entity responsible for waste management operations.

A new Waste Management Act is proposed that will provide for the implementation of the new waste management policy and thereby establish a comprehensive basis for waste management. The new Act will address the above-identified deficiencies and will provide for the consolidation of existing legislation. The implementation of the proposed waste management policy and legal framework will however have a number of implications for St. Lucia. Broad consultation is ongoing to assess these implications and decide on the best way forward.

APPLICATION OF ENVIRONMENTAL LAW IN ST. LUCIA.

Presented by:
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St. Lucia

INTRODUCTION

St. Lucia, like most of the other Commonwealth Caribbean Countries, has an extensive collection of legislation which addresses various aspects of environmental management. However, the legislative infrastructure is, for the most part, outdated and inadequate to cope with current problems, especially those associated with conflicting demands for resource use and development. Additionally there are several areas where legislation is inadequate to cope with current environmental and natural resource management problems. In other instances, overlapping jurisdiction, the lack of monitoring to ensure compliance, and the lack of enforcement have hindered the effective application of existing legislation. The main issues that are likely to be addressed in the future are:

1. LAND USE PLANNING AND DEVELOPMENT CONTROL

In the area of land use planning and development control, legislation is largely unresponsive to the conflicting demands for land, particularly for building construction in coastal areas. The 1971 Interim Development Control Act and its subsequent amendments contain no provisions for the application of Environmental Impact Assessments (EIAs). Thus, there are no formalized mechanisms for the incorporation of EIAs into the planning process. Government is considering amendments to the Land Development Control Act 1971 and a new Planning Act that will permit the Development Control Authority to legally require an EIA. The new Act should provide for the orderly, efficient and equitable planning, allocation and development of resources taking

into account all the relevant social, cultural, economic, and environmental factors.

2. ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE DEVELOPMENT

Environmental management in St. Lucia is currently dispersed among several government ministries, statutory bodies, and quasi-agencies. This does not ensure adequate cross-sectoral communication and coordination among key resource sectors. In addition, resource management functions are often not clear-cut, with the consequence that agencies often have overlapping responsibilities. This often results in the fragmentation of some key government functions such as development control, resource protection, enforcement of existing regulations, and resource development. It is expected that a comprehensive legal and institutional review will be necessary to identify the most effective legal framework that would facilitate improved environmental management.

3. MULTILATERAL ENVIRONMENTAL AGREEMENTS

St. Lucia has joined the international community in global efforts to protect and preserve the environment, natural resources and biodiversity by acceding to various multilateral agreements. However, the domestic legislation infrastructure for environmental management is often inadequate to fulfil the various obligations under these multilateral conventions and agreements. It will be necessary to develop an appropriate legislative structure to give effect to these multilateral agreements, conventions and protocols.

ENVIRONMENTAL PROBLEMS IN SURINAME

Presented by:
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Suriname

INTRODUCTION

BACKGROUND

Suriname (are 164,000 km²) is situated northwest of South America, bordered by French Guyana to the east, Guyana to the west and Brazil to the south. The country is covered with 90% tropical rainforest, with only 25% directly accessible through roads. Its population is very diverse consisting of East Indians (Hindustani, 37%), Creoles (Mixed African and European ancestry, 31%), Indonesians (Javanese, 14%), and other minority groups. Bauxite, agricultural products and fisheries are the main economic motors with contributions from the forestry – and gold-sector.

INTERIOR COMMUNITIES

The Maroons and Amerindians subsistence are based on the unique interplay with the forest natural resources: hunting, fishing, and shifting agriculture, non-timber forest products. The culture of the interior communities is adopted from the ancestors (African descendants and pre-Colombian) and influenced by the forest and the contacts with other communities, which is reflected in their housing, migration, social organization, religion, economy. Unfortunately, due to the increase of artisanal mining activities, large areas are becoming unfit for sustainable livelihood and the unique culture, being in balance with the forest, is threatened.

GOLD MINING

In Suriname the majority of gold production, estimated to be 8 to 12 tons per year, comes from approximately 15,000 artisanal miners. The greenstone belt, with high probabilities for gold occurrences, within the Guyana Shield is situated east of the country, encompassing high concentration of the Maroon and Amerindian population. The past decade showed dramatic changes with an increase of artisanal mining activities. The physical impact of these uncontrolled activities includes: extensive river siltation, resulting in depletion of fish popula-

tion not adapted to such extreme conditions, soil destruction, deforestation, invasion of nature reserves and traditional settlement areas of Amerindian and Maroon population. The chemical impact includes: the possibility of mercury exposure and acid mine drainage. The social impact includes: degradation of moral and social standards, health threats as a result of prostitution and malaria, culture loss. Impacts can be reduced if adequate mining techniques are applied and if people are aware of the dangers the mercury poses to the environment and health. Maroons, principally involved in gold mining are replaced, during the last years by residents from the capital and foreigners, especially Brazilian "garimpeiros".

THE NIEUW KOFFIE KAMP (NKK) EXPERIENCE

In March 1991 the state-owned mining company Grasslco requested the right to exploration for the Gross Rosebel concession. These rights were then transferred to Golden Star Resources Ltd., a Canadian Company.

On August 8, 1992 the Government of the Republic of Suriname and the former leaders of the illegally armed groups signed the accord for National Reconciliation and Development known as the Peace Accord.

Article 10 of the peace accord contained provisions relating to legal rights for maroons and Amerindians. These specified that the government would set aside economic zones for inhabitants of the interior, allowing hunting, harvesting of timber and mining. The village of Nieuw Koffie Kamps is located in the middle of the southern half of the 17,000-hectare Gross Rosebel concession.

The villagers use the land given as a concession to Grasslco as a sustainable livelihood. Moreover small-scale miners have been working in the area for some time.

Initially the company tolerated small-scale mining activities by the villagers, but as time went by, complications developed. Over a thousand small-scale miners entered the concession and confrontations were the result.

The company would like to see the provisions of the mineral agreement implemented, which leave no room for the villagers to conduct gold mining activities in the Gross Rosebel concession. The inhabitants of Nieuw Koffie Kamp claim an economic zone near their village under the provisions of the Peace Accord. Such a zone would fall well within the Gross Rosebel concession.

THE ENVIRONMENTAL IMPACT OF SMALL-SCALE GOLD MINING IN THE GROSS ROSEBEL CONCESSION

One of the arguments to discourage small-scale mining relates to control especially in the area of the environment. The assumption is that it is easier for the government to control a few large companies than several thousand small-scale miners.

In assessing the techniques by small-scale miners in Suriname four things stand out:

- (a) The lack of adequate prospecting;
- (b) The use of inefficient ore processing techniques;
- (c) Inadequate health and hygiene measure and
- (d) The lack of proper administrative know-how.

In many cases the soil does not contain enough gold to warrant a viable operation at that specific location. High pressure hoses are used to spray loose soil, and only then samples are taken. The site is abandoned, but the damage has already been done and a large track of land was unnecessarily disfigured.

The small-scale miners in Suriname use sluice boxes to process the ore. Samples taken in the field indicate that in many high concentrations of gold were still present in the tailings. This is a fact which indicates a need for the introduction of more efficient sluice boxes. It should be pointed out that not only gold is lost in the process, but also the mercury which was placed by high the riffles in the sluice box. It has been estimated that about 400 to 50% of the mercury is lost through sluice boxes.

Observations in the field indicate that most of the small-scale miners are not aware of the specific dangers associated with the use of mercury. The release of mercury in the environment is further brought about by the manner in which the mercury is removed from the amalgam. When the amalgam is heated with the fire, the mercury vapor rises and settles on the tree and bushes in the immediate vicinity. When it rains the mercury finds its way back into the soil and water system, and ends up in the food chain, particularly in fish.

The people most vulnerable are the Amerindians, because they obtain almost all of their food locally.

The amount of mercury can be reduced with the introduction of resorts. In this process the mercury can be recovered through distillation. The process not only

protects the health of those involved and avoids dangerous pollution, but it also recovers the relatively expensive mercury for future use by the small-scale miners.

Proper administrative know-how is one of the necessary conditions for mitigating the problems mentioned above.

Mercury contamination in soils, surface water and ground water wells from gold mining areas generally has not been quantified but is anticipated to have effects on health of the local population and also on fish, water etc. downstream of the mining area.

Furthermore this has effects on Amerindians living outside the mining areas that rely on local food supplies such as fish.

In the case of Nieuw Koffie Kamp the proximity of the mines to the village further complicates the already precarious water situation. It was noted that a number of creeks in the vicinity of the village were discolored. The discoloring was caused by the clay tailings of the small-scale mining activities. Recently villagers started mining immediately upstream from the village, near the water well. There is a possibility that the groundwater will be polluted by mercury, which finds its way to the environment, as a result of the mining activities.

The environment is being polluted by the small-scale miners at a gradual pace at a larger number of locations. In the long run the cumulative effect of this type of pollution may be more harmful than single mayor spill. And in many cases the victims will be the population of the interior itself.

For the time being, Golden Star permitted the small-scale miners to enter the concession, but they were not permitted to do mining. They are also forbidden to enter the marked spots where geological samples have been taken to define the gold deposits. Some of the small-scale miners have been removed toward the so called mamma creek, but the effect of the removal of small-scale miners from larger areas is, that the small-scale miners moved upstream thereby polluting the villages water resources. Moreover several miners, seeking other mining areas, invaded the Brownsberg Nature Park.

CONCLUSION

The situation of NKK is illustrative of the consequences of a lack of social policy, the risks faced by the international investor and the effects on the Maroon peoples. It also demonstrates the inherent dangers to Government development and investment strategies, which may be perceived as unworkable if the government issues mining rights, but fails to guarantee them.

LEAD CONTAMINATION IN THE DEMARARA ROAD AREA

Presented by:
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THE PROBLEM

On April 29, 1993, a newspaper article brought into focus the plight of an estimated 500 residents in an area known as Demarara Road who were subjected to lead poisoning from toxic waste landfill. The environmental health problem became the focus of public attention when a 6 year old child living in the area was admitted to the Port of Spain General Hospital and was diagnosed with severe lead poisoning. This led to the conduct of an environmental assessment of the child's home by the County Medical Officer of Health. The investigation revealed that the source of the problem emanated from the use of the area by a company located in a nearby industrial estate to dump toxic waste. There were hundreds of tons of toxic waste at a depth of six feet in some areas and in the periphery of the houses. Investigation of soil samples revealed that lead concentration ranged from 0.1 % to 42% in excess of the US Environmental Protection Agency allowable limit of 0.025%. This did not only pose a threat to the health of the residents, who were mainly squatters, but also to the contamination of ground water and a nearby treatment plant that produces approximately 40% of the potable water for this country. The soil also contained toxic amounts of copper, antimony and bismuth. Nearby communities were also at risk since lead contamination of surrounding sites may occur by airborne lead contaminated dust, run off water from the affected site and smoke particles from the burning and re-smelting of lead contaminated wastes which took place on the site.

ACTION TAKEN BY THE GOVERNMENT

The first line of action was to ensure that the residents received medical treatment. Some of the residents reported to the hospital for treatment, while health officials visited other members of the community. Health officials found that approximately 400 of the 500 residents had elevated lead levels of lead poisoning in their blood and hospitalised 50 of the serious cases.

The Ministry of Health, concerned that persons released from hospital would become re-infected if they returned to the settlement, gave consideration to the immediate relocation of the entire community to another location. This was not possible since the alternative site was found to be unfit for habitation. The Ministry of Health turned the issue over to Cabinet.

The Government felt that the situation was critical enough to warrant urgent attention and in June 11, 1993, Cabinet agreed to the following:

1. the immediate appointment of a Task Force to investigate the problem and to recommend immediate and short term solutions;
2. that the Solid Waste Management Company Limited, with assistance of Government ministries and departments, would immediately commence the removal of the toxic waste from the Demarara Road site;
3. to seek legal advice of the Attorney General with a view to taking legal action against persons responsible for disposing of the toxic waste in the area; and
4. that the Ministry of Planning and Development be mandated to develop a policy for legislation to deal with the environment and the disposal of toxic materials.

The Task Force was set up and comprised of representatives from various ministries and private citizens with specific expertise in contaminated soil. In its report, dated June 29, 1993, the Task Force recommended that the government take steps to immediately evacuate the residents of the area.

The Government considered and agreed that compulsory evacuation and resettlement was the preferred option. Therefore, in July 1993 the National Housing Authority (NHA) and the Town and Country Planning Division (T&CPD) were instructed to prepare a resettle-

tlement plan as a matter of urgency. The Ministry of Works and Transport would assist by providing transport for the residents following completion of the infrastructural works. In addition the Ministry of Health would conduct a survey and inform on the number of households to be relocated.

One month after the NHA and T&CPD identified the settlement site, the NHA's Squatter Regularisation Unit (SRU) completed a preliminary development plan in August 1993. Funds were allocated in the annual fiscal budget and it was expected that the resettlement would be concluded by the end of March 1994. In November 1993 Cabinet agreed to the designation of a site and conditions for relocation of the affected persons. However, delays were experienced when the T&CPD failed to give the necessary approval and in March 1994 the T&CPD granted conditional approval of the site plan that was submitted by the NHA in December 1993. The T&CPD subjected the plan to its normal standards and failed to give its final approval.

In May 1994, the Ministry of Housing and Settlements, in an effort to encourage the evacuation of the affected site, placed two public notices in the daily newspaper. The notices advised that appropriate arrangements were put in place to relocate the residents, that site development works were in progress to provide roads, drains water supply and electricity and that building lots were being set out for occupation. The affected residents were requested to visit the NHA's site office from June 13, 1994 for the purpose of selecting building lots. As a result of these notices 86 households, originally identified by the survey of households undertaken by the Ministry of Health, visited the site office. However, it is reported that in November 1994 the Minister of Housing and Settlements viewed the site and decided that it was too good for the squatters and that the site should accommodate a regular housing component with the squatters reassigned to back plots.

The Ministry of Housing and Settlement sought a legal opinion from the Attorney General and Minister of Legal Affairs with respect to the enforcement of compulsory evacuation. No response was forthcoming and compulsory evacuation of the contaminated site cannot begin until such opinion is given.

In July 1993 Cabinet agreed to the establishment of a Technical Team to manage the evacuation, treatment

and proper disposal of the contaminated material. The Team then held several meetings between June and August 1994 to determine the most appropriate and cost effective approaches to achieve its terms of reference. It decided that the soil will be treated on site, compacted and sealed to prevent leaching by containing it in an impermeable tank, and water-proofing the treated soil.

CURRENT STATUS

Over the years the sense of urgency wore off and the resettlement of the residents was treated as a regular resettlement and regularisation project and as such nothing substantive has been done to alleviate the problems of the residents. Early general elections held in 1995 after the ruling party was in power for three of the five years provided for by the Constitution, would have contributed to the delay in implementing the relocation exercise. In June 1996, under the new government, the Ministry of Health sought and received Cabinet's approval to establish a Task Force with specific terms of reference to submit within two weeks, a proposal for the resettlement of the residents; the decontamination of the site at Demarara Road and the disposal of toxic wastes generated in Trinidad and Tobago.

In 1998 the Government, in response to questions from Members in the Upper House of Parliament, informed that it had taken a decision to resettle the residents of the contaminated site and to construct houses under the NHA by the end of 1998 and that when the residents are relocated, remediation action will be taken. Consequently, the Environmental Management Authority (EMA) established by the Environmental Management Act, No. 3 of 1995, was mandated to prepare an action plan for remedial activities. The EMA, with the assistance of the US Environment Protection Agency, has developed the Remedial Investigation Feasibility Study Plan and has sought to acquire equipment to establish the nature and extent of the lead contamination. One of the prerequisite to implementation of the action plan is the removal of the residents from the site. Recognizing the fact, that the residents may resist resettlement, the EMA has met with the residents to establish dialogue and improve relations with them. The EMA intends to use its authority under Section 70 of the Environmental Management Act, 1995 to investigate and prosecute the parties responsible for the contamination of the site.

THE CONSTITUTIONAL REGULATION OF TREATY-MAKING: ITS IMPORTANCE IN THE ENFORCEMENT OF INTERNATIONAL ENVIRONMENTAL LAW

Presented by:
Mr. Luis G. Franceschi
Venezuela

Man perfected by society is the best of all animals; he is the most terrible of all when he lives without law, and without justice.

Aristotle

The procedures to ensure enforcement and effectiveness of international environmental treaties or agreements varies from country to country. It depends on the internal procedure followed for domestication of international law. Consequently, the search for the most appropriate constitutional system for domestication is of paramount importance so as to enable international environmental law to permeate any national legislation in a most effective manner.

International agreements or treaties may bring about **external effects** and **internal effects**. The former binds a state to fulfil international obligations. All international agreements produce external effects for the mere fact of being 'international', but not all will necessarily produce internal effects.¹ 'Internal effects' refers to those agreements which are intended to produce some change in the municipal legal system. They fall within any of the following two categories:

- Those agreements which officials intend to have applied within their territorial boundaries, and
- those agreements which, in order to accomplish

an international obligation, require that some change be made in the internal law of the country.

External and internal effects depend primarily on the fulfilment of the legal formalities established by law. For example, a treaty will have international effects if it fulfils the international law requirements, i.e. that signature, ratification, or other formalities have been performed according to law. If these formalities are fulfilled, it is said to be a '*valid*' treaty; it has **validity**. Similarly, a treaty will have internal effects if it fulfils the municipal law requirements for treaty making.² If these requirements are not fulfilled the treaty may be valid, but there is '*inability to perform*'. Hence 'inability to perform' is caused by a breach in the municipal law requirements, and it induces what is known as '*imperfect ratification*'.³

If attention is now focused on those agreements requiring internal application, which is the case of most environmental agreements, and on the manner in which they are incorporated into the legal municipal arena, the need arises of giving an answer to this question: how is a treaty incorporated into the municipal arena?

INCORPORATION OF A TREATY INTO THE MUNICIPAL ARENA

The rules governing the conclusion of treaties are laid down partly by national constitutions — varying from one country to another — and partly by international customary law, supplemented by the 1969 Vienna Con-

1 For example, a declaration recognizing as compulsory the jurisdiction of the International Court of Justice, in conformity with Article 36, paragraph 2, of the Statute of the International Court of Justice.

2 Constitutional law plays a key role in this regard. The formalities established by the constitution for the conclusion of treaties will determine whether a party has the necessary executive or legislative power to give effect to the treaty.

3 Imperfect ratification occurs when 'two States conclude a treaty and, after their representatives have declared it to be binding, one of them claims not to be bound because some of its own constitutional requirements have not been complied with.' See Paul Reuter, Introduction to The Law of Treaties, Printers Publishers, London, 1989, at 10.

vention on the Law of Treaties and the 1986 Vienna Convention on the Law of Treaties between States and International Organisations or between International Organisations.⁴ National constitutions present two approaches to the conferment of legal character to those treaties requiring internal application:

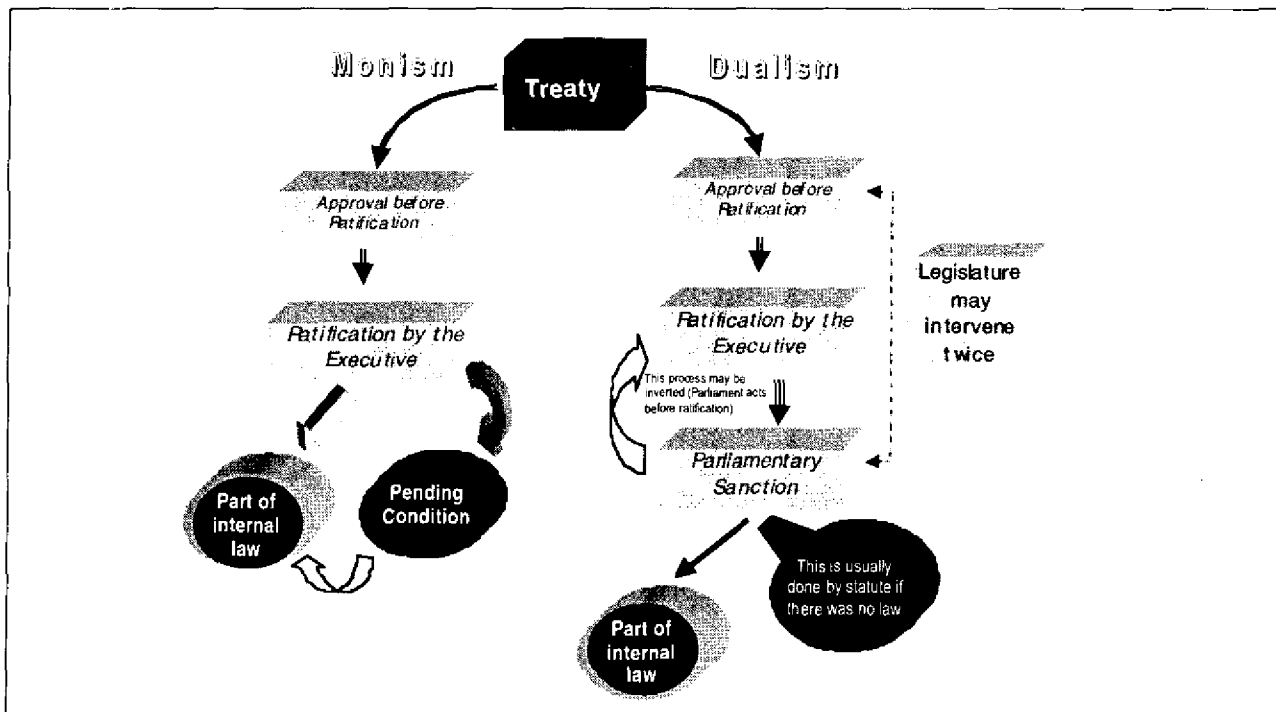
- **Parallelism**, a concept of historical reality, is the acknowledgement of the co-existence of the two independent juridical orders, i.e. international and national.
- **Internationalism**, initiated by the Austrian school; it is the acknowledgement of the primacy of international law and, thus, agreements made under certain conditions automatically become law of the land.⁵

In today's juridical literature, parallelism is called **dualism**, while internationalism is called **monism**. The fact is that for some states, concluded treaties are considered part of the law of the land (monism)⁶, and for others they are not (dualism).⁸

In monist systems treaties become law of the land automatically. However, they are not always self-executing or immediately operative. Monism represents a step forward in the development of binding rules of international law and their enforcement. Dualism, on the other hand, is not directly related to the approval the legislature usually grants before ratification, which may also be there in the monist system. Rather, it rests on the requirement of having a statutory law being passed by Parliament before giving any legal internal effect to a 'ratified' treaty. This may hamper the fulfilment of international obligations because there is no possibility of giving internal effect to treaties unless they are consistent with existing legislation, or a statute is passed by Parliament.

The following chart may help the reader understand how monism and dualism operate.⁹

The modern trend in constitutional law should be geared towards enhancing and facilitating domestication of treaties in general and, specifically, those referring to international environmental law. Inappropriate constitutional



4 See Paul Reuter, *op. cit.*, at 35.

5 Some authors like Boris Mirkin-Guetzevitch speak of a third group called *Nationalisme constitutionnel*, that is the acknowledgement of the primacy of internal law although this would imply a complete negation of the existence of international law which does not correspond to today's reality.

6 See Boris Mirkin-Guetzevitch, *La Methode Historique de l'etude des Rapports entre le Droit International et Droit Constitutionnel, Recueil des Cours*, Académie de Droit International, vol. 38 de la collection librairie Hachette, 79 Boulevard Saint-Germain, Paris, at 312.

7 For example, Article 2 of the US Constitution says: "...all treaties made or which shall be made, under the authority of the United States, shall be supreme Law of the Land." However, although they become 'the supreme Law of the Land', some treaties require legislative action before they can receive effect in American courts.

8 Examples of dualist constitutions are the 1979 Constitution of the Islamic Republic of Iran, the 1945 Constitution of Indonesia, the Iraq Interim Constitution of 1968, the 1982 Constitution of the People's Republic of China, the Constitution of Antigua and Barbuda of 1981, the Constitution of Venezuela.

9 It is important to understand that there can be as many designs of systems as countries in the world. We have tried to present in this chart the most common features of systems in operation in the world.

provisions dealing with treaty-making, raises a major obstacle for the performance and enforcement of international environmental obligations.

To make the domestication process expeditious, inexpensive and effective, in our view, only **certain kind** of treaties should be tabled in Parliament for discussion before ratification, i.e. those dealing with the critical function of the legislature, such as treaties in matters of peace, modifying municipal laws or territory, some which deal with financial matters, and those that require domestication in the municipal legal order. We could call them "**critical treaties**" for they deal with the critical function of the Legislature, i.e. the function whereby the executive is made answerable to the legislature.

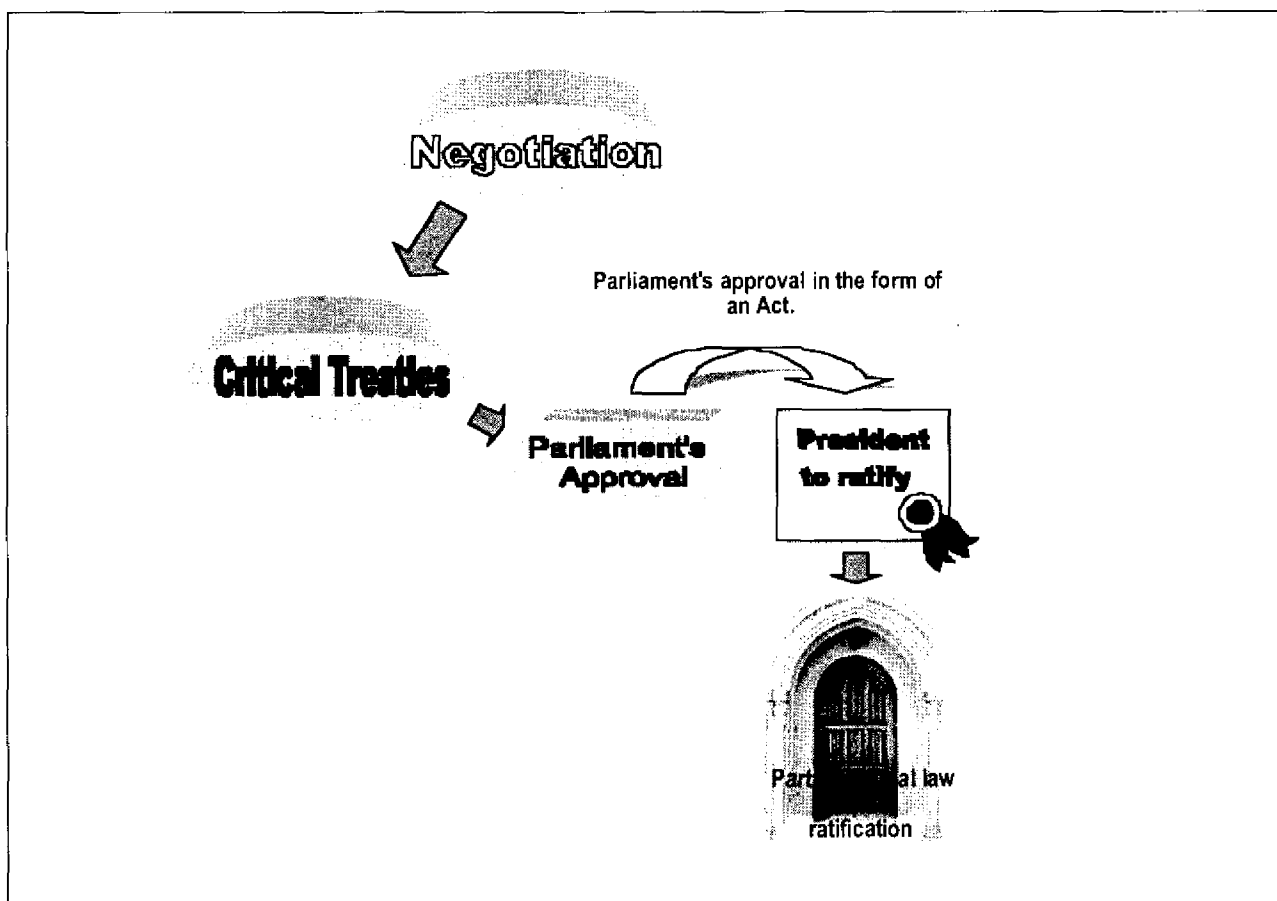
It may be noted that the power to make treaties consists of three levels: negotiation, signature and ratification.¹⁰ These three levels should be vested in the executive. Parliament would only get involved before ratification by way of authorising the executive to ratify certain kinds of treaties. The role of Parliament is, thus, limited *rationae materiae* - by the specific kind of treaties which would be tabled in the House, and *rationae tempore* - by the specific time in which Parliament's approval is required (only before ratification).

Once the National Assembly has taken part in the discussion of treaties requiring internal application, and once internal laws have been harmonised, there is no reason for further legislation in respect to them. In conclusion, Parliamentary involvement in the treaty making process would be achieved through the adoption of the following rule:

Critical treaties should be tabled in Parliament for discussion before ratification. Parliament's role should be limited to approving the treaty or expressing its reservations to all or part of the treaty. Parliament however, should not be able to change the terms of the treaty. If Parliament does not approve the treaty as a whole, the executive should not ratify. If Parliament expresses reservations, the executive should ratify, subject to a reservation on those articles which Parliament has not approved.

The suggested system for the signature and ratification of critical treaties may be summarised, in general terms, in the following graphic:

And the suggested system for the signature and ratification of non-critical treaties may be summarised, in general terms, in the following graphic:



10 These levels may overlap each other as it happens with those treaties which do not require ratification, e.g. the agreement resulting from an exchange of notes.

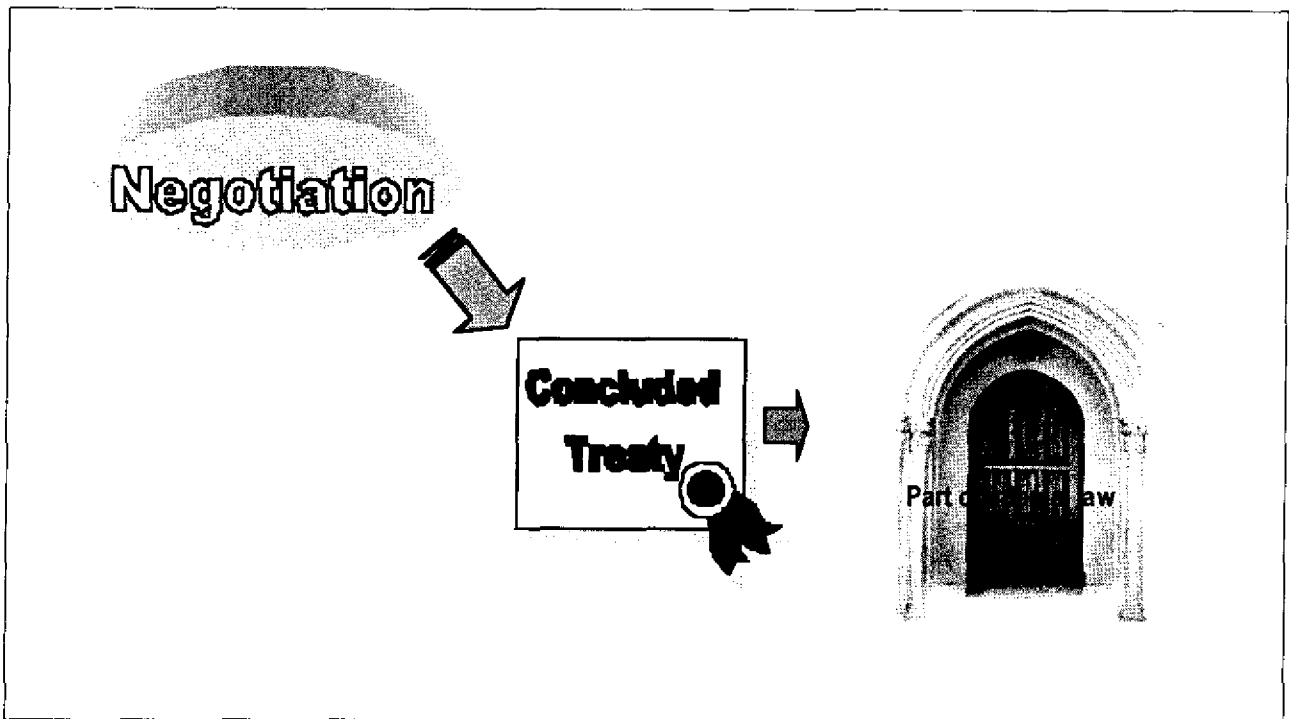
Hence, it would be our suggestion that an article/section regulating the treaty making process should be included in national constitutions. Such an article/section may not necessarily make specific mention of environmental treaties but treaties in general. In this way environmental treaties do not need to follow a special procedure but would instead benefit from the procedure followed by treaty-making in general. The section could read as follows:

- (1) **The President of the Republic shall negotiate, sign, ratify or denounce treaties.**¹¹
- (2) **Peace treaties, treaties modifying¹² or requiring the enactment of provisions of a legislative nature,¹³ treaties modifying national boundaries,¹⁴ treaties creating a direct or contingent financial obligation on the people of Kenya,¹⁵ and financial treaties of which provision has not been made in the estimates of expenditure approved by Parliament,¹⁶ shall**

require the approval of Parliament before ratification.

- (3) **Duly ratified treaties shall be, upon their publication, law of the land.**¹⁷

A clear set of rules governing ratification and domestication of international treaties is essential for the adequate performance of international environmental obligations. It is the purpose of this research to encourage governments and international organizations to assess the current treaty-making procedure in municipal law and to make an in-depth study to seek ways of improving deficiencies and/or legal gaps. In this regard UNEP, perhaps in conjunction with international legal agencies/organizations could make a large and productive contribution to help states knock down any barrier preventing quick and efficient domestication of international environmental obligations. This may be done, first, by advising on proper domestication procedures at the constitutional level.



¹¹ The three stages of treaty making are still vested in the Executive.

¹² Those treaties which are not consistent with national laws or require that a change be made in the law.

¹³ Treaties requiring domestication and for which there is no legal provision already existent in the country.

¹⁴ This implies a change in one of the essential qualifications of a state.

¹⁵ This is also a critical function of which the government must give an account to its people through Parliament.

¹⁶ This provision is intended to keep government expenditure and financial commitments within the national budget approved by Parliament.

¹⁷ In this case, once a treaty is duly ratified it will automatically become, upon publication, law of the land and, thus, it will not need to be domesticated further after ratification.

E. WEST ASIA

HAZARDOUS WASTE MANAGEMENT IN THE STATE OF BAHRAIN

Presented by:
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1. INTRODUCTION

The State of Bahrain comprises an archipelago of 36 low lying islands situated between Saudi Arabia and the Qatar peninsula. The total land area of islands is approximately 695 Sq. km. The three islands of major economic importance are Bahrain (Manama), Muharraq and Sitra. Manama is the largest island with a land area of 587 Sq. km where over 85% of the country's population reside. The total population of Bahrain is over 642,972 and is increasing at an alarming rate of 2.8% with a high population density of around 829 persons per Sq. km.

The main economic activities in Bahrain are industry, trade and tourism. Waste management in general and Hazardous Waste management, in particular, are the main tasks of the Directorate of Environmental Control, Environmental Affairs (EA), Ministry of Housing, Municipalities and Environment.

2. TYPES OF WASTES GENERATED IN BAHRAIN

Three main types of waste are generated in Bahrain and include municipal, industrial and healthcare waste. It is estimated that around 1,000 tons/day of municipal waste, 250 tons/day of industrial waste and around 3 tons/day of healthcare waste is generated in Bahrain. This includes hazardous, semi-hazardous or potential hazardous, inert, inorganic and organic waste. Due to the rapid increase in population and industrial activities, the quantities of waste generated are increasing proportionately.

3. GENERATION OF HAZARDOUS WASTES:

The highlight of country's industrial policy is to encourage the industrial sector to expand and diversify in order to increase the sources of income and to provide future non-reliance on oil and oil related industries for increasing and securing the standard of living of its citizens. Thus the country generates a wide range of industrial and hazardous wastes.

The major sources of hazardous wastes are health care wastes and industrial waste. Healthcare wastes are generated from the healthcare facilities (five major hospitals) and industrial wastes by the following major industries:

- Oil refining;
- Aluminium processing;
- Petro-chemicals;
- Ships repairs and dry docks.

The summary of estimated industrial waste generated is mentioned in tables 3.1, 3.2 and 3.3 below

TABLE - 3.1. Summary of Estimated Waste Generated in Bahrain 1998	
Waste Category	Production (t/yr)
1 Solid Waste	95,467
2 Oily waste & sludge	25,218.7
3 Liquid waste	22,667 Cu.m./yr
4 Tarry Pitch	1,500,000 accumulation
5 Miscellaneous waste	N.A

TABLE - 3.2: Estimated Quantities of Solid Waste Generated - 1998		
Type of waste generated	Production (t/yr.)	Classification
1. Spent Pot Lining	12,700	A
2. Carbon Dust	1,950	B
3. Aluminium Dross	11,550	B
4. Sewage Sludge	7,765	B
5. Chemical Waste	1,684	A
6. Bath Dust & Filter Dust	480	B
7. Chromium Sludge	27.5	A
8. Aluminium Sludge	15,367.5	B
9. Spent Catalyst	1,671	B
10. Sand Plastering Grit	42,000	B
11. Health Waste Ash	272	A
TOTAL	95,467	
A : Hazardous Waste		
B : Potential Hazardous waste		

Type of waste generated	Production n (t/yr.)	Classification
1. Oil Sludge unleaded	4,040	B
2. Oil Sludge leaded	6,373	A
3. Oily Waste	3,966	B
4. Oil Slop	7,000	B
5. Lubricant oil	3,012	B
6. Tarry Pitch	1,500,000	B
7. ESP Tar & Tarry Pitch	190	B
8. Oily & Chemical Waste	637.7	A
TOTAL	1,525,218.7	
A: Hazardous Waste B: Potential Hazardous Waste		

4. PROBLEMS AND CONSTRAINTS RELATED TO WASTE MANAGEMENT:

There are several inter-related problems and constraints related to waste management, which include:

1. Limited land area;
2. High population density;
3. Lack of information on industrial production and recycling processes;
4. Limited Small and Medium Enterprises (SMEs) resources and incentives for proper waste treatment;
5. Insufficient finances and manpower to conduct waste inspections and monitoring;
6. Stock piling of industrial waste on land;
7. Illegal dumping of hazardous waste in water bodies and on land;
8. Lack of environmental awareness;
9. Lack of pressure and participation from the public.

5. PROBLEMS IDENTIFICATION

The problems occurring due to hazardous waste management were identified two decades ago. This was when rapid industrialization resulted in misuse of natural environmental resources, causing air, water and land pollution. The Government of Bahrain reacted promptly to these growing problems and established the Environmental Protection Committee (EPC) in 1980, which was converted into full fledged Environmental Affairs (EA) in 1996 under Ministry of Housing, Municipalities and Environment.

6. APPROACHES FOR PROBLEM SOLUTION

The responsibility for waste management in Bahrain falls to the Municipality Affairs for the municipal and domestic waste, to the Ministry of Health for the Healthcare waste and to the EA for industrial waste. The industrial wastes are classified based on their characteristics and

composition. The waste generators submit the waste profile sheet to the EA, which after scrutiny classifies into hazardous, semi hazardous, inert waste and miscellaneous waste. The non hazardous waste and inert waste is sent to the Askar Municipal landfill site. While the other waste is classified and appropriate treatment and disposal methods are recommended. Presently, Bahrain exports small quantities of industrial waste for either recycling (like refinery catalyst) or for treatment and disposal (like PCB for transformers). The planning, monitoring and control of hazardous waste are done according to the national environmental legislation and international guidelines. EA is striving hard to manage and control the hazardous waste based on the available resources. EA has acquired a dedicated landfill site at Haifira to accommodate industrial waste. Recently a consultant has been appointed to plan and design the landfill site as per the international standards. EA has also earmarked another future landfill site in the proposed quarry area of the Third Town. Besides, EA is continuously working with the major industries to assist them in solving their waste management problems.

For healthcare waste treatment and disposal, EA has provided technical assistance to the Ministry of Health and has invited private contractors to build and operate the modern and centralized State-of-the-art technology for healthcare waste treatment in the country.

A Ministerial Decree has been issued mentioning that the industrial waste generator has to pay BD 20/ & BD 40/ per ton for the disposal of potential hazardous and hazardous waste respectively. EA is also working on the agenda on waste minimization, recycling and creating environmental awareness among the people.

7. ENVIRONMENTAL LEGISLATION:

The timeline of significant developments outlining the major legislative measures concerning waste management and environmental pollution are mentioned in

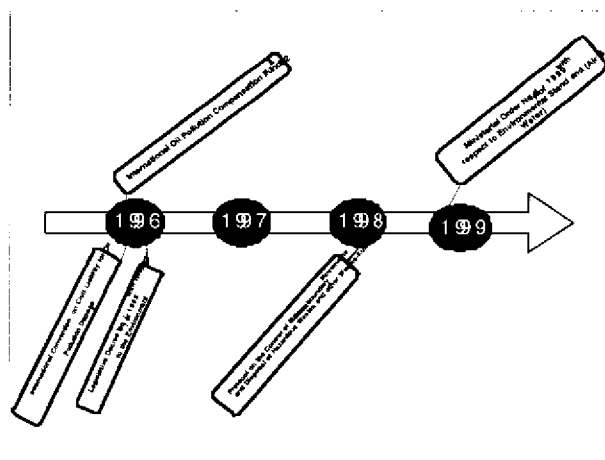


Figure 7.1.

The main legislation controlling the waste management is the Legislation Decree No. (21) of 1996 with respect to the Environment. The main Articles related to waste management are:

Article 2:

For the purpose of implementing the provision of this law, the following terms shall have meaning assigned against each:

Any materials or wastes resulting from industrial operations, chemicals or radiation and acquire the hazardous characteristic because of their contents of materials, material concentrates, chemical reactions, characterized as toxic, having the capability to burst and corrode or any other characteristic resulting in danger to human, animal, plant life or the environment whether alone or when they are in contact with other forms of wastes.

Article 4:

For the purpose of implementing its objectives, the Environmental Body shall co-operate and co-ordinate with all the relevant authorities to carry out the following:

Laying down the required bases for the proper management of industrial, health care and domestic waste.

Article 15:

Persons concerned with the production and dealing in such hazardous materials whether in gas, liquid or solid form, shall comply with all the precautions and conditions determined by the Environmental Body to ensure that no damages occur to the environment.

The owner of the establishment, which produces such hazardous materials as a result of its activity in accordance with the provisions of this Law, shall maintain a register for such waste and the manner of their disposal. An Order of the Minister for Housing, Municipalities and Environment shall specify the details to be entered in the said register.

The Environmental Body shall be empowered to follow up such a register to ensure that the details thereof conform to the actual state of affairs.

Article 18:

Various persons and projects shall be prohibited from storing or disposing of waste in any manner which does not comply with the systems, standards and methods laid down by the Environmental Body.

Article 19:

All industrial projects determined by the Environmental Body shall be required to establish waste treatment units for waste resulting from their activities, particularly the hazardous and toxic ones.

Article 29:

Without prejudice to any severer punishment provided for in any other law, every violation of the provision of Articles 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 27 and 28 of this law shall be liable for a punishment of imprisonment and a fine not exceeding BD50,000/- or either penalty. Additionally, the court is empowered to order the closure of the premises where the work is the source of pollution for a period not exceeding three months. In case of recurrence of the violation, the court may order the cancellation of the licence.

Imprisonment for a period not exceeding one year and a fine of no more than BD 1,000/-, or either penalty, shall be inflicted upon everyone who violates the provision of Article 3(3).

Inflicting the punishments, provided for in this Article, shall not bar the court from compelling the offender to pay all the expenses resulting from making good the damage caused to the environment and passing a judgement for compensation due to such damages.

8. HAZARDOUS MATERIALS AND WASTE

The EA is providing guidelines and advice to industries in treating and disposing of their industrial and hazardous waste. After the closure of industrial landfill site at Ad-dur in 1992, no site was available to accommodate the industrial waste. Private enterprises on the other hand are also not keen in setting up any recycling and treatment facility due to low profitability.

The EA is laying great emphasis on hazardous waste management and the subject is on the top of the agenda. The strategy of EA is on waste avoidance and waste minimization and building in house (on-site) waste treatment and recycling facilities, exporting the non-recyclable waste in accordance with Basel Convention and to manage the hazardous waste in environmentally sound manner. The legislation on hazardous waste management is under preparation and is expected to be enforced in near future. Furthermore, Bahrain will also benefit from the establishment of a Hazardous Waste Training and Technology Transfer Centre in the region.

9. VEHICLE EMISSION MONITORING

The vehicle numbers are rapidly growing in Bahrain due to rapid industrialization, population growth and

increase in economic activities. It is estimated that the registered vehicles in Bahrain are around 200,000 for a population of over 645,000. This distinguishes Bahrain as a country with one of the highest population to vehicle ratio. The vehicles plying in the country are of different sizes, capacities and usage and include diesel and petrol vehicles ranging from motorcycles, cars, wagons, pick-ups, trucks, buses, long vehicles municipal vehicles and equipment carrying vehicles which cumulatively generates poisonous gases like carbon monoxide, hydro carbons, nitrogen oxides and smoke especially during the peak rush hour.

EA has realised this serious matter, and has initiated a campaign with the Traffic Directorate to monitor the vehicular emission for safe-guarding the public health and protecting the fragile environmental resources of the country. EA has also procured Vehicular Emission Monitoring equipment to conduct random checking of polluting vehicles, which is as per the Article 9 of the Legislative Decree No. (21) of 1996 with respect to the Environment which is mentioned below:

Article 9:

The use of machinery, engines or vehicles from which polluting materials or contaminants are discharged or from their exhausts in excess of the limits determined by the Environmental Body, shall not be permitted.

10. CONSTRUCTION OF POTTERY KILNS AT A'ALI

Pottery industry is considered as one of the traditional industry that Bahrain is famous for since the primitive ages. At present, this industry is being concentrated at A'ali village close to the archaeological sites. However, this industry has become a source of pollution affecting the public health as well as the environment mainly due to the harmful and dangerous gases and smoke that are produced due to burning of inefficient and polluting wastewood.

The EA has conducted a detailed study and assessment of pollution spread by the seven pottery kilns and confirmed that the harmful emissions and smoke from the kilns are seriously affecting the worker's health and people residing in the neighborhood causing severe air pollution, discoloration of buildings and danger to vehicle commuters.

The EA in consultation and coordination with the Directorate of Archaeology and Heritage and Directorate of Tourism has planned the improvement project to be implemented in two phases:

Phase I: Construction of Improved Kilns

The EA selected an experienced local contractor for planning, designing and construction of the improved

kilns. Seven new kilns were constructed and have recently been handed over to the pottery kilns owners. These kilns utilize cylinder gas and are environmental friendly utilizing proper heating and insulating bricks, inside and outside cover, stack for dispersion of emissions and gas burners with manual controls.

Phase II: Environmental Improvement of the A'ali Area

After construction of the improved pottery kilns, the EA has planned the area to be a showcase for tourists who are eager to watch and witness the traditional craftsmanship of Bahraini Entrepreneurs. The entire A'Ali area with old and improved pottery kilns will be separated and fenced. A cafeteria and restaurant will be provided along with the walkways, toilets, souvenir shops etc. At present the EA is scrutinizing the bids of the selected contractors for carrying out the construction activities.

These projects activities are carried out by the EA which are in consonance with the Legislative Decree No. 21 of 1996 with respect to the Environment. Following Articles support the project.

Article 6:

It shall not be permitted for any person or project to use the environment in any environment polluting activity, contributing to its deterioration activity, causing damage to the natural resources, living beings, breach, prevent the utilization, use and the proper and reasonable exploitation of the environment.

Article 8:

The various projects shall, in undertaking their activities, ensure not to emit or allow leaking of materials and agents causing environmental pollution exceeding the maximum limits permitted by the Law and the implementing regulations.

Article 25:

The Environmental body shall, after consultations with the relevant organizations, reconsider the best technology available to prevent pollution, control it and prevent environmental deterioration.

11. SAND-WASH PLANTS

Sand-Washing Plants are Located in Bahrain mainly near to the seashores. These plants extract sand from the sea, and then drain the used washed water back to the sea. Usually this water contains suspended materials that can pollute the marine environment and can deteriorate the water quality.

To monitor this environmental problem the "Environ-

mental Affairs" is keeping vigilance and control on the effluents from these plants keeping in view the Legislative Decree No. 21 of 1996 with respect to the Environment. The relevant Articles of the Legislative Decree are Article 6, 8 and 25. The sand washing plants are instructed by the EA to provide testing reports of random samples to be taken on weekly basis. The results should confirm the national effluent standards, which is 35 mg/liter for suspended solids.

In addition, to confirm these results, the laboratory of Environmental Affairs periodically conducts random analysis and testing of some samples to verify the results. The analysis from January till June 1999 showed that the concentration level of the suspended material is remarkably improving.

12. OBSTACLES BEING FACED BY THE ENVIRONMENTAL AFFAIRS

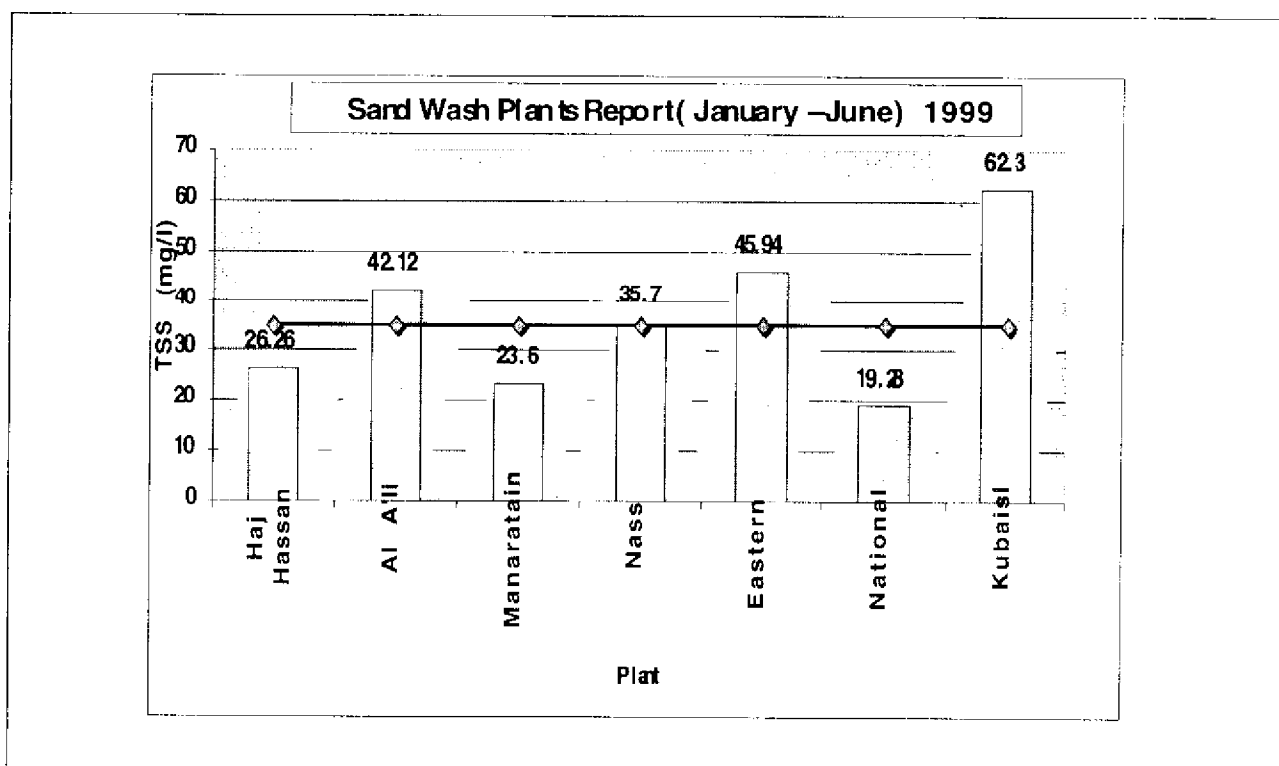
Following are the major constraints being faced by the EA in appropriate management of hazardous wastes:

- Lack of essential treatment and recycling technologies and the limitation of geographical area;
- Lack of financial resources;
- Lack of expertise and well-trained staff;
- Absence of national regulations pertaining to industrial waste;

- Collection, storage, recycling, treatment and disposal;
- Lack of appropriate facilities for industrial waste;
- Lack of industrial waste disposal sites.
- The temporary waste disposal site is inadequate in capacity and because of its lack of lining and a leachate control system;
- Enforcement of legislation and regulations concerning hazardous wastes management;
- Absence of adequate facilities for industrial and chemical waste. Collection, storage, recycling, treatment and disposal;
- Lack of waste classification (Categories) for waste generation from SMEs;
- Illegal disposal of hazardous waste by SMEs;
- Lack of analytical capabilities for testing and identification of hazardous waste;
- Lack of database regarding industrial and hazardous wastes.

13. ASSESSMENT OF ACTIONS AND RECOMMENDATIONS FOR FOLLOW-UP

The timely promulgation and enforcement of the environmental legislation has greatly helped in creating awareness among the waste generators including large industries and SMEs.



MAJOR ENVIRONMENTAL PROBLEMS IN OMAN

Presented by:

Mr. Ibrahim Khamis Al-Gbedani

Ministry of Regional Municipalities and Environment

Sultanate of Oman

Introduction

1. A Lack of environmental awareness can be noted among the public and various sectors whether national or expatriate investors, staff of industrial sector, fishermen residing adjacent to beaches or cattlemen as concerning overgrazing. This lack of environmental awareness was noticed by the officials of this Ministry (Ministry of Regional Municipalities and Environment) through the damaging human activities of these sectors. The Ministry, in its efforts to solve this problem, revealed its ambitious plan by establishing awareness centres in all the regional municipalities of the Sultanate. In addition to the field awareness campaigns, it would also deliver lectures to raise the awareness of the citizens of their adverse impacts on the environment, produce televised or radio programmes, or include relevant articles in its magazine. These ongoing activities aim at implanting the correct principles and sound environmental behaviours among all the community individuals, so that they will learn to live in a clean environment.

Problems of Pollution Faced by Oman

2. The Sultanate of Oman has a coast extending about 1700 km. Because of the importance of the sea, it is always exposed to pollution resulting from two sources as follows:
 - (1) Discharge of ballast water
 - (2) Cargo tanks washings.
 - (3) Offshore discharges of liquid and solid waste.
 - (4) Machinery rooms waste oil discharges.

The Sultanate, due to such discharges, is facing the tar balls problem along all its beaches which is considered a major problem. To confront this problem of illegal discharges, the Ministry has organized an International Conference on Tanker Discharges and Protection of the Marine Environment in collaboration with Gulf Area Oil Companies

Mutual Aid Organization (GAOCMAO) during the period 11-12 April 1995. The conference was attended by States, regional and international agencies and organizations concerned with the issue of marine pollution, beside oil shipping industries and companies, where such problems were studied, discussed and recommendations made.

Actions taken or intended to be taken by the Sultanate:

- 1) Establishment of the regional reception facility in coordination with the United Arab Emirates to receive the ballast water from vessels passing the Arabian Gulf. The facility shall be established in Al-Fujaira, in compliance with the MARPOL Convention, which the Sultanate had sanctioned. The operation of the facility was entrusted to a specialized company.
- 2) The Sultanate is endeavouring to provide an aerial surveillance system. This is with the aim of catching contravening tankers which tend to discharge waste oil or ballast water into sea particularly during the night. Photographing such illegal operations would provide evidence for the prosecution of these tankers.
- 3) The Ministry is also endeavouring to purchase a fast dedicated equipped boat to combat marine pollution and containment of oil spill incidents and pollution.
- 4) The Ministry, in cooperation with other concerned authorities, is implementing the National Oil Spill Contingency Plan.

The second source of pollution is the marine pollution resulting from land-based sources such as:

- a) Drainage of liquid industrial waste;
- b) Discharge of liquid waste from desalination and sewage treatment plants; and

- c) Wadis and rivers' courses waster borne pollutants.

In dealing with this problem, the Ministry has issued laws and regulations organizing the discharges in addition to coastal zones management plans.

- 3. Water pollution in the Sultanate, particularly aflaj (artificial canals) water, is considered one of the major pollution problems. This problem is worsening by the construction of soakaway pits adjacent to aflaj and water misuse by some citizens.

It should be noted that the Sultanate is depending on groundwater to meet its water needs. The pollution of such water is exacerbating and some reports and studies mentioned that the increase in water salinity was the result of over extraction of potable water. The cause of such pollution is attributed to the permanent sources of pollution in the aquifers"recharging areas, bearing in mind that the domestic and industrial liquid and solid waste are the most possible sources of water pollution in the Sultanate. The action taken by the Ministry to confront such problem is represented by the implementation of a project or the study of a plan for the protection of groundwater from pollution through assessment of the current water pollution, specifying the sources of pollution, the activities and practices which their impacts on such water need careful study, in addition to determining the issues of concern which include the use of wells and aflaj water for various purposes and the prepa-

ration of a long-term strategy for the protection of water resources.

Issues that the environmental laws is likely to, or should, address in the next 10 years:

- 1) To establish sites for the disposal of hazardous waste which is expected to increase during the coming years due to the rapid industrial development in the Sultanate and the effects of hazardous waste, resulting from such activities, on the environment. This step will be accompanied by provision of a technical qualified cadre for the management of such hazardous waste.
- 2) To provide a qualified national technical cadre capable of handling the environmental issues. It should be noted that the provision of such cadre will require a long period for qualifying this cadre. The Sultanate, in general, and this Ministry in particular are giving great concern to this issue by sending the national cadre and this Ministry's staff abroad for higher studies in the field of environment. Recently two centres for environmental studies and remote sensing were established at the Sultan Qaboos University, where the studies and a practical research centre is entrusted with the enhancement and coordination of the various scientific research in the field of environment with particular emphasis on the Omani environment.

INTEGRATED COASTAL ZONE MANAGEMENT

Presented by:

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Nairobi, Kenya*

A. INTRODUCTION

The concept of coastal zone management (CZM) emerged in Saudi Arabia as a recognizable entity over the 15 years ago when we began to have growing concerns over rapidly increasing pressures on the coastal zone. In addition the preservation of valuable coastal resources appeared to be threatened. Concerned people began to espouse the need for managing the coastal zone in an integrated system. However, the ensuing years saw a series of successes and failures of attempts to deal with these pressures in a coordinate way.

As in many other countries around the world, the early 1970s in Saudi Arabia were a time of growing awareness and concern over resource and environmental degradation. Sections of our coasts were showing visible signs of this pressure and this generated considerable discussion as to how we should deal with it. This was what prompted Saudi Arabia to pursue a path toward national coastal zone policy development.

A recent review of the international literature on national assessment of the need for coastal zone management in the Kingdom of Saudi Arabia, indicates the wise approaches to coastal resources management by the bilateral collaboration between MEPA/IUCN (1986). This revealed a number of similarities and differences among coastal resources with respect to their sustainable utilization. Hence, there was an awareness of the importance of coastal resources for the institutional development of coastal related sectors, and a corresponding concentration on balancing between the environment and development.

B. INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL ADMINISTRATION.

A Brief History

The beginning of the Meteorology and Environmental Protection Administration (MEPA) occurred in 1951. This was when the Aeronautical Observation Unit was established within the Ministry of Defense's Presidency for Civil Aviation. At that time there were four meteorological observation systems in the Kingdom at Riyadh, Jeddah, Medina and Dhahran. In 1959, The General Directorate of Meteorology became a full member of World Meteorological Organization (WMO). MEPA's role was expanded in 1966 when it was established as an independent administration within the Presidency for Civil Aviation.

Throughout this period, Saudi Arabia was undergoing an unprecedented period of economic expansion. A realization of the environmental impacts resulting from growth, led the government to acknowledge the need for increased environmental input into the Kingdom's expansion. Consequently, in 1981 MEPA's mission was expanded and it became the central environmental agency within the Kingdom. It's name was changed at that time to recognize its environmental role and its current organizational structure was established.

Concurrently, MEPA's mandate was increased in order to deal with issues of environmental management, for example, MEPA, now follows-up on developments regarding climate change, and coordinate the implemen-

1. Agenda 21 is a set of principles for environmental responsibility, which was developed at the 1992 United Nation Conference on Environment and Development. It seeks to provide guidance, which would enable the Family of Nations to enter the 21st century in a sustainable relationship with the natural environment. Specific references regarding the need for coastal zone management as well as the need for national and regional coordination can be found in Chapter 17A of Agenda 21 published by the UNCED Secretariat.

tation of Agenda 21¹. These additional responsibilities included: Environmental monitoring and coordination responsibilities; analytical duties pertaining to the land, air, and water in the Kingdom; authority to prepare appropriate environmental standards and criteria to regulate urban and industrial activities; promotion of public awareness of environmental issues, and to play a catalytic role.

The Institutional Framework

MEPA is the central government's national agency, which is responsible for environmental affairs throughout the Environmental Protection General Directorate (EPGD). In addition to its conventional role as the national meteorological service agency, MEPA is assigned the role of the General Secretariat of the Ministerial Committee on the Environment MCE². This is concerned to establishment of environmental policies, regulations and impact assessments guidelines and procedures; coordination of environmental work and issues; monitoring of environmental parameters; combating environmental degradation; and the sustainable development of natural resources.

EPGD is responsible for matters related to environmental protection such as issuance and implementation of the standards, assessment of environmental status and proposing policies necessary to conserve and improve the environment. The specific duties are: proposing environmental quality standards for the ambient environmental and pollution source; proposing appropriate pollution control measures for implementation; submit reports on environmental impacts of major industrial projects; providing advice and technical consultation for industrial and agricultural activities to ensure that they meet environmental standards; preparing reports on the status of the environment; proposing solutions for resolution of conflicts between human activities and the natural environment.

EPGD has varied responsibilities, which are reflected in its organization. It consists of several departments, which include Environmental Standards and Pollution Control, Human Ecology, Natural Resources, Environmental Impact Assessment, and Marine Environment. A brief description of each department follows:

(i) Environmental Standards and Pollution Control

The main concerns of this department are chemical safety, qualifications, and environmental standards. It conducts studies and researches necessary for development and drafting of pollution standards; studies economic impacts of environmental standards and pollution control measures in order to propose optimal solutions for development activities; reviews solutions to global environmental problems in order to improve current environmental quality standards; and introduces appropriate pollution control technology to the Kingdom.

(ii) Human Ecology

The main concerns of this department are as follows: monitoring, studying and assessing interactions between human ecology and human settlement as they effect changes to natural environment; proposing solutions for conflicts between human activities and the natural environment.

(iii) Natural Resources

The main concerns of this department are as follows: planning for sustainable development within the Kingdom's coastal zone; studying and assessing the impacts of pollution and improper utilization of natural resources; proposing solutions and measures necessary to conserve the natural resources; attaining an optimal ecological balance and preventing pollution.

(iv) Environmental Impact Assessment

This department has the following concerns: evaluating proposals for economic development projects, and recommending actions to reduce potential environmental impact.

(v) Marine Environment

This department evaluates the status of the marine environment; develops comprehensive plans for efficient use of the coastal zone; and coordinates response to oil spills and marine pollution incidents.

2 The MCE is the highest institutional authority in the Kingdom for environmental matters, especially in the establishment of national environmental policy and strategy. The MCE is chaired by HRH The Second Deputy Premier and is composed of concerned Ministers from the Ministries of Foreign Affairs, Interior, Finance and the National Economy, Petroleum and Mineral Resources, Agriculture and Water, Municipalities and Rural Affairs, Industry and Electricity, Health, Planning; the President of KACST and the President of MEPA who serves as the MCE Secretary-General

C. SOME OF MEPA'S ACCOMPLISHMENTS

- Expanded MEPA's instrumentation network of surface, upper air, radar, satellite and environmental stations.
- Regional Telecommunication Hub for World Meteorological Organization (WMO) network, and Regional Climatology and environmental Research Centers
- Public information and environmental standards for air and water pollution sources and the ambient environment;
- Response to the largest oil spills in history: the 1991 Gulf War response received an award from the Bankia Environmental Foundation of Australia. MEPA implemented the National Contingency Plan for Combating Marine Pollution from Oil and other Hazardous Substances in Emergency Cases;
- The Saudi Environmental Awareness Program, supported by MEPA and funded by the private sector within the framework of the Economic Offset Program, produced Arabic environmental materials for schools and carried out a one month environmental exposition in 1995;
- Revised and published the 2nd edition of "Environmental Protection", in Islam, jointly, with IUCN. And MEPA/IUCN Coastline survey of the Red Sea and The Gulf environment and habitats.

D. National Coastal Zone Management

As in many other countries around the world, the early 1980s in Saudi Arabia were a time of growing awareness and concern over resource and environmental degradation. Sections of our coasts were showing visible signs of this pressure, and this generated considerable discussion as to how we should deal with it. We began to see signs of growing concern over rapidly increasing pressures on the coastal zone. Such pressures result from a wide range of activities on land. Human settlements land use, construction of coastal infrastructure, agriculture, forestry, urban development, tourism and industry can affect the marine environment. Coastal erosion and siltation are of particular concern. Therefore, the preservation of valuable coastal resources appeared to be an important issue. This led to the fruitful collaboration between MEPA and the IUCN, which resulted in the assessment of national CZM requirements.

Degradation of the marine environment can result from a wide range of sources. Land-based sources contribute 70 per cent of marine pollution, while maritime transport and dumping-at-sea activities contribute 10 per cent each. There are a number of contaminants that pose the greatest threat to the marine environment, in vari-

able order of importance, and depending on differing national or regional situations. These are sewage, nutrients, synthetic organic compounds, sediments, litter and plastics, hydrocarbons and aromatic hydrocarbons. Many of the polluting substances originating from land-based sources are of particular concern to the marine environment since they exhibit at the same time toxicity, persistence and bio-accumulation in the food chain.

The term "*coast*" is, in the majority of cases, defined as a "*sea-land interface*" a *place where land, water and air meet*". Consequently, a "*coastal zone*" is most frequently defined as "*land affected by its proximity to the sea and that part of the sea affected by its proximity to the land*". In other words, this is the area where the processes which depend on the sea-land interaction coast and the axis, are perpendicular to the coastline. In terms of the basic definition of the coastal zone, there is a little controversy related to the coast-wise axis, since it enables any case definition of the boundaries of the coastal systems. On the contrary, there is much dispute with regard to the cross-shore axis. As a result definitions of the coastal zone vary from those covering the entire watershed areas in the hinterland part of the coast, to those which include a narrow coastal strip only. In any case, the definition of the boundaries of coastal zone depends on criteria stemming from the goals of the integrated coastal area management.

"*coastal Area*" is a notion which is geographically broader than the coastal zone, the borders of which require a less strict definition. This notion indicates that there is a national or sub-national recognition that distinct transitional environment exists between the ocean and terrestrial domains. This notion is of extreme importance, as many processes, environmental, demographic, economic or social, actually take place within the boundaries of the coastal area, with their extreme manifestations being most visible in the area of coastal zone.

E. CONCLUSION

In conclusion, I believe all recent environmental planning and management, seeks to improve coastal human settlements, especially in housing, drinking water and treatment and disposal of sewage, solid wastes and industrial effluents. There is a need for the management of the coastal zone in an integrated system. This would require integration of all sectoral programs concerning sustainable development. These would include settlements, agriculture, tourism, fishing, ports, and industries affecting the coastal area. However, this has not always been the case since the past years have seen both a series of successes and failures of attempts to deal with these pressures in a co-ordinated way.

WATER DEPLETION AND POLLUTION

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A. INTRODUCTION

Concern for environmental protection and sustained use of natural resources grew gradually since the 1980s, both on the part of the government and the public. The government interest was reflected in undertaking increasingly active management role in this respect, particularly since 1990 when the environmental protection work was institutionalized. Growing public interest resulted in formation of a number of non-governmental organizations, and increasing involvement of the media in environment issues. The academic institutions and scientific community also got more involved in environmental research.

Remarkable progress has been made in capacity building, institutional development, environmental awareness and in setting a general legislative framework. Progress achieved represents good base for introduction and implementation of sound environmental management.

B. MAJOR ENVIRONMENTAL ISSUES

Protection and careful use of the limited natural resources are essential for sustainable economic development. This is an important issue to Yemen, as the Yemeni economic prosperity relies to a great extent on its natural resource base, on agriculture and mining. Much of the economic activities depends on the exploitation of fresh water resources, marine resources, its soil and oil wealth.

Since the 1960s economic development in Yemen has been undertaken with hardly any consideration to environmental issues. High rates of population growth and urban expansion have increased the pressure on natural resources. Furthermore, natural resources have been sometimes poorly managed and suffered from the harmful effects of over-exploitation. Major environmental problems in Yemen can be listed as follows:

- Desertification;
- Water depletion and pollution;

- Degradation of natural habitats;
- Industrial pollution;
- Sanitation (liquid and solid wastes);
- Hazardous wastes;
- Marine pollution;
- Management of fisheries resources;
- Degradation of the cultural and historic heritage.

(i) Water Depletion and Pollution

Yemen is facing a water crisis, in terms of depletion of water resources and threats to water pollution. Although complete data on the nature and magnitude of the water crisis are not available, the basic trends are reason enough for concern. Failure to meet the country's water needs, will intensify health and environmental problems.

(ii) Over extraction of ground water

Ground water is being mined in many areas. Countrywide, it is estimated that the current withdrawal rate of water for all purposes is at the rate of 138% of renewable resources. The natural supply/replenishment, mainly from rainfall, is limited. Uncontrolled drilling results in lower water tables. Further more, the available scarce water resources is facing problems of growing demand (domestic and irrigation), unconformity between water availability and population distribution, and poor management.

Critical aquifers are expected to reach the end of their useful life within 10 years. The depletion and degradation of the ground water resources represents a disinvestment of the country's natural resource base. In the short term, depletion adds to disposable incomes, contributes to rural employment, and postpones the need for investment in expensive alternatives such as desalinization. In the long term, however, these trends are unsustainable and the rapid exhaustion of usable supplies will lead to the collapse of much of the rural economy.

(ii) Water pollution

Water quality is deteriorating. Shallow aquifers, especially in urban areas, are becoming polluted and coastal aquifers are subject to saline intrusion. The capacity to plan and implement appropriate responses to water resource problems is undermined by insufficient data. Data on water quality and salt water intrusion are weak. There are no national water quality standards, although WHO guidelines are generally applied to urban water supply monitoring for restricted range of constituents.

Ground water contamination is pervasive and poses a serious health threat for those dependent on water from private tankers and neighborhood wells in urban areas. Water resources are contaminated primarily by industrial and residential waste, seepage of wastewater and low pressure, back siphonage and cross-contamination. Consequently, many wells especially those drawing water from shallow aquifers, are contaminated with viruses and bacteria, leaving large segments of the population vulnerable to waterborne diseases. In addition, ground water used in public water supplies is not filtered. In the poor neighbourhoods, inadequate environmental conditions have led to outbreaks of diseases.

Two major studies were commissioned by the EPC in 1990 and 1993 to investigate water pollution in Sana'a Basin. Both indicated bacteriological and chemical contamination of the shallow aquifer. Several other reports and workshop proceeding on environmental issues highlighted water problem as a critical environmental issue in Yemen. The two studies mentioned above contributed in raising awareness among decision makers on the issue.

C. MAIN ACTIONS AND PROPOSED MEASURES

The National Environmental Action Plan prepared in 1996 identified water depletion and pollution as one of the priority environmental issues. Priority actions recommended by the plan to address these issues were:

- Strengthening of the National Water Resources Authority;
- Development of a Nation Water Resources Information System;
- Design of a comprehensive water law; and
- Economic control of water waste and water pollution.

The draft water resources management strategy prepared by the newly established National Water Resources Authority, proposes a number of priority measures to control water resources depletion at the macro, sector and local levels as well, an agenda on the long run. The measures proposed can be summarized as follows:

1 at macro level:

- National consultation on water issues;
- Effective water pricing
- Re-orientation of public expenditures;

2 at sectoral level:

- Introduce regional planning;
- Setup of systems and regulation to conserve water resources and rationalize water uses in agricultural sector (irrigation).

3 at local level:

- Community participation in water resources management

4 the long term agenda:

- Capacity building;
- Development of water policies;
- Drafting a comprehensive water law.

D. MAIN LEGISLATIVE MEASURES REQUIRED

Legislative policy options are among the set of policy options use in addressing environmental issues in environmental management. These legislative measures include development and redrafting of existing laws, regulations and standards for environmental quality. Main legislative measures, which are likely to be encountered during the up coming 10 years, are listed as follows:

1. Issue implementation regulation of the Environment Protection Law enacted in 1995;
2. Issue and enact Environmental Impact Assessment Policies and Procedures;
3. Issue and enact a comprehensive water law;
4. Issue regulations regarding import of water exploitation technology;
5. Redraft the forestry law;
6. Issue land tenure law;
7. Issue a by-law on protected area;
8. Issue wastewater standards and regulations;
9. Issue a by-law on disposal of solid waste;
10. Issue a by-law on hazardous waste;
11. Issue a by-law on pesticide handling and use.

CONCLUSION

It could be concluded that environmental legislation, as a policy option, will be address environmental issues relating to water resources, land resources, waste management, biodiversity and natural habitats. It is also expected to contribute in promotion of sustainable use of natural resources and sound environmental management.

F. EUROPE

WASTE MANAGEMENT

Presented by:

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BACKGROUND

About 20 to 25 years ago Austria started developing and following an "environmental" policy in its own right. Nowadays it is a very complex set of policies framed and determined by UNCED and its follow-up, by the CSD process as well as by the 5th Environmental Action Programme of the European Union. The principles followed in implementing environmental policies are precautionary in nature: the polluter pays principles, the principles of subsidiarity, of democratic decision making, of ownership of society, of ecological economics, of just distribution, of solidarity and of international responsibility. Austria, having a Federal Constitution, incorporates a multitude of actors. These actors are responsible for the implementation of environmental policy at the national, regional and local levels.

1. THE PROBLEM

One of the very visible environmental problems affecting each citizen is that of waste. Both the amount of waste produced as well as the types and toxicity of waste are a threat to the environmental and to the health of the people.

The industrial revolution and the economic boom in Austria have caused the mass production of goods. The production processes themselves may be environmentally hazardous, and often produce substantial amounts of waste. In addition the individual consumer is left with having to deal with the "left-overs" of his consumption – the packaging material, and the individual product or its remains after use. The amount of hazardous waste registered in the nationwide electronic database in Austria was 655,000 tonnes in 1996 (Waste Report). In that year about 20,000 tonnes were imported into Austria and about 40,000 tonnes were sent abroad.

If one looks at the total waste production, the mass potential was about 46.5 million tonnes in 1998. 43.0%

was excavated material, 13.8% construction and demolition waste), 7.2% wood (excluding wooden packages), 6.0% domestic and similar waste, 4.9% secondary materials from trade and industry, 1.6% hazardous waste and used oil, and finally 10.4% of other non-hazardous waste.

2. SOLVING THE PROBLEM

The Austrian Federal and Provincial Waste Management Acts (Abfallwirtschaftsgesetze) regulate questions of a voiding, recycling and treating waste. There are also rules about the trans-border shipment of waste. The responsibility for all hazardous waste lies with the Federal Government, which can also regulate question of non-hazardous waste, if a uniform regulation is required for the whole country. The Federal Ministry for the Environment, Youth and the Family has the responsibility for drawing up a Federal Waste Management Plan.

a) Avoiding waste

Waste can be avoided by developing production methods that result in no or just a very low production of waste. At the same time the toxicity of waste can be minimized.

As a consequence of the Federal Waste Management Act and the Industrial Code industrial concepts have been worked out in recent years in order to describe and quantify waste prevention and re-use potential for various industries and stages of production. The corresponding plans usually are drawn up jointly by the environment ministry and the Austrian Chamber of Commerce or other relevant trade organizations. On the basis of their work companies find it easier to take correct measures for the protection of the environment. So far, industrial concepts have been drawn up for timber, agriculture, medical waste, waste paint and varnish, halogen-free solvent waste, waste from leather producing companies, foundry waste, waste food, drinks and tobacco, waste from dry cleaning, chlorinated hydrocar-

bon metal surface cleaning, the woodpulp and paper industry, textiles, photographic waste materials and water, used oils and lubricants and electroplating waste.

An important aspect for the acceptance of these industrial concepts is their innovative character. Thus it is possible to combine environmentally sound production methods with an increased competitiveness. Consequently, the initial cost of designing a waste management concept may be offset by additional profits generated by the company.

b) Recycling waste

The findings of the 1998 Federal Waste Management Plan show that the amount of residual waste is shrinking in Austria. Apart from achieving a lower rate of production of wastes, much of the decrease in residual waste is due to a growth in sorted collection and recycling. Between 1993 and 1996 sorted collection and recycling has increased overall by 50% (i.e. from 839,000 to 1,263,000 tonnes). For plastics the figure is 900%, for organic waste 97%, for textiles 50% and metal 43%. Paper and glass already had a tradition of being collected, nevertheless they also recorded an increase of 26% and 8% respectively.

Although the total quantity of waste has grown in Austria due to a growing population, a thriving economy and a trend towards single households, there has been a decrease in the quantity of waste dumped. This is of some relief to the Austrian dumps and landfills.

c) Treating waste

Per inhabitant Austria produces 3.3 tonnes of waste per year. About 160 kg per inhabitant per year is classified as residual waste. In order to reduce the amount as well as the toxicity of residual waste destined for dumping, Austrian dumps will only accept thermally or mechanically or biologically pre-treated waste after 1st January 2004. Thus the incineration of waste is gaining importance. It serves as a form of treating and reducing the amount of waste and as a means of destroying toxic components. In addition it can be used for generating energy. After thermal treatment, only about 25% to 30% of the original mass remains. The methods for the incineration of residual waste vary. However, in order to avoid toxic gas emissions, thermal treatment has to take place at a minimum temperature of 850°C. The result is the emission of "purified gases", i.e. a medium-sized

incineration plant emits as much nitrogen oxide as 3 to 4 trucks and as much carbon compounds as one dozen limousines. With improved technology, the emission of dioxin has been reduced by factor of 1,000.

Compared to dumping waste, thermal treatment combined with energy production is thought to be economically viable and sustainable. It also contributes to a reduction in greenhouse gas emissions.

3. The Legacy of Existing Contaminated Sites

In 1997 Austria had 133 old contaminated sites (i.e. old landfills or industrial sites). They pose a threat to human health and the environment. The Contaminated Site Remediation Act provides the legal basis for assessing, funding and carrying out the process of securing and cleaning up of contaminated sites. These activities are financed by earmarked fees collected for the dumping, storing or exporting of waste.

CONCLUSION

The problem of ever-growing mountains of waste clearly demonstrates the necessity for an integrated and comprehensive approach to environmental protection. Here the precautionary principle shows the way towards new production and consumption patterns that reduce the material flows and close material cycles as much as technically and economically feasible thus avoiding waste in the first place. Despite new legislation and policies, the damage already done to the environment will take a long time to repair.

ADDENDUM:

The aim of legal and policy measures to protect the environment is to maintain the basis of human existence. Therefore the quality and sufficient quantity of the basic commodities air, water, and soil have to be preserved as a prerequisite for the production of food.

It is apparent that a large number of environmental conventions have already entered into force. Additional protocols are currently being negotiated, covering probably all environmental issues currently known to man. Consequently, the main emphasis in future will lie on the (early) adjusting benchmarks and parameters according to new scientific findings, enforcing compliance with environmental obligations and ensuring that damages are paid and polluted sites are repaired.

ANNEX I

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ANNEX III

PROGRAMME OF WORK

TIME	ACTIVITY/TOPIC	RESOURCE PERSON
MONDAY, NOV. 15 — DAY 1		
9:00 – 10:00	Registration of participants	
10:00 – 11:00	Walking tour of Gigiri UN Compound	Carol Andere, UNEP
11:00 – 11:30	TEA BREAK	
11:30 – 13:15	Opening ceremony	S. Kakakhe, UNEP S. Wakeham, UNCHS
	Welcome and introduction to the course	D. Kaniaru, UNEP/DEPI
13:15– 14:15	LUNCH BREAK	
14:15 – 15:30	Global Environmental Outlook 2000	D. Claasen, UNEP/DEIA&EW
15:30 – 15:45	TEA BREAK	
15:45 – 17:00	Overview of environmental policy	B. Kante, UNEP/DPDL
TUESDAY, NOV. 16 — DAY 2		
9:00 – 9:45	Recent trends in international environmental law	A. Timoshenko, UNEP/DPDL
9:45 – 10:30	Recent trends in national environmental law	M. Iqbal, UNEP/DPDL
10:30 – 10:45	TEA BREAK	
10:45 – 11:40	Recent trends in environmental law in Africa	C.O. Okidi, UNEP/DEPI
11:40 – 12:30	Recent trends in environmental law in Asia and the Pacific	L. Kurukulasuriya, UNEP/ROAP
12:30 – 14:00	LUNCH BREAK	
14:00 – 14:45	Recent trends in environmental law in Latin America and the Pacific	I. Martinez, UNEP/ROLAC
15:30 – 15:45	TEA BREAK	
15:45 – 16:30	Judicial approaches to environmental litigation	A. Mumma, Univ. Of Nairobi

WEDNESDAY, NOV. 17 — DAY 3

8:30 – 9:15	Scientific and technical aspects of water management	J. Pernetta, UNEP/GEF
9:15 – 10:30	Management aspects of water issues	T. Nakamura, DEIA&EW/UNEP
10:30 – 11:00	Legal aspects of sustainable development	L. Kurukulasuriya, UNEP/ROAP
10:30 – 10:45	TEA BREAK	
10:45 – 11:30	Water Policy Issues	H. Drammeh/T. Nakamura UNEP/DPDL
11:30 – 13:00	Environmental management, with special reference to framework of environmental law and water legislation	J. Nel, South Africa
13:00 – 14:00	LUNCH BREAK	
14:00 – 15:15	Cont.	J. Nel, South Africa
15:15 – 15:30	TEA BREAK	
15:30 – 17:00	Legal issues in sustainable management of freshwater resources	C.O. Okidi, UNEP/DEPI
17:00 – 17:30	Management issues of the biodiversity loss	I. Martinez, UNEP/ROLAC

THURSDAY, NOV. 18 — DAY 4

9:00 - 10:30	Video presentation on the State of the Ozone Layer	G. Bankobeza, UNEP/Ozone Secretariat
"	Legal and management issues on the depletion the Ozone Layer	"
10:30 – 10:45	TEA BREAK	
10:45 – 11:15	Country report New Zealand (Ozone Depletion)	J. Macmillan
11:15 – 12:30	Recent trends in environmental law in Europe	S. Hoefnagel, UNEP/ROE
12:30 – 14:00	LUNCH BREAK	
14:00 – 15:15	Environment and trade: Trade Aspects of MEAs	H. Abaza, UNEP/DTIE
15:15 – 15:30	TEA BREAK	
15:30 – 16:15	Environmental planning and management approach within the sustainable cities programme, institutional and legal aspects	O. Lyse, UNCHS
16:15 – 17:00	Localising Agenda 21 (Action Planning for Sustainable Development)	R. Tuts, UNCHS

FRIDAY, NOV. 19 – SUNDAY, NOV. 21 — DAY 5 – 7

Field trip to the city of Nakuru and Nakuru National Park (Two nights at Lion Hill Lodge) R. Tuts, UNCHS
E. Mrema, UNEP/DPDL

MONDAY, NOV. 22 — DAY 8

9:00 – 10:00	Project Development and Implementation	G. Merckx, UNEP/PCMU
10:00 – 10:30	Country report Thailand (Water Pollution)	R. Jatupoomdecha
10:30 – 10:45	TEA BREAK	
10:45 – 12:00	Intellectual Property Rights	A. Sinambela
12:00 – 12:30	Country report Indonesia (Forest Fire)	P. Kameri-Mbote, ACTS
12:30 – 14:00	LUNCH BREAK	
14:00 – 14:45	Enforcement of MEAs: Problems, issues and common solutions	E. Mrema, UNEP/DPDL
14:45 – 15:30	Global and regional networks on enforcement and compliance: Projected guidelines	I. Rummel-Bulska, UNEP/DEPI
15:30 – 15:45	TEA BREAK	
15:45 – 17:00	MEAs and their relation to GATT/WTO enforcement and settlement of disputes	I. Rummel-Bulska, UNEP/DEPI

TUESDAY, NOV. 23 — DAY 9

9:00 – 10:00	The first decade of the Basel Convention: A review	I. Rummel-Bulska, UNEP/DEPI
10:00 – 10:30	Country report Venezuela (The constitutional regulation of treaty-making)	L. Franceschi
10:30 – 10:45	TEA BREAK	
10:45 – 11:30	Intellectual Property Rights, plant genetic resources and trade	R. Silva Repetto, FAO
11:30 – 12:00	Country report Mexico (Forest Fire)	G. Guiza
12:00 – 12:30	Country report Nigeria (Drought and Desertification)	H.D. Belgore
12:30 – 14:00	LUNCH BREAK	
14:00 – 14:45	UNEP's Regional Seas Programme	M. Iqbal, UNEP/DPDL
14:45 – 15:30	GPA	E. Mrema, UNEP/DPDL
15:30 – 15:45	TEA BREAK	
15:45 – 16:30	Nairobi-Abidjan Conventions	S. Bankobeza, UNEP/DDPL

16:30 – 17:00 Country report Trinidad (Lead Contamination) C. Crawford

Wednesday, Nov. 24 — Day 10

9:00 – 10:30 Video Presentation on climate change S. Osafo, Climate Change Secretariat

“ Legal and policy issues of climate change “

“ Bringing about ratifications of environmental conventions “

10:30 – 10:45 TEA BREAK

10:45 – 12:30 Climate change management issues R. Sharma, DPDL/UNEP

12:30 – 14:00 LUNCH BREAK

14:00 – 15:15 Exercise on climate change S. Osafo, Climate Change Secretariat

15:15 – 15:30 TEA BREAK

15:30 – 17:00 Cont.

THURSDAY, NOV. 25 — DAY 11

9:00 – 10:30 CITES: Scientific/legal/management issues J. Vasquez, UNEP/CITES Secretariat

10:30 – 10:45 **TEA BREAK**

10:45 – 11:45 CBD: Access to genetic resources and benefit sharing F. Situma, Univ. of Nairobi

11:45 – 12:30 Scientific aspects of biodiversity loss P. Chabeca

12:30 – 14:00 **LUNCH BREAK**

14:00 – 15:15 Biosafety protocol negotiations H. Okusu, UNEP/DEC

15:15 – 15:30 **TEA BREAK**

15:30 – 16:30 Sources of environmental information G. Cunningham, UNEP DEIA&EW

FRIDAY, NOV. 26 — DAY 12

8:30 – 9:30 Interlinkages among CBD, UNFCCC and CCD A. Alusa, UNEP/DEC

9:30 – 10:30 Integrated implementation of biodiversity-related conventions Prof. Ojwang, Univ. of Nairobi

10:30 – 10:45 **TEA BREAK**

10:45 – 12:30	Financing environmental management	A. Djoghla, UNEP/GEF
12:30 – 14:00	LUNCH BREAK	
14:00 – 15:15	Implementation of legal aspects of environmental conventions in Uganda	R. Wabunoha, NEMA (Uganda)
	Experience in harmonising sub-regional environmental legislation in East Africa	"
15:15 – 15:30	TEA BREAK	
15:30 – 17:00 Evening	FREE The Carnivore Hotel	Participants

SATURDAY, NOV. 27 — DAY 13

Field trip to Nairobi National Park	KWS
Visit to the Lusaka Agreement Task Force headquarters	A. Dullo, LATF
Weekly evaluation	E.Mrema, UNEP/DPDL

SUNDAY, NOV. 28 — DAY 14

Free

MONDAY, NOV. 29 — DAY 15

9:00 – 10:30	Scientific and technical issues of an environmentally sound management of hazardous chemicals/wastes (PIC, POPs etc.)	J. Willis, UNEP/DTIE
10:30 – 10:45	TEA BREAK	
10:45 – 11:15	International and national legal aspects of environmentally sound management of hazardous chemicals and wastes	M. Nagai, UNEP/DPDL
12:45 – 14:00	LUNCH BREAK	
14:00 – 15:15	The Convention on Migratory Species: Its aims, instruments and relationship with other biodiversity related conventions	U. Mueller-Helmbrecht, UNEP/CMS Secretariat
15:15 – 15:30	TEA BREAK	
15:30 – 16:30	Best Practices: Kenyan butterfly project	S. Friczka, UNCHS
16:30 – 17:00	Country report Austria (Waste)	R. Sturm

TUESDAY, NOV. 30 — DAY 16

9:00 – 10:15	Environmental enforcement/compliance related to Industry and environment: Cleaner production and consumption	L. Heileman, UNEP/DIRCR
10:15 – 10:30	TEA BREAK	
10:45 – 12:30	Video on environmental economics	I. Higuero, UNEP/DIIC
"	Natural resource valuation, economic incentives and benefit sharing	"
12:30 – 14:00	LUNCH BREAK	
14:00 – 15:15	Scientific Aspects in the field of migratory species	W. Meinzingen
15:15 – 15:30	TEA BREAK	
15:30 – 16:30	Small Island Developing States (SIDS)	D. Smith, UNEP/DEPI
16:30 – 17:00	Multi/sectoral chemical decision-making exercise on hazardous chemicals/wastes	M. Nagai, UNEP/DPDI

WEDNESDAY, DEC. 1 — DAY 17

9:00 – 9:45	Management issues related to deforestation and land degradation in the context of CCD	E. Migongo-Bake, UNEP/DEPI
9:45 – 10:15	Country report Bangladesh (Arsenic Contamination)	S. Ahsan
10:15 – 10:45	Country report The Former Yugoslav Republic of Macedonia (Ohrid Lake Protection)	I. Jadranka
10:45 – 11:00	TEA BREAK	
11:00 – 11:45	Developing public participation principles: NGO perspectives on the Aarhus Convention	B. Gemmill, Environmental Liaison Centre International
11:45 – 12:30	Legal aspects of disaster management	M. Iqbal, UNEP/DPDI
12:30 – 14:00	LUNCH BREAK	
14:00 – 14:45	Forest monitoring and advocacy in Kenya	C. Lambrechts, UNEP DEIA & EW
14:45 – 15:15	Country report Kiribati (Waste)	K. Temakei
15:15 – 15:30	TEA BREAK	
15:30 – 17:00	Environmental activism: The role of environmental law NGOs	A. Ogbuigwe, Anpez Environmental Law Centre, (Nigeria)

THURSDAY, DEC. 2 — DAY 18

8:30 – 9:45	Deforestation and land degradation policy and technical issues	B.M. Taal, UNEP/DPDL
9:45 – 10:30	Policy issues and legal aspects in restoring property rights in a war-torn society: the case of Kosovo	S. Lacroux, UNCHIS
10:30 – 10:45	TEA BREAK	
10:45 – 11:30	Environmental protection in time of armed conflicts	A. Kirchner, intern, UNEP/DPDL
11:30– 12:30	Environmental security	A. Kirchner, intern, UNEP/DPDL
12:30 – 14:00	LUNCH BREAK	
14:00 – 17:30	Regional group brainstorming sessions on future directions of environmental law and policy	Participants

FRIDAY, DEC. 3 — DAY 19

9:00 – 10:30	Reports by regional groups on future directions and large group discussion	Participants
10:30 – 10:45	TEA BREAK	
10:45 – 13:00	Weekly evaluation	E. Mrema, UNEP/DPDL
	Awarding of certificates to deserving participants	D. Kaniaru, UNEP/DEPI
	Closing remarks	B. Kante, UNEP/DPDL
13:00	CLOSING LUNCHEON	

ANNEX IV

LIST OF MATERIALS PROVIDED

A. GENERAL INFORMATION

UN System Structure
 UNEP System Structure
 Programme Agenda
 List of Participants
 List of Resource Persons

Lesotho Disaster Management Act No. 2 of 1997.

Report on the Workshop on Enforcement of and Compliance with Multilateral Environmental Agreements (MEAs).

Transforming CMS into National Legislation and Programmes.

B. SUPPLEMENTARY CONVENTIONS, LEGISLATION, JUDICIAL OPTIONS, ARTICLES/PAPERS

Final Act of the Conference of Plenipotentiaries on the Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

UNEP's Development and Implementation of Environmental Law presented by D. Karliaru at the Southeast Asian Regional Symposium on the Judiciary and Law in the Field of Sustainable Development, Manila, 4-7 March 1999.

Report of the Intergovernmental Negotiating Committee for an International Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants on the Work of Its Third Session.

Revised Model National Legislation on the Management of Hazardous Wastes as well as on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

Convention on Wetlands of International Importance especially as Waterfowl Habitat.

UNEP/SIDA Multilateral Environmental Agreements: Relevance, Implications and Benefits to African States.

Convention on the Law of the Non-navigational Uses of International Watercourses.

Environmental Law – Supplement 12 (January 1996): Part I. Pollution Control

Environmental Policy and Law

Convention on Long-Range Transboundary Air Pollution.

Status of Participation in the Selected Multilateral Treaties in the Field of the Environment of the Committee of Permanent Representatives to UNEP as at 30 July 1999.

Convention on Environmental Impact Assessment in a Transboundary Context.

Environmental Law Guidelines and Principles: Environmental Impact Assessment.

Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters.

Environmental Law Guidelines and Principles: Shared Natural Resources.

Draft Framework Convention for the Protection of the Marine Environment of the Caspian Sea.

C. RESOURCE PERSONS' MATERIAL

Convention on the Conservation of Migratory Species of Wild animals.

Opening remarks by Mr. Shafqat Kakakhel, Deputy Executive Director, UNEP

- Statement by Ms. Sara Wakeham, Coordinator, Urban Governance Unit, UNCHS
- Remarks by Mr. Donald Kaniaru, Chief, Legal, Economic and Other Instruments and Acting Director, Division of Environmental Policy Implementation
- Presentation on GEO –2000 (Mr. D. Claasen)
- Overview of Environmental Policy (Mr. B. Kante)
- Recent Trends in National Environmental Legislation (Mr. M. Iqbal)
- Recent Trends in Environmental Law in Africa (Mr. C.O. Okidi)
- Legal Aspects of Sustainable Development (Presentation Notes) (Mr. L. Kurukulasuriya)
- Recent Trends in Environmental Law in Asia and the Pacific (Presentation Notes) (Mr. L. Kurukulasuriya)
- Recent Trends in Environmental Law in Latin America and the Caribbean, (Ms. I. Martinez)
- Scientific and technical aspects of water management (J. Pernetta)
- Elements of the Draft UNEP Water Policy
- Integrated Environmental Policy and Law: Case Examples from South Africa's National Environmental Act (107 of 1998) (Mr. J. Nel)
- Case Study 01: National Environmental Management Act 107 of 1998, (Mr. J. Nel)
- Implementation of the Vienna Convention for the Protection of the Ozone Layer (1985) and the Montreal Protocol on Substances that Deplete the Ozone Layer, (Mr. M. Bankobeza)
- New Zealand Case Study: Ozone Depletion, (Ms. J. Macmillan)
- Report on the Status of Multilateral Environmental Agreements in the European Region Copies of slides to the presentation "Environment and Trade" (Mr. H. Abaza)
- The Nakuru Strategic Structure Plan, (Mr. L. Esho)
- Pollutant Release and Transfer Register – Nakuru Initiative (Mr. J. Wafula)
- The UNEP Project Development and Approval Process (Ms. G. Merckx)
- Way forward in implementation of Nakuru Strategic Structure Plan, (Mr. P. Chege)
- Thailand Case Study: the Example of Water Pollution in Thailand, (Ms. Wong Mee Ling)
- Forest Fire in Indonesia, (Mr. A. Sinambela)
- Enforcement of and Compliance with Multilateral Environmental Agreements, (Ms. E. Mrema)
- Guidelines for Co-operation at National, Regional and Global Level
- Global Conventions: Compliance Mechanisms and Dispute Settlement in Environmental Conventions (Ms. I. Rummel-Bulska)
- Regional Conventions: Compliance Mechanisms and Dispute Settlement in Environmental Conventions (Ms. I. Rummel-Bulska)
- Ad hoc Working Group of Legal and Technical Experts to consider an develop a Draft Protocol on Liability and Compensation for Damage resulting from Transboundary Movements of Hazardous Waste and their Disposal – Report on the Session
- Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal – Challenges for the Basel Convention for the next Decade (Ms. I. Rummel-Bulska)
- Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal – Draft Declaration and Draft Decision on Environmentally Sound Management (Ms. I. Rummel-Bulska)
- Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal – Legal Matters: Monitoring the Implementation of and Compliance with the Obligations set out by the Basel Convention (I. Rummel-Bulska)
- The Basel Convention – A Global Solution for Hazardous Wastes, (Ms. I. Rummel-Bulska)
- Basel – Broad, global and dynamic, (Ms. I. Rummel-Bulska)
- Ad Hoc Committee for the Implementation of the Basel Convention – Report
- The Constitutional Regulation of Treaty-Making: Its Importance in the Enforcement of International Environmental Law , (Mr. L. Franceschi)

- Intellectual Property Rights, Plant Genetic Resources and Trade (Ms. R. Silva Repetto)
- Forest Fires in Mexico (Mr. G. Guiza)
- A Brief on Drought and Desertification Control Activities, (Ms. H. Belgore)
- First and Second Conference of Parties to the Convention (COP's) (Ms. H. Belgore)
- UNEP's Regional Seas Programme (Mr. Manjit Iqbal)
- Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities and related UNCLOS provisions (Ms. Elizabeth M. Mrema)
- The Nairobi and Abidjan Convention where we are and where we are going (Ms. S. Bankobeza)
- Lead Contamination in the Demarara Road Area Wallerfield (Ms. C. Crawford)
- Convention on Climate Change (Mr. S. Osafo)
- An overview of the United Nations Framework Convention on Climate Change and its Kyoto Protocol (Mr. S. Osafo)
- Exercise on Climate Change – Cabinet discussion on whether or not Avatia should ratify the Climate Change Convention (S. Osafo).
- Scientific aspects of Biodiversity Loss (Mr. P. Chabeda)
- Causes of Biodiversity Loss (Mr. P. Chabeda)
- Model Law on International and Domestic Trade in Wild Fauna and Flora (Mr. J. Vasquez)
- Biosafety Protocol Negotiations and UNEP's Initiatives on Biosafety (Mr. H. Okusu)
- Convention on Biological Diversity
- Washington Statement by the members of the UNEP/INFOTERRA Advisory Committee on the reform of UNEP's global environmental information exchange network, INFOTERRA, to ensure better public access to environmental information (Mr. G. Cunningham)
- Facilitating Access to Environmental Information (Mr. G. Cunningham)
- Scientific linkages and complementarities between the Conventions on Climate Change, Biological Diversity and Desertification (Mr. A. Alusa)
- UNEP Executive Director, Klaus Töpfer, Speech for the launch of GEO-2000, (London: 15 September 1999)
- Integrated implementation of biodiversity-related conventions (Prof. J. Ojwang)
- The United Nations Environment Programme: A Partner in The Global Environment Facility (Mr. A. Djoghla)
- The Experience in Developing and Harmonising Environmental Legislation in East Africa (Mr. R.A. Wabunoha)
- Implementing Legal Aspects of Environment Conventions in Uganda (Mr. R.A. Wabunoha)
- Regulating Chemicals & Wastes (Mr. M. Nagai)
- Advice for accession to CMS to facilitate ratification of sub-Agreements (Mr. U. Muelle-Helmbrecht)
- Cleaner Production: An Economical Means of Achieving Industrial Environmental Compliance (Mr. L. Heileman)
- Economics for the Conservation and Sustainable Use of Biodiversity (Ms. I. Higuero)
- Small Island Developing States (SIDS) (Mr. D. Smith)
- UNEP initiative on success stories in land degradation-desertification control (Ms. E. Migongo-Bake)
- Developing Principles of Public Participation: an NGO perspective of the Aarhus Convention (Ms. B. Gemmill, ELCI)
- Legal aspects of Disaster Management (Mr. M. Iqbal)
- Aerial Survey of the Destruction of Mt. Kenya, Imenti and Ngare Ndare Forest Reserves (Mr. C. Lambrechts)
- Environmental activism: The role of environmental law NGOS (Ms.A. Oguigwe, ANPEZ)
- On the Establishment of the Housing and property Directorate and the Housing and Property Claims Commission in Kosovo (Ms. Silvie Lacroux)
- Human Settlement Impacts of the Kosovo Conflict: Legal/Policy/Institutional Issues Towards implement-

ing the Habitat Agenda recommendations and the two Global Campaigns on Secure Tenure and urban Governance (Ms. Silvie Lacroux)

Environmental Security and Environmental Protection in Time of Armed Conflict (Mr. Andree Kirchner)

D. UNEP PUBLICATIONS

UNEP - Biannual Bulletin of Environmental Law Vols. 11, (1999), 9&10 (1998); Special Issue (997), Special issue Nos. 2 and 3

UNEP - Code of Ethics on the International Trade in Chemicals

UNEP - Compendium of Environmental Laws of African Countries

UNEP - Compendium of Environmental Laws of African Countries Vol. 1

UNEP - Compendium of Judicial Decisions – International Decisions Vol. 1

UNEP - Compendium of Judicial Decisions – National Decisions Vol. 1

UNEP - Development and Periodic Review of Environmental Law at the United Nations Environment Programme: Programmes, Implementation and Reviews

UNEP - Director of Principal Governmental Bodies Dealing with the Environment

UNEP - Environmental Law Publications – Arabic Compendium of International Environmental Law

UNEP – Environmental Law Training Manual

UNEP – Handbook of Environmental Law

UNEP – Industry and Enforcement of Environmental Law in Africa

UNEP – International Environmental Law Aiming at Sustainable Development

UNEP – Legislating Chemicals: An Overview (1995)

UNEP – Liability and Compensation for Environmental Damage (1998)

UNEP – Register of International Treaties and Other Agreements in the Field of the Environment

UNEP – The Sustainable Development of Small Island Developing States in the Indian Ocean

UNEP – Compendium of Environmental Laws of African Countries Vol. 1: Framework Laws (98 supplement)

UNEP - Survey of the Destruction of Mt. Kenya Forest Reserve

UNEP - Report on the Workshop on Enforcement of and Compliance with Multilateral Environmental Agreements (MEAs), Geneva, 12-14 July 1999.

UNEP - Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora (Arabic, English, French and Spanish Versions)

Draft Framework Convention for the Protection of the Marine Environment of the Caspian Sea

UNEP - CMS Guide to the Convention on the Conservation of Migratory Species of Wild Animals/ CMS or Bonn Convention

Resource use Conflicts around Lake Naivasha

UNEP - Environmental Law Guidelines and principles – Shared Natural Resources

UNEP - Environmental law guidelines and principles – Environmental Impact Assessment

UNEP/FAO – Final Act of the Conference of Plenipotentiaries. Hazardous Chemicals and Pesticides in international Trade

UNEP - The Kosovo Conflict – Balkan Task Force Report Environment in Print

UNEP – UNEP Annual Report

UNEP - Protecting our Planet Securing Our Future

UNEP - Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

UNECE - Convention on access to information, public Participation in Decision-making and Access to Justice in Environmental Matters

E. PUBLICATIONS OF OTHER ORGANIZATIONS

FAO – Sources of International Water Law

FAO – The Burden of Proof in Natural Resources Legislation (Some critical issues for fisheries)

FAO – Global Forum on Agricultural Research

FAO – Issues in Water Law Reform

FAO – Trends in Forestry Law in America and Asia

IUCN – A Guide to Undertaking Biodiversity Legal and Institutional Profiles

IUCN – Biological Diversity Conservation and the Law

IUCN – Draft International Covenant on Environment and Development

IUCN – Wetlands, Water and the Law

UNCHS – Environmental Planning and Management (EPM) Source Book: Implementing the Urban Environment Agenda Vol. 1

UNCHS – Environmental Planning and Management (EPM) Source Book: City Experiences and International Report Vol. 2

UNCHS – Environmental Planning and Management (EPM) Source Book: The Urban Environment Forum Directory Vol. 3

E. WELCOME PACKAGE

Welcome note

Map of Central Nairobi

Gigiri Complex map

Security Advice for UN visitors to Kenya

Safari Njema booklet