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OPEN-ENDED WORKING GROUP OF THE PARTIES TO THE MONTREAL PROTOCOL TO INTEGRATE THE FOUR REPORTS OF THE ASSESSMENT PANELS INTO ONE SYNTHESIS REPORT AND TO MAKE RECOMMENDATIONS ON AMENDMENTS TO THE MONTREAL PROTOCOL

Nairobi, 28 August - 5 September 1989

NOTE BY THE EXECUTIVE DIRECTOR

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I. INTRODUCTION

1. The Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer decided at their first meeting in Helsinki (2-5 May 1989) to establish an open-ended working group to:

(a) Review the report of the four panels:

(i) Panel for Scientific Assessment;

(ii) Panel for Environmental Assessment;

(iii) Panel for Technical Assessment;

(iv) Panel for Economic Assessment

and integrate them into one synthesis report;

(b) Based on (a) above and taking into account the views expressed at the First Meeting of the Parties to Montreal Protocol, prepare draft proposals for any amendments to the Protocol which might be needed. Such proposals are to be circulated to the Parties in accordance with article 9 of the Vienna Convention for the Protection of the Ozone Layer;

(c) Develop the workplans referred to in decision 4 and required by Articles 9 and 10 of the Protocol;

(d) Work out the modalities required by decision 13.

Decision 4, Decision 13 and Articles 9 and 10 are annexed to this Note.

2. The tasks for the Working Group at the present session are:

(a) To produce a synthesis report based on the four reports of the Assessment Panels;

(b) On the basis of the synthesis report, consider options for amendments.

The other responsibilities assigned to the Working Group by the Parties will have to be dealt with in the preceding meeting (21-25 August) and in those which are to follow in September 1989. The results of the Group's deliberations will be reported to the Bureau of the Conference of the Parties, which will meet from 27 to 30 September 1989 for its information and then presented to the Conference of the Parties for its consideration and action. The Executive Director intends to re-convene the Working Group probably more than once to consider further the options for amending the Protocol until they reach agreement on the most acceptable proposals to be considered for adoption at the second meeting of the Parties to the Montreal Protocol to be held in 1990. The need for additional informal consultations over proposed amendments could arise.

3. The Executive Director met with the Chairmen and Co-Chairmen of the four Panels and exchanged information on the issues addressed by each. On the basis of the findings, the Chairmen have produced a draft synthesis, report which has been circulated in its original language (English) as an advance working paper to give participants sufficient lead time to consider what they wish included in the final synthesis. This draft is now being translated into the other United Nations languages and the official language versions will be circulated as soon as they become available.

4. On the basis of the final synthesis report, the Working Group is invited to propose various possibilities for amending the Montreal Protocol. Amendments or comments may be needed for Articles 2, 4, 5, 6, 7 and 9. If so, the Group is expected to identify the parts or paragraphs of each of these Articles which need either amendment or comment and to specify what form these should take.

5. Based on his briefing by the Chairmen and Co-Chairmen of the four Assessment Panels and following informal consultations with high-level officials in a number of countries and the European Economic Community in their personal capacities, the Executive Director wishes to bring the following points to the attention of the Working Group concerning reasons for amending the Protocol, new knowledge of the state of the ozone layer, the process for amending the Protocol, the scope and timing of adjustments to the Protocol, the role of developing countries, changes other than production and consumption measures and, finally, his own recommendations.

II. REASONS FOR AMENDING THE MONTREAL PROTOCOL

6. In September 1987, given the understanding of atmospheric science at that time, the Montreal Protocol was accepted as the best regulatory instrument for protecting the ozone layer from unacceptable change, through the partial control of production and consumption of fully-halogenated chlorofluorocarbons (CFCs) and halons.

7. Since 1987, considerable advances in the physics and chemistry of the atmosphere and new information on the state of the ozone layer strongly suggest that, even global compliance with the Protocol's regulatory measures would probably be insufficient to prevent global and regional ozone losses, with their attendant risks to human health and the environment.

III. NEW KNOWLEDGE ON THE STATE OF THE OZONE LAYER

8. Intensive scientific investigations carried out since the adoption of the Montreal Protocol now confirm that:

(a) A major cause of the Antarctic ozone 'hole', in which approximately 50 per cent of the natural ozone amounts are temporarily lost during the southern hemisphere springtime, is chemical destruction involving man-made CFCs. The loss of ozone over Antarctica causes significant increases in the amounts of ultraviolet (UV) radiation that reach the ground in that region. The effects on the Antarctic environment cannot yet be quantified;

(b) A recent scientific campaign in the Arctic region has identified the same chemical perturbations that have been associated with ozone destruction in Antarctica. Although there have been no ozone changes over the Arctic comparable to those which have occurred in Antarctica, the recognition of the disturbed chemistry of the region's atmosphere gives rise to concern. While the special meteorological conditions of Antarctica that foster the precipitous chemical destruction of ozone do not occur to the same extent in the Arctic, future significant losses of Arctic ozone cannot be ruled out. In the presence of increasing concentrations of active chlorine and bromine resulting from the continued use of CFCs and halons, and depending on the severity of the Arctic winter (a cold stratosphere being one precondition of the chemical decomposition processes), ozone holes can theoretically occur in high northern latitudes;

(c) A re-examination of global ozone observations and the correcting of instrumental and observing errors have confirmed a downward trend in ozone concentrations that cannot be explained by natural processes. A 2-6 per cent decrease in winter ozone levels has been confirmed over northern latitudes during the 1969-1986 observing period;

(d) Research on environmental effects confirms the risk of harm from increased levels of UV-B reaching the Earth's surface as a consequence of ozone loss. It is calculated that a 1 per cent loss of ozone may result in a 3 per cent increase in non-melanoma skin cancer. Other likely health effects include melanoma skin cancer; cataracts; suppression of the immune system and increases in infectious diseases. Fifty per cent of the plant species examined are known to be sensitive to UV-B, with irradiated plants demonstrating reduced growth, yield and quality. Aquatic organisms are also harmed by ultraviolet radiation.

IV. PROCESS FOR AMENDING THE MONTREAL PROTOCOL

9. The Protocol provides for assessments of the control measures every four years beginning in 1990. Such assessments are to be based on the available scientific, environmental, technical and economic information furnished by appropriate expert panels set up to provide such information.

10. To meet the requirement of the 1990 assessment of the control measures, four review panels with appropriate terms of reference and composition were set up in October 1988. These panels have completed their work and draft summaries of their conclusions are contained in documents UNEP/OzL.Pro.Asmt.1/Inf.1-4. The complete review documents will be published in November 1989 in their original language (English) and distributed to all Parties. As indicated in paragraph 3 above, the Working Group is invited to use the draft summary conclusions as a working paper for the preparation of the final version of the synthesis report.

11. Based on the assessments, the Parties are expected to decide if further adjustments and reductions of production or consumption of the controlled substances from their 1986 levels should be undertaken and, if so, what the scope, amount and timing of any such adjustments and reductions should be.

12. The Parties also will have to review the available figures on the ozone-depleting potentials for the controlled substances specified in Annex A of the Montreal Protocol.

13. For each adjustment, proposals must be communicated to the Parties by the secretariat six months before the meeting of the Parties at which they are proposed for adoption. Accordingly, if the second meeting of Parties is to adopt proposals for change, the secretariat must inform Parties of such proposals before the end of December 1989, i.e. six months before the meeting of the Parties in London in June 1990. Allowing sufficient time for the secretariat to translate and dispatch the proposals requires finalization of the proposals for amendment by the Working Group of the Parties during the present meeting.

14. Similarly, other amendments to the Protocol such as:

(a) Whether any substances, and if so, which, should be added to or removed from the Annex to the Protocol; and

(b) The mechanism, scope and timing of the control measures that should apply to these substances;

(c) Changes in the control of trade with non-parties; or

(d) The special provisions provided for under Article 2, paragraphs 5, 6 and 8 or under Article 5, paragraph 1;

(e) Articles 6, 7 and 9 must also be considered in the same time frame, if it is determined that such amendments should be adopted by the Parties at their second meeting. The Working Group is expected to identify the parts or paragraphs of each of the Articles that need amending and to specify the possible form of the amendment.

V. THE SCOPE AND TIMING OF ADJUSTMENTS TO THE PROTOCOL

15. Any proposed changes to the Protocol, particularly to the control measures, should be determined on the basis of whether such changes are desirable and necessary for the integrity of the ozone layer and for the protection of human health or the environment. The technical feasibility of making such changes must also be determined and the economic consequences of making such changes must be accepted by the Parties or adjusted to ensure that no unacceptable economic penalties of new regulatory measures fall upon one or more groups within the Parties.

16. New scientific information on ozone layer depletion and the latest studies on environmental effects, including implications for human health, confirm that environmental risks are associated with implementation of the existing Montreal control measures, even if full global compliance is achieved. It is therefore essential that the control measures be strengthened and extended.

17. There are many ways in which the regulatory measures can be altered. However, for convenience, an illustrative set of possible control scenarios is presented here, each scenario having a different consequence for the chlorine and bromine loading of the atmosphere and for the calculated future concentrations of stratospheric ozone. It must, however, immediately be pointed out, that despite the advances of scientific knowledge, there remain many uncertainties with regard to the understanding of processes that govern the abundance of atmospheric ozone, particularly with regard to the prediction of future concentrations. Such shortcomings in knowledge, however, should not be used as an excuse to delay action. Indeed, the uncertainty regarding how the atmosphere responds to human intervention is itself sufficient reason for resisting its alteration and, if possible, returning it to its pre-industrial state.

18. The options are:

(a) Implementing the Protocol unchanged;

(b) Completely phasing out the substances controlled under the Montreal Protocol, particularly the chlorofluoride carbon by the year 2000, or as close to that date as possible;

(c) Phasing out CFCs and halons; freezing methylchloroform and carbontetrachloride;

(d) Phasing out CFCs, halons, methylchloroform and carbontetrachloride;

(e) Phasing out CFCs, halons, methychloroform and carbontetrachloride and limiting substitution by CFCs halogenated (HCFCs) and halogenated fluorocarbons (HFCs) such that the combined average ozone-depleting potentials (ODPs) of such substitutes do not exceed 0.02.

19. Each of these options has different technical and economic implications. However, unless the most stringent of these possibilities is chosen, then, allowing for the many uncertainties associated with prediction, it is believed that there can be no recovery of the atmosphere to its pre-CFC condition, nor can the Antarctic ozone hole be repaired. Even with this option, full repair of the ozone hole may take centuries. It is also pertinent to add that all the options - with the possible exception of (d) and (e) - imply some change in the vertical distribution of ozone, as well as a reduction in global ozone. Thus, there are climatic implications, as well as those related to the increasing ultraviolet radiation associated with ozone loss.

20. According to the Panel for Technical Assessment, there appear to be no technical problems implicit in achieving options (a) to (c).

21. With regard to (d), substitutes exist for almost all methylchloroform uses and, accepting the need for continued use of carbon tetrachloride as a feedstock for HCFCs, phase-out can still be achieved by emission control.

22. The technical feasibility of achieving (e) depends on the application of emission controls on HCFCs after the year 2000. Up to that time, HCFCs and HFCs will probably be essential as substitutes for the phased-out CFCs.

23. It therefore appears to be technically feasible to phase down the Protocol-controlled CFCs by 95-98 per cent by 2000, and to phase them out completely by approximately 2005.

24. It is possible to reduce halon emissions by 50-60 per cent by 1997. A total phase out is feasible, but would be accompanied by increased fire damage risk.

25. Alternatives and substitutes exist to virtually phase out emissions of methylchloroform and carbontetrachloride.

26. If the Montreal Protocol is implemented unchanged, then, even with full global compliance, it is possible that:

(a) The Antarctic Ozone Hole will never recover; global ozone will decrease by several per cent with increased incidences of skin cancers and other health and environmental effects world-wide;

(b) There is a risk of significant ozone losses over-high latitude Northern areas. Although smaller than the Antarctic equivalent, a thinning of the ozone layer could occur over densely populated continental areas with the attendant risk of higher ultraviolet doses for millions of people.

27. According to the Panel for Economic Assessment, the economic consequences of implementing any of the options do not appear to be limiting factors, provided that a suitable mechanism to ensure that the costs of chemical substitutes and technology transfer to those developing nations without financial resources for the purpose is established and effectively utilized. These financial mechanisms are discussed in detail in the note by the Executive Director on Financial Mechanisms for the implementation of the Montreal Protocol (UNEP/OzL.Pro.Mech.1/2).

28. The pace of phasing out CFCs and halons must also be considered. From an environmental point of view, the change should be as rapid as possible. Each year's delay in implementing the phase-down carries a penalty of perhaps a decade in ozone recovery time, which is already measured in decades to centuries as a result of the projected long atmospheric residence time of those CFC already released. However, this must be balanced against the substantially increased monetary cost of rapid phase-out associated with abandoning capital investment in CFC production and use technologies and the transition to hastily developed and possibly less energy-efficient and more costly alternative technologies or substitutes. All changes must be carefully assessed to ensure their environmental safety, particularly as regards any contribution to future global warming.

VI. THE ROLE OF DEVELOPING COUNTRIES

29. An international solution to the ozone layer depletion problem requires global participation. The consequences for the ozone layer outlined in paragraph 18 are calculated assuming 100 per cent compliance with existing or revised controls. It is essential that all States become parties to the Protocol or comply with its control schedule. However, the existing schedule contains special provisions for developing countries, which allow them a 10-year period before they must enact the control schedule already in force for developed nations. This enshrines the principle that environmental protection should be consistent with legitimate development needs. Although developing countries as a whole can theoretically double the 1986 production level for CFCs if they implement a production schedule to ensure an annual consumption rate of 0.3 kg per unit as allowed under the Protocol, the reality is that if some of the more industrially advanced and populous developing countries embark on significant industrial expansion using CFCs, they would still command only a small fraction of the 1986 production level annually, provided that affordable new technology and substitutes become available to them at the earliest possible time. Maintaining the special conditions provided for under Article 5 would be a tangible acknowledgement of good faith by the developed countries. In view of the fact that the worst consequences of a diminished ozone layer would affect the richer North, developed countries would have an added incentive to ensure that substitutes and alternative technologies are quickly made available to the poorer South so that the developing nations could deploy their own environmental protection programme as soon as practicable.

30. Developing nations, though less susceptible to skin cancers among their people, are not immune to environmental damage resulting from increased ultraviolet radiations. Other health effects and reduction in agricultural productivity, as well as indirect effects through disruptions in the world food trade, demand the early commitment of developing countries to ozone layer protection. This can be achieved through a partnership of effort by North and South whereby the former guarantees the legitimate development needs of the latter in return for a contribution to global atmospheric protection. The Working Group may wish to consider the results of an earlier Working Group meeting (21-25 August) dealing with the subject of financial mechanisms, in order to achieve this goal.

31. With regard to Article 6, assessment and Review of Control Measures, the Executive Director wishes to draw attention to the rapid development of scientific and technical understanding that has occurred since the signing of the Montreal Protocol in September 1987. This has necessitated the undertaking of a major scientific review that will be published in its final form in October 1989. Article 6 requires, inter alia, that the Parties shall convene appropriate panels of experts to provide information on scientific, environmental, technical and economic matters. The panels would meet at least every four years from 1990 on. The Executive Director understands by the words 'at least' that should scientific and technical development continue at its present rapid rate, then, if necessary, the panels could be convened at intervals shorter than four years - for example, every two years. The Working Group is invited to comment on the frequency of convening of panels.

32. With regard to Article 7, reporting of Data, the Working Group may wish to review this Article in the light of comments made on its text by the Parties at their first meeting and contained in the report of that meeting (UNEP/OzL.Pro.1/5) under section K, paragraphs 82-85.

33. The Working Group might also consider extending the requirement of reporting on data concerning all potentially ozone depleting substances with calculated ODPs of greater than 0.02, whether or not such substances are controlled under the Protocol.

34. With regard to Article 9, Research, Development, Public Awareness and Exchange of Information, the Executive Director has observed that the requirement for the Parties to co-operate in promoting research, development and exchange of information omits specific reference to scientific research, development and information exchange. The Working Group is asked to comment on whether the provisions of the Vienna Convention, in particular Article 3, Research and Systematic Observations, are sufficient to meet the needs of the Parties or if Article 9 of the Montreal Protocol should be expanded to include a reference to scientific aspects similar to the references to technical and economic matters in paragraph 1 (a), (b), and (c), and to environmmental effects in paragraph 2.

VII. CHANGES TO THE PROTOCOL OTHER THAN PRODUCTION AND CONSUMPTION CONTROL MEASURES

35. In view of the need to eliminate rapidly the emission of substances with the potential to damage the ozone layer, Article 4, paragraph 3 should be reconsidered with respect to the need to prohibit trade in products containing any of the expanded list of controlled substances.

36. Similarly, Article 4, paragraph 4 should be considered with a view to the possibility of providing for an automatic ban or restriction on trade in products made with the any controlled substances.

VIII. RECOMMENDATIONS OF THE EXECUTIVE DIRECTOR

37. In accordance with the considerations presented in this Note, the Executive Director urges the Working Group to develop recommendations for amending the Montreal Protocol, in particular to:

(a) Include methylchloroform and carbontetrachloride in the list of controlled substances;

(b) Require that all controlled substances be phased out so that 95 per cent of their production and consumption is effected by the year 2000 and complete phase-out is achieved by the year 2005;

(c) Limit the substitution of the controlled substances so that no substitute would have an ODP exceeding 0.02 and that its greenhouse warming potential (GWP) would be restricted to an appropriate level to be determined by the Parties;

(d) Prohibit trade with non-parties in products made with or containing the controlled substances by an early date to be determined by the Parties;

(e) Require that the provision of data by the Parties on production, imports and exports be extended to include a requirement to provide data on all potentially ozone layer depleting substances with a calculated ODP greater than 0.02, whether or not such substances are controlled under the Montreal Protocol.

ANNEX

Decision 4: To consider the following elements as the first components for the workplans required by articles 9 and 10 of the Protocol:

(a) Dissemination of the reports of the panels for scientific, environmental, technical, and economic assessments, as well as the synthesis report, and their follow-up;

(b) Regular updating of the panel reports, taking into account in particular the developments in the fields of production of environmentally sound substitutes or alternative technological solutions to the use of CFCs or halons;

(c) Development of a programme, which will include workshops, demonstration projects, training courses, the exchange of experts and the provision of consultants on control options, taking to account the special needs of developing countries, for the consideration by the Parties at their second meeting;

(d) Preparation of a study of retrofit technologies applicable to existing manufacturing facilities that produce controlled substances or products made with or containing such substances, to be presented to the Parties for the consideration at their second meeting;

(e) Facilitation of the production and wide dissemination material for public information;

(f) Exploration of specific ways of promoting exchange and transfer of environmentally sound substitutes and alternative technologies;

(g) Initiatives to support activities in programmes of international organizations and financing agencies that could contribute towards implementing the provisions of the Protocol, and defining means by which the Secretariat can initiate concrete contacts with the appropriate international organizations, programmes and financing agencies for this purpose.

Decision 13: Assistance to Developing Countries:

(a) To recognize the urgent need to establish international financial and other mechanisms to implement Article 5, paragraphs 2 and 3, in conjunction with Articles 9 and 10 of the Montreal Protocol and to enable developing countries to meet the requirements of the present and a future strengthened Protocol, thereby addressing the ozone depletion and related problems;

(b) To establish an open-ended working group of the Contracting Parties to develop modalities for such mechanisms, including adequate international funding mechanisms which do not exclude the possibility of an international Fund and to report the results of their deliberations to the Conference of the Parties at its second meeting in 1990.

Article 9: Research, Development, Public awareness and Exchange of Information

1. The Parties shall co-operate, consistent with their national laws, regulations and practices and taking into account in particular the needs of developing countries, in promoting, directly or through competent international bodies, research, development and exchange of information on:

(a) Best technologies for improving the containment, recovery, recycling or destruction of controlled substances or otherwise reducing their emissions;

(b) Possible alternatives to controlled substances, to products containing such substances, and to products manufactured with them; and

(c) Costs and benefits of relevant control strategies.

2. The Parties, individually, jointly or through competent international bodies, shall co-operate in promoting public awareness of the environmental effects of the emissions of controlled substances and other substances that deplete the ozone layer.

3. Within two years of the entry into force of this Protocol and every two years thereafter, each Party shall submit to the secretariat a summary of the activities it has conducted pursuant to this Article.

Article 10: Technical Assistance:

1. The Parties shall in the context of the provisions of Article 4 of the Convention, and taking into account in particular the needs of developing countries, co-operate in promoting technical assistance to facilitate participation in and implementation of this Protocol.

2. Any Party or Signatory to this Protocol may submit a request to the secretariat for technical assistance for the purposes of implementing or participating in the Protocol.

3. The Parties, at their first meeting, shall begin deliberations on the means of fulfilling the obligations set out in Article 9, and paragraphs 1 and 2 of this Article, including the preparation of workplans. Such workplans shall pay special attention to the needs and circumstances of the developing countries. States and regional economic integration organizations not party to the Protocol should be encouraged to participate in activities specified in such workplans.
