

REPORT OF

A SEMINAR ON ENVIRONMENTAL ASPECTS OF INDUSTRIAL DEVELOPMENT

Nairobi, Kenya

6-9 March 1978

Conducted by

International Program on the Environmental Aspects of Industrial Development
(IPEAID)

Department of Environmental Sciences and Engineering
School of Public Health 201-H
University of North Carolina
Chapel Hill, North Carolina 27514
USA

and

National Environment Secretariat
Nairobi, Kenya

Agency for International Development
Department of State
Washington, DC 20520
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SEMINAR ON ENVIRONMENTAL ASPECTS OF INDUSTRIAL DEVELOPMENT

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The organizations conducting and supporting this seminar and their principal persons are as follows:

- 1) the National Environment Secretariat, Office of the President, Republic of Kenya. Director, George K. Muhoho; Deputy Director W. N. Mbote; in charge of seminar Margaret Saitoti.
- 2) United States Agency for International Development, Kenya Mission. Project Manager Jerome Hulehan; Office of Science and Technology/Washington, Environmental Affairs Officer Molly Kux.
- 3) University of North Carolina, School of Public Health, Department of Environmental Sciences and Engineering. Daniel A. Okun, Director of International Programs.

A total of 50 persons were formally registered for the seminar. There were from 2 to 5 occasional visitors from time to time. Forty of the registrants were from Kenya. Of these, 32 were from governmental offices or academic institutions and 8 from industry. Among the Kenyans, 20 were either from the Republic of Kenya or from the Nairobi City Council. Seven were from universities and colleges in Nairobi and six were from outside Nairobi. Two were from the United Nations Environmental Program. One, a program speaker, was from Senegal, and six were from the co-sponsoring institutions of AID and UNC-CH. The Chapel Hill group was made up of Professors Emil T. Chanlett, Donald T. Lauria, and Daniel A. Okun.

There were 18 formal papers. Seven were given by Kenyans and 10 by the UNC faculty group. One was an invited paper from Senegal by Liberty Mhlanga.

There were scheduled open discussion sessions on each day. These were very successful in directing formal papers to the particular environmental concerns in Kenya. The two hours of discussions were scheduled for each of the first two days, and 2-1/2 hours on the closing day.

One of the objectives of the National Environment Secretariat was to have the seminar develop a series of recommendations which could be used by the Secretariat in formulating and in support of policies which it then could carry forward to the Office of the President and other agencies of government in Kenya. A committee was appointed on the first day in order to get this work underway. The committee, which included Professor Donald T. Lauria of the University of North Carolina, devoted many hours outside of the seminar schedule to prepare such recommendations. These recommendations were discussed thoroughly during the closing day and acted upon by all those attending the seminar. These recommendations are summarized in the latter portion of this report. Full text of the recommendations are in the proceedings of the conference which were prepared by the NES.

The subject matter covered in the seminar can be briefly identified in four groups.

1. Basic information on environmental matters:
 - environmental issues in developing countries
 - the P game
 - the economics of environmental quality.
2. Water quality and pollution control
 - history of water pollution in Kenya

- water quality standards
- water pollution monitoring and control
- industrial wastewaters

3. Environmental management

- financing and financial incentives
- land use planning in environmental management
- research and appropriate technology
- institutional, legislative, and regulatory approaches
- manpower and education for environmental management
- guidelines for incorporating environmental parameters in project proposals: (1) the Kenyan viewpoint; (2) the U. S. viewpoint

4. Other pollution sources

- solid wastes
- airborne wastes

For most of the topics enumerated the full text of the presentation is in the proceedings of the seminar. For others, there is an extensive abstract. These appear in a report of the National Environment Secretariat, Post Office Box 30510, Nairobi, Kenya, dated 17 July 1978.

The recommendations of the seminar covered 15 points. Each of these is stated in full in the proceedings of the seminar. Here they are briefly identified.

1. A study on the means to apportion the costs of pollution control.
2. Guidelines for doing environmental assessment including the working environment, and for the preparation of environmental impact reports for both new and old projects.
3. The need to determine the assimilative capacity of the environment before siting new industries.
4. The need to use locally available resources encompassing human resources and capacity, material resources, and technology. The National Council of Science and Technology is an organization to coordinate these efforts.

5. Research on identified problems is urged, with the recommendations that a National Research Register be developed.
6. The need for the urgent extension of the industrial framework in Kenya, including a heavy engineering component. An investigation of the feasibility of initiating a pollution control equipment industry is urged.
7. A recycling, recovery and the reuse of waste including waste-waters should be given a high priority for considering options for pollution control.
8. The monitoring of environmental quality should be strengthened and broadened.
9. Legislative and regulatory measures, and appropriate standards, should be developed. Ambient standards should be established on the basis of best use criteria.
10. There should be a review of current legislation, implementation and enforcement, on matters relating to environmental protection.
11. Environmental education is needed at all levels of society. Courses in environmental sciences and engineering should be strengthened at the university level as well as on environmentally oriented management science.
12. The National Environment Secretariat should take the lead in promoting professional development through short courses, seminars and workshops.
14. The enhancement of environmental quality and the conservation of resources must be recognized as a legitimate development objective. The use of natural and environmental resources should be fully paid for at market rates and the environmental costs and benefits should be internalized.

15. The National Environment Secretariat should follow-up on issues discussed in this seminar and seek to initiate action necessary for their implementation by the government.

The seminar is judged to have been successful. The attendance was very satisfactory and showed a reasonably good distribution geographically and among interests within Kenya. Attendance was sustained throughout the three days of the seminar. Scheduled discussion periods were very useful in gaining active participation. The experience of organizing and conducting such a seminar has been very useful to the staff of the National Environment Secretariat stimulating their interest, strengthening their confidence, and giving them the satisfaction of doing the job very well. The seminar provided added recognition for the National Environment Secretariat among other governmental agencies, among the cities and towns of Kenya, among the universities and colleges, and to some degree among industries. The body of recommendations with a firm consensus from those participating in the seminar provides support and in part a platform on which to advance the activities to preserve and better environmental quality in Kenya. It should be noted that throughout the content of this seminar has been focused on matters of pollution control.

- Prepared by Emil T. Chanlett
24 March 1979
University of North Carolina

SEMINAR ON ENVIRONMENTAL ASPECTS OF INDUSTRIAL DEVELOPMENT ORGANIZED BY UNIVERSITY OF NORTH CAROLINA, NATIONAL ENVIRONMENT SECRETARIAT AND AGENCY FOR INTERNATIONAL DEVELOPMENT

KENYATTA CONFERENCE CENTRE NAIROBI 6th MARCH - 9TH MARCH

Monday March 6, 1978 - Chairman: Mr. W.N. Mbote

- 1.30 - 2.30 p.m. Registration All participants
2.30 - 3.00 p.m. Opening address Director of National Environment Secretariat, Mr. G.K. Muhoho
3.00 - 3.30 p.m. Address on behalf of sponsors Prof. D.A. Okun, University of North Carolina
3.30 - 4.30 p.m. Distribution of Seminar materials

Tuesday March 7, 1978 - Morning Chairman: Mr. W.N. Mbote

- 8.30 - 9.25 a.m. The environmental issues in developing countries Mr. Y.Z. Kyesimira, Programme Officer, UNEP
9.25 - 10.05 a.m. Economics of environmental quality Prof. D.T. Lauria, University Professor University of North Carolina
10.05 - 10.45 a.m. The "p" game: people, production, power, places and pollution Prof. E.T. Chanlett University Professor University of North Carolina
10.45 - 11.00 a.m. Coffee Break
11.00 - 11.40 a.m. Land use Planning as a tool in environmental management Mr. E.N.D. Ndegwa, Physical Planner in the National Environment Secretariat
11.40 - 1.00 p.m. Open discussion All participants
1.00 - 2.30 p.m. LUNCH

Afternoon Chairman - Mr. G. Njau

- 2.30 - 3.10 p.m. Institutional, legislative and regulatory approaches Mr. I. Karuga, Director of Industries
S. J. W. G. Chanlett

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| 11.40 - 12.20 p.m. | Guidelines for incorporating environmental parameters in project appraisal (Kenyan viewpoint) | Mr. Mutua-Kihu Economist, National Environment Secretariat. |
| 12.20 -- 1.00 p.m. | Open Discussion | All participants |
| 1.00 -- 2.30 p.m. | Lunch | |
| Afternoon Chairman | -- Mr. W.N. Mbote | |
| 2.30 -- 3.10 p.m. | Recommendations | Ad Hoc Committee |
| 3.10 -- 3.50 p.m. | Open Discussion | All Participants |
| 3.50 -- 4.30 p.m. | Closing remarks (Informal) | Mr. G.K. Muhoho |
| 4.30 | <i>Reception</i> | |

3rd March, 1978

National Environment Secretariat,
Office of the President,
P. O. B. 30510,
NAIROBI.

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SEMINAR ON ENVIRONMENTAL ASPECTS OF
INDUSTRIAL AND DEVELOPMENT

LIST OF PARTICIPANTS

| <u>NAME</u> | <u>DESIGNATION</u> | <u>ORGANIZATION</u> |
|--------------------|---------------------------------|--|
| 1. D.K. Andere | Project Co-Manager | K.R.E.MU - Kenya Range- land Ecological Monitoring Unit, Ministry of Tourism & Wildlife, P.O.B. 30027 |
| 2. P. Carli | Programme Management Officer | United Nations Environ- ment Programme, P. O. B. 30552, NAIROBI |
| 3. Emil T.Chanlett | Prof. of Sanitary Engineerig | School of Public Health University of North Carolina, Dept. of Environmental Sciences & Engineering, Chapel Hill, North Carolina, U.S.A. |
| 4. J. Gechaga | Lecturer | Dept. of Civil Enginee- ring, University of Nairobi, P. O.B. 30197 |
| 5. Jerome Hulehan | Project Manager | U. S. A. I., P.O.B. 30261, NAIROBI |
| 6. M.C. Jansen | Physical Planner | Physical Planning Dept. P. O. B. 45025, NAIROBI. |
| 7. K. Kamalgoda | Senior Lecturer | Faculty of Commerce, University of Nairobi, P. O. B. 30197, NAIROBI |
| 8. J.K. Kanyua | Lecturer | Faculty of Mechanical Engineering, University of Nairobi, P.O.B. 30197, NAIROBI. |
| 9. W.K. Kariuki | Asst. Town Engineer | Municipal Council of Thika, P.O.B. 240 THIKA |
| 10. G. Kihara | Town Clerk | Nyeri Municipal Council P. O. B. 180, NYERI |
| 11. Mutua-Kiku | Economist/Planner | National Environment Secretariat, P.O.B. 30510, NAIROBI |

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| 12. | D.N. Kinyanjui | Ecologist | National Environment Secretariat, Office of the President, P. O. B. 30510, NBI. |
| 13. | K. Kuiper | Project Investigations Manager, | Development Finance Company of Kenya, P.O.B. 30483, NAIROBI |
| 14. | Molly Kux | Environmental Affairs Officer | U.S. Agency for International Development (Office of Science & Tech) Washington D.C. 20523 |
| 15. | Yoeri Kyesimira | Programme Officer | United Nations Environment Programme P.O.B. 30552 NBI. |
| 16. | D.T. Lauria | Associate Prof. | University of North Carolina, Chapel Hill, N.C. |
| 17. | J.R. Lelei | Physical Planner | National Environment Secretariat, P.O.B. 30510, NAIROBI |
| 18. | A.T. Lloyd | Technical Manager | East African Industry, P.O.B. 30062, NAIROBI |
| 19. | T.S.G. Makunda | Physical Planner | Physical Planning Dept. P.O.B. 45025 NAIROBI |
| 20. | M. Manunda | Lecturer | University of Nairobi P.O.B. 30197, NBI |
| 21. | B.S. Meadows | Water Pollution Control Officer | Ministry of Water Development, P.O.B. 30521, NAIROBI |
| 22. | Liberty Mhlanga | Lecturer | Environment Training Programme, B.P. 3370, DAKAR Senegal |
| 23. | K.A. Miln | Tech-Manager | E.A. Bag & Cordage, P. O. RUIRU |
| 24. | R.S. Mishra | Senior Chemist | Panafrican Paper Mills, P.O.B. 535 Webuye. |
| 25. | B.N. Mberia | Asst. Planner | N. E. S. P.O.B. 30510, NBI. |
| 26. | W.N. Mbote | Deputy Director | National Environment Secretariat, NBI |

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| 27 | M.G. Mitine | Economist | Ministry of Finance & Planning, P.O.B. 30007, NAIROBI |
| 28 | F.N. Muchena | Technical Coordinator | Ministry of Agriculture, Soil Survey P.O.B. 14733, NBI. |
| 29 | H.K. Mugo | Senior Physical Planner | Dept. of Physical Planning, P.O.B. 45021, NAIROBI |
| 30 | E. Musazi | Town Engineer | Eldoret Municipal Council, P.O.B. 40, ELDORET |
| 31 | T.F. Muthee | Industrial Development Officer | Ministry of Commerce & Industry, P.O.B. 30430, NAIROBI |
| 32 | Margaret Nuthoka | Lecturer | Kenya Science Teachers' College, P.O.B. 45531, NBI. |
| 33 | C.M. Mwashumbe | Counsellor | Kenya Mission to UNEP, P.O.B. 41395, NAIROBI. |
| 34 | E. Mweya | Range Management Officer | Range Management Division, P.O.B. 30028, NAIROBI |
| 35 | E.N.D. Ndegwa | Physical Planner | National Environment Secretariat, P.O.B. 30510, NAIROBI. |
| 35 | D.M. Nguru | Lecturer | University of Nairobi, Faculty of Education, P.O.B. 30197, NAIROBI |
| 36 | G.J. Njau | Chief Planning Officer | Nairobi City Council P.O.B. 30075, NBI. |
| 37 | Henry Njoroge | Manager, Research, & Promotion Div. | Industrial Dev. Bank Ltd. P.O.B. 44036, NAIROBI. |
| 38 | J.C. Obel | Chief Public Health Officer | Ministry of Health, P.O.B. 30016, NAIROBI |
| 39 | Daniel A. Okun | Kenyan Prof. of Environmental Engineering | University of North Carolina, Chapel Hill, N.C. 27514, U.S.A. |

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| 40. | E.M. Othieno | Ag. Chief Public Health Officer | Municipal Council of Kisumu, P.O.B. 105, KISUMU |
| 41. | Kurt Petersen | Architect/Planner | Kitale Municipal Council, P.O.B. 1283, KITALE |
| 42. | L.H. Randall | Industrial Technology Adviser | National Council for Science & Tech. P.O.B. 30623, NBI. |
| 43. | Satish P. Shah | Engineer | U.S.A.I.D./Kenya P.O.B. 30261, NBI. |
| 44. | M.W. Saitoti | Education Officer | National Environment Secretariat, P.O.B. 30510, NBI |
| 45. | G.M. Warui | Company Microbiologist | Kenya Breweries, P.O.B. 30161, NBI. |