DPC Secretariat / [illegible] 5-22-87

Eileen

drop "voting" process... don't need all the Yes-No's? Could be just list issues?

SUMMARY OF NEGOTIATION ISSUES

SUBJECT: Stratospheric Ozone Protocol Negotiations

The U.S. negotiating team is seeking DPC guidance on the following issues:

Chemical Coverage

o Should the team press for ~~[a freeze with]~~ the broadest attainable chemical coverage?

Yes_____ No_____

Note: Theoretically, would like to have protocol cover "all ozone-depleting chemicals". Treatment could differ. Some, CFCs, e.g. could be frozen and reduced; some, halons, just frozen; others, unspecified, identified for later study.

o Given their defense uses, should Halon chemicals be excluded from reduction targets?

Yes_____ No_____

Not just "defense" rationale. Poor data base internationally, coupled with high depletion potential of halons, could lead to cheating through claims of high halon reductions.

Stringency and Timing

✓ o Should the freeze at 1986 levels proposed in the "Chairman's text" be accepted?

Yes_____ No_____

o Should the freeze take effect two years after entry into force (EIF) of the protocol or earlier?

After Two Years_____ ~~Earlier~~ After one year_____ Immediately _______

o Should an <u>automatic</u> 20% reduction take place four years after EIF or should a <u>positive vote</u> be required, ~~after science, technology, environmental, and economic (STEE) elements are reviewed?~~ to put into place?

Automatic Reduction_____ Require Positive Vote_____

Note: A science review would precede the automatic step, giving parties a chance to overturn it that was suggested

✓ o Should an additional 30% reduction be scheduled?

Yes_____ No_____

o Should reductions beyond 20% be subject to positive confirmation, ~~[following STEE reassessment]~~ or should additional reductions automatically take effect unless reversed?

Positive Confirmation_____ Automatic Unless Reversed_____

beyond 20%?
beyond 30%?

- o Should confirmation/reversal of additional reductions be based on a majority or a two-thirds vote?

  Confirmation: Majority_____ Two-thirds_____

  Reversal: Majority_____ Two-thirds_____

- o Should the team press for further scheduled reductions beyond 50%? support the Chairman's text provision for further reductions (beyond 50%) to the point of phase out, based on positive determination by parties? Should such further steps be specified by amount and time?

  Yes_____ No_____

Control Formula and Trade Provisions

- o Should the team pursue a formula regulating trade among parties based on the following objectives: effective control of emissions with accountability; fewest restrictions on the flow of trade and capital among parties; and most favorable treatment for U.S. industry?

  Is this an issue? Seems like an obvious "yes".

  Yes_____ No_____

- o Should the team pursue regulation of trade with non-parties consistent with GATT to encourage adherence to the protocol and to avoid benefits to non-parties at the expense of parties?

  Yes_____ No_____

Participation

No concessions are in the Chair's Text

- o Should concessions being considered in the "Chairman's text" (72) for less developed countries (LDCs) be accepted, or should LDCs be exempted from controls only for a limited period followed by adherence to the protocol?

  not clear. There is no proposal yet.

  Accept Concessions_____ Limited Exemption Only_____

- o Should participating parties have an equal vote or should the U.S. team press for weighted voting based on historic use and production levels?

  e.g.,

  Equal Vote_____ Weighted Vote_____

Weighting formula options are under study?

DOE F 1325.8
(12-84)

United States Government **Department of Energy**

memorandum

DATE: May 27, 1987

REPLY TO ATTN OF:

SUBJECT: EH-22

TO: Bob Sweet

Attached are annotations to the Negotiation Questions

On question 2.

CFC-113 is also used for national security reasons. Therefore, this question could be restated to consider an exclusion for CFC-113 and/or halons from reduction targets (note: not the freeze, as now stated).

On question 4.

For completeness, I suggest a third option of "later than 2 years after EIF" be included.

On question 5.

Again for completeness, add a third possibility "require a negative vote to remove an agreed upon reduction requirement".

On question 6.

Clarify to point out the 30% reduction is calculated from the 1986 base (it is not 30% of the remaining 80% after the initial 20% reduction).

On question 7.

It is my understanding that a vote of reversal must be taken as part of proposed protocol language. Have use of the word "automatic" is not appropriate.

On question 8.

Point out who are the relevant voters.

On question 9.

This question is only relevant now. If the science later indicates consideration of more reductions should be taken, the process should not be forbidden now.

After question 9.

A new question should be added, concerning establishing a process to include added reductions developed at a later time.

- Should the team press for a process be established for adopting future emissions reductions beyond those provided in the initial protocol?

  Yes _____ No _____

Question 10 and 11 are value-loaded questions. They should be reworked to be more neutral and specific questions.
Also add to the formula questions.

- Should the term pursue a control formula based on:

  Emission controls _____, Production _____, Consumption _____

Question 12

Indicate that the concession would be accepted on a permanent basis.

Ted Williams

Ted Williams

C

(i.e., ignoring imports and exports between signatories)

controlled CFC's.

In a free market among all the signatory parties, a supply "shortage" created by a production cap would result in raising the prices of ~~(CFCs 11 and 12 (and of other chemicals, if any, listed in Annex A.))~~. In Europe the aerosol uses plus the low-priority uses would be squeezed out ahead of high-priority uses in the U.S., giving the right result by indirect means.

Administration of a production cap would be simpler than that for adjusted production because it could focus exclusively on production and destruction. However, the free-trade clause would require an enforcement mechanism.

Due to changes in exchange rates, relative costs, and other economic factors, the lowest-cost locations for production of controlled CFCs can change. However, a simple production cap would prevent location changes among parties. Shifting production to a location, across a national boundary, that has become more economic since the establishment of the cap would violate the cap at the new location.

However, production rights

~~(Such rights)~~ can be made transferable, and the protocol could include a paragraph requiring that a party can secure an increase in its production cap by obtaining an agreed equal reduction in another party's cap, and that parties should impose no barriers to such shifts. A private firm in one country could buy out a right from an firm in another country and shift it abroad. The prohibition of barriers would have to cover both administrative barriers and subsidies to local production.

THE WHITE HOUSE

WASHINGTON

June 10, 1987

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: RALPH C. BLEDSOE

SUBJECT: Domestic Policy Council Meeting on June 11, 1987

Attached are an agenda and materials for the Domestic Policy Council meeting scheduled for Thursday, June 11, 1987 at 11:00 a.m. in the Roosevelt Room. The agenda item to be discussed is Stratospheric Ozone.

This will be a continuation of the discussion at the May 20 meeting, at which additional information was requested on the legal and legislative, health, climatic, and cost/benefit aspects of this issue. The attached paper contains a brief description of these, and includes additional points for discussion about the U.S. positions that should be taken during the international negotiations.

Attachments

THE WHITE HOUSE

WASHINGTON

DOMESTIC POLICY COUNCIL

Thursday, June 11, 1987

11:00 a.m.

Roosevelt Room

AGENDA

1. Stratospheric Ozone -- Lee M. Thomas
Administrator
Environmental Protection Agency

Beryl W. Sprinkel
Chairman
Council of Economic Advisers

CHAIRMAN'S TEXT

Distr.
~~RESTRICTED~~

UNEP/WG.172/CRP.8/Rev.1
30 April 1987

Original: ENGLISH

Ad Hoc Working Group of Legal and Technical Experts for the Preparation of a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer (Vienna Group)

Third Session
Geneva, 27-30 April 1987

TEXT PREPARED BY A SMALL SUB-WORKING GROUP OF HEAD OF DELEGATIONS

ARTICLE II: CONTROL MEASURES

1. Each party, under the jurisdiction of which CFC 11, CFC 12, CFC 113, (CFC 114, CFC 115) are produced shall ensure that within (2) years after the entry into force of this Protocol the (combined annual production and imports) (combined adjusted annual production) of these substances do not exceed their 1986 level.

2. Each party, under the jurisdiction of which substances referred to in paragraph 1 are not produced at the time of the entry into force of this Protocol, shall ensure that within (2) years from the entry into force of this Protocol (its combined annual production and imports) (its combined adjusted annual production) do not exceed the levels of imports in 1986.

3. Each party shall ensure, that within (4) years after the entry into force of this Protocol levels of substances referred to in paragraph 1 attained in accordance with paragraphs 1 and 2 will be reduced by 20 per cent.

4. Each party shall ensure that within (6) (a), (8) (b) years after the entry into force of this Protocol, the 1986 levels of substances referred to in paragraphs 1 and 2 will be further reduced (by 30 per cent), (a) (if the majority of the parties so decide, (b) (unless parties by a two-third majority otherwise decide), in the light of assessments referred to in Article III, such decision should be taken not later than (2) (4) years after entry into force.

5. Parties shall decide by (two-third majority) (a majority vote)
   - whether substances should be added to or removed from the reduction schedule
   - whether further reductions of 1986 levels should be undertaken (with the objective of eventual elimination of these substances).

These decisions shall be based on the assessments referred to in Article III.

Note: A second paragraph reading as follows has to be added to Article III. Beginning 1990, and every four years thereafter, the parties shall review the control measures provided for in Article II. At least one year before each of these reviews, the parties shall convene a panel of scientific experts, with composition and terms of reference determined by the parties, to review advances in scientific understanding of modification of the ozone layer, and the potential health, environmental and climatic effects of such modification.

THE WHITE HOUSE

Office of the Press Secretary

PRESS BRIEFING
BY
MARLIN FITZWATER

June 18, 1987

The Briefing Room

11:16 A.M. EDT

MR. FITZWATER: Okay, on the President's schedule this morning -- we have the staff meeting and national security meeting. There was a -- Domestic Policy Council meeting going right now but without the President. It's on review of the free trade agreement negotiations.

At 12:30 p.m., the President will have a luncheon for the Medal of Arts winners, to honor the 1987 recipients -- artists and patrons who have been outstanding -- made outstanding contributions to the arts and the funding of the arts. We have already given out the names and background and all that sort of thing.

Q Are they all going to be there, do you know?

MR. FITZWATER: I think they will all be there except for Dr. Armand Hammer, who, according wire service reports, slipped and injured a rib, I believe, and probably will not be here. But I think the rest will all be here.

MR. JARRATT: Robert Penn --

Q But Robert Penn Warren will not?

MR. JARRATT: Right. Robert Penn Warren will not be here this morning.

Q When is the President going to make his remarks?

MR. FITZWATER: At approximately -- well, let's see -- shows he goes over at 12:30 p.m., so he'll probably make them right at that time or shortly after he arrives.

Q Don't they usually do it after lunch, 1:10 p.m. or so?

Q 1:30 p.m.?

Q 1:30 p.m.?

Q 1:30 p.m.?

MR. FITZWATER: Oh, I see. He sits through the lunch first. Does it say 1:30 p.m. in the briefing sheet, Ben?

MR. JARRATT: Yes, 1:30 p.m. is the remarks and then the presentation right after that.

MR. FITZWATER: All right. At 2:00 p.m., the President attends the Domestic Policy Council meeting, which he will chair on the question of ozone.

Q Get your suntan lotion. (Laughter.) Get your visors. (Laughter.)

MR. FITZWATER: Purpose of the meeting is to discuss the final stages of international negotiations on a protocol for regulating chemicals that are believed to be causing depletion of the stratospheric ozone layer, generally known as chlorofluorocarbons.

Q It helps to have worked for the EPA, then?

MR. FITZWATER: It help to work for the EPA. I was there -- actually when we banned non-essential uses of chlorofluorocarbons -- no more hairsprays.

Q Is there a decision expected today?

MR. FITZWATER: I doubt that there's a decision today. The outcome of this is really guidance to our negotiators who will be involved in the international conferences considering this issue. I don't think there'll be a decision in the meeting, although -- probably will be some kind of written guidance shortly thereafter.

Q Has the President ever taken a position on Hodel's suggestions about visors and suntan lotion?

MR. FITZWATER: I don't think so. Secretary Hodel has suggested he wasn't totally serious there. And I have suggested I hope he's not serious.

Q Like ketchup is a vegetable. (Laughter.)

MR. FITZWATER: I don't think that's a serious alternative.

Q I mean, he does -- because he did raise questions about that the President -- that this would violate the President's feelings against regulation. The President isn't concerned about the need for regulations to control the ozone?

MR. FITZWATER: Well, he was looking at all alternatives, he was saying, and -- but this is a question of -- were talking here about instructing our negotiators on objectives for these conferences, such as freezing ozone levels at current production levels or going for a decrease of some percentage point -- issues like that. So it's a -- it's not a direct regulatory issue. And I think that there are a number of serious options under consideration of which hats and lotions is not one of them.

Q What is the timetable and the forum for these international talks?

MR. FITZWATER: Since 1985, the U.S. has been the leader in international negotiations in chlorofluorocarbons. Representatives of several of the parties to the negotiations will meet next week on June 29 to discuss a chairman's text. A plenipotentiary conference is scheduled for September in Montreal. I guess the Montreal conference is the key.

Q When is that?

MR. FITZWATER: I don't have an exact date. It just says in September.

Q What is the forum. I mean, is there --

MR. FITZWATER: Let me see if I have any other background on this. The Vienna convention for the protection of the ozone layer, ratified by the Senate in the July of 1986, established an international framework for scientific cooperation and intiated

negotiations toward a protocol for controls on ozone depleting chemicals.

The United States, through the State Department and EPA, has participated in three negotiating sessions toward a protocol to the Vienna convention on the control of chlorofluorocarbons. Those were in Geneva, December 1986, Vienna, April 1987, and April 27 - 30 1987, also in Vienna.

The final negotiating session is tenatively scheduled for the end of June 1987. And the signing ceremony tentatively set for September 1987 in Montreal, Canada.

The State Department received authority to negotiate an emissions control protocol pursuant to interagency approval of the 1986 circular.

So in any case, basically, Montreal end of this year.

Q So the President's instructions, Marlin, will essentially be the final negotiating position of the United States just before the signing, expected in September, on this issue, right?

MR. FITZWATER: That's correct. Basically, the United States banned non-essential uses of chlorofluorocarbons in 1978. Those are most commonly known as the ones that were in the propellants on hairsprays and other kinds of cans.

There, however, were a number of essential uses that remained because, at that time, were considered that there were no substitutes for them -- like, primarily, electrical transformers and refrigeration units and so forth.

CFCs have extraordinary power to retain heat and, therefore, are used as coolants in a lot of industrial applications. However, the problem has remained and scientists generally still feel that it's significant and there need to be further reductions. And so, the issue now is what kind of reductions can be made in these essential uses?

Q Is one of the DPC options a total ban?

MR. FITZWATER: I think they're talking about a freeze at current levels and reductions, presumably leading to elimination over a period of years.

Q Is the administration still considering unilateral action by the U.S. on these chemicals, as the EPA Administrator indicated recently?

MR. FITZWATER: I don't -- as far as I know, our main participation is through this multilateral protocol that's being considered in Montreal.

Q How about the hostages?

MR. FITZWATER: On the hostages, let me just echo a brief statement that was given by the State Department a few minutes ago that says: Another American seized in Lebanon. Our Embassy in Beirut has learned that Mr. Charles Glass, a American newsman -- actually, the wire services indicate he has not been with ABC for some five months, but is, nevertheless, a writer; he's working on a book -- was kidnapped in the southern suburbs of Beirut, north of Beirut International Airport, on the afternoon of July 7th -- I'm sorry -- June 17. We know of no claims of responsibility.

We hold the kidnappers responsible for the safety of their victims and call for the immediate and unconditional release of all those held hostage.

That's all I have on it at the moment. The State Department will provide any more guidance as it becomes available.

Q Since the son of a defense minister is said to have been taken with him and he's a Shiite Moslem, is there any indication that the kidnappers may be others than Shiites?

MR. FITZWATER: We don't have any indication on the kidnappers that I'm aware of. I'm sure we don't at this point.

Q When was the President notified?

MR. FITZWATER: This morning, but I don't have an exact time.

I guess I don't have anything else to announce. Well, wait a minute, I didn't finish the schedule. Back to the schedule. The President will sign an agreement for a relay station in Israel for the Voice of America, at 3:45 p.m. this afternoon in Room 450. We'll have a fact sheet for you that's coming over from the Voice of America. But, basically, the agreement to be signed provides for the construction of a new radio relay site in Israel for the Voice of America, Radio Free Europe, and Radio Liberty, which will significantly enhance our access to audiences in Western Asia, Soviet-Central Asia, and important areas of East Africa. The agreement was negotiated over a period of several years and is a key element in the administration's program to modernize international broadcasting.

THE WHITE HOUSE

WASHINGTON

DOMESTIC POLICY COUNCIL

Thursday, June 11, 1987

11:00 a.m.

Roosevelt Room

AGENDA

1. Stratospheric Ozone -- Lee M. Thomas
Administrator
Environmental Protection Agency

Beryl W. Sprinkel
Chairman
Council of Economic Advisers

Domestic Policy Council Meeting

June 11, 1987

PARTICIPANTS

The Attorney General, Chairman Pro Tempore

Secretary Hodel
Secretary Lyng
Secretary Bowen
Secretary Herrington
Deputy Secretary Whitehead
(Representing Secretary Shultz)
Deputy Secretary Taft
(Representing Secretary Weinberger)
Deputy Secretary Brown
(Representing Secretary Baldrige)
Under Secretary Covitz
(Representing Secretary Pierce)
Deputy Director Wright
(Representing Director Miller)

T. Kenneth Cribb, Jr., Assistant to the President for Domestic Affairs
Nancy Risque, Assistant to the President and Cabinet Secretary
Gary Bauer, Assistant to the President for Policy Development
Ralph Bledsoe, Executive Secretary, Domestic Policy Council

For Presentation

Lee Thomas, Administrator, Environmental Protection Agency
Beryl Sprinkel, Chairman, Council of Economic Advisers

Additional Attendees

Dan Crippen, Deputy Assistant to the President
Jim Dyer, Deputy Assistant to the President for Legislative Affairs
John Tuck, Executive Assistant to the Chief of Staff
Albert Brashear, Special Assistant to the President and Deputy Press Secretary
Robert Dean, Special Assistant to the President and Senior Director of International Programs/Technology Affairs, NSC
William Graham, Science Advisor to the President and Director of the Office of Science and Technology Policy

Richard Benedick, Deputy Assistant Secretary for Environment, Health and Natural Resources, Department of State
Thomas Hookano, Deputy Assistant Attorney General, Land and Natural Resources Division
Wendell Wilkie, General Counsel, Department of Education
Jacqueline Schafer, Member, Council on Environmental Quality
Steve Galebach, Senior Special Assistant to the Attorney General

DATE: _____

TELEPHONE LOG

PURPOSE: DPC Meeting - Thursday, June 11 - 11:00 am
Roosevelt Room - Re: Ozone

Invited:

✓	The Vice President	Briget	4245	
✓	STATE (Shultz)	Sheila Lopez	647-5804	Whitehead
✓	TREASURY (Baker)	Cheryl	566-2269	
✓	DEFENSE (Weinberger)	Betty Grim	695-6064	Taft
✓	JUSTICE (Meese)	Carol Miles	633-2107	EM III / Galebach
✓	INTERIOR (Hodel)	Sybil Terry	343-4203	Hodel
✓	AGRICULTURE (Lyng)	Dolores Flowers	447-3631	Lyng
✓	COMMERCE (Baldrige)	Mitchell Stanley	377-2112	Brown
___	LABOR (Brock)	Carol Browning	523-8271	
✓	HEALTH (Bowen)	Kim Fuller	245-7000	Bowen
✓	HUD (Pierce)	Starr Eckart/ Louise	755-6417	Rovich
✓	TRANSPORTATION (Dole)	Jeanne Smith	366-1111	
✓	ENERGY (Herrington)	Paul Longsworth	586-5500	Herrington
✓	EDUCATION (Bennett)	Henrietta Moody	732-3000	Willkie
✓/✓	Howard Baker	Sue	6797	Cripper / Tuck
✓	OMB (Miller)	Stephanie	4840	Wright
___	UN (Walters)	Ellen	647-8344	
✓	TRADE (Yeutter)	Sue Nelson	395-3204	

****

✓	Frank Carlucci	Cathy Bergeran	6534	
✓	Beryl Sprinkel	Alice Williams	5042	Sprinkel
✓	Nancy Risque	Kathy Djenab	2823	Risque
✓	Gary Bauer	Amy Sullivan	6515	Bauer
✓	T. Kenneth Cribb	Debbie Hansen	2421	Cribb

✓	William Ball	Mary Anne	2230	Dyer
___	A.B. Culvahouse	Linda/Nancy	2632	
___	Ken Duberstein		2533	
___	Frank Donatelli	Jean	7620	
?	Marlin Fitzwater	Sally McElroy/Connie	2100	Brashear
___	Charles Greenleaf		6597	
___	Tom Griscom	Karen Hart	2533	

✓ EPA Thomas

✓ CEQ _____

✓ OSTP - Graham

DPC Mtg. 6/11

Lee Thomas

→ True Global freeze result in very little depletion
→ Health effects. (same)
→ lots uncert's, but he's very concerned b/c impact on ecology of world.
↳ not gratified!

Legal / legis issues

§157 CAA.
(2) At some pt of time b/c 1) stat & 2) admin rec -- action in U.S. will be taken either with or w/o an int'l agreemt.
↳ 50% reduc needed, even tho over 10-12% only course which will prevent unilat

50% protocol reduc equates to 20% WW reduc + 95% unilat U.S. reduc

Beryl Sprinkel

→ arduous process & ~ all diff's reconciled
∴ Beryl's best jmt:

→ Std present discr'l value = costs
→ benes are a prob =
only = avoiding skin cancer deaths in future
↳ ? - how V human life
↳ ? - how well jnt gen's calc V.
Valuation of deaths averted
= what wld soc be willing to pay?

WG's disagreement on everything.
└ ∴ he discussed diff's ≠
i.e. direct rates vis-a-vis R/R on K.
└ costs compared to uncertain outcome -- i.e.
the prevent of deplet. of ozone layer.

(Graphs that Steve did.)

Freere - in all cases, the bene's exceed the costs

Freere +20 -- majority but not all of cases, bene's exceed costs.

Freere +20
+30 -- closer, on avg -- majority (56%) bene's exceed costs; but others diff.

Beryl's BL = ① Freere clr
② Freere + 20 = odds very high
③ Next 30 = may be justif'd & better info will be availab b-4 have to pull this trigger.

~~Phil~~

Bill Graham

- we're doing this 200 yrs out
& effects are > inpt. later on.

- assump's = not reachable [illegible]
- the time uncert.
└ lots of uncert's.
└ effects negligible if non-particip
① we don't know a lot now -- & will later
② Commit U.S. to int'l voting provisions that may bind us in future.

Beryl's questions re ① Congress + ② Int'l

Bill Graham = Support FREEZE but wrt Reduc's:
① Congress is receptive to hearing his info
"educatable but uneducated"
∴ they will listen &
[⇒'d not legis?]
② partic'p is key
& countries are committing to reduc's that

Whitehead = are you out of step w/ other scientists calling for reduc's?
Graham - we need to ↑ understdg & we have time.

NOAA = Agree w/ Sci Adv'r.
└ we have time.
∴ > moderate approach is OK.
Unilat'lly we have not received any credit

w/o LDCs, no level of control

Meese - while we all agree w/ Bill G, must ~~also~~ > impt'ly consid polit envir
① Int'l approach as rec ~~and~~
② Congress - A) legis action
- B) not able to sanc.

Lee T. - DPC paper Good.
- Close int'lly to reasble approach warranted by sci.
- have most producers & consumers + LDCs

Hodel

- Fascinating to watch F's chg dramatically as pressure is put on the F base
- NIH's stats are 1/4 re skin cancers as EPA; & no cataracts.
- Assmp's are Amazing for 200 years.
- Pres may well have to do something b/c of polit concerns
- Hodel did not utter the words sunglasses & hats.
- Need Real look at options:
  1. Go fwd & do the best you can.
  2. Give negot'rs gdlines:
     a) How many countries particip
        i.e. 80% minimum for signing
        i.e. all chemicals
        i.e. stepped & phased reduc's.

→ Is Pres going to instruct deleg? & will it be w/ particip baseline

Reads ltrs from
- Alliance: - support a freeze
- Envir Comm: opposite.

Whitehead
- agree w/ EPA.
- need multi-, not 1 approach → remove danger.
- need to take lead
- ? pressure on negot'rs to get most particip's.
- need most chemicals

- polit'lly, other nations are pressuring Shultz on what is
- Japan is now coming in stronger in agreemt.
  - ↳ 113
  - ↳ reduc's
  - ↳ Chrmn's Text

Hodel: Pres shld say he wants an agreemt that will work.
& some people want agreemt even if not workable.

↳ These people threaten by saying U.S. is scuttling negot's.

↳ He fears that if sign in response to Congress w/ few countries wld hurt b/c; ① no incentive to join later

Thomas Same principles:
→ Many countries
→ Many chem's.

Wright - Need give Pres options paper b-4 next negot'g session
- & ~ blow posit b-4 next session

- Smaller gp shall put options paper together. & go into Pres.

Taft - Not want anything below a freeze on Halons
(all agree)

Thomas - If you add 113 to the Halons wld be charge

Lyng — not enuff knowledge now
— need > $ on research.

CEQ -- future assessmts be linked to
future reductions
& implement'g mechanisms
-- not comfortable on automatic
freeze prior to assessmts.

Meese

① Negot's shld go frwd w/ instruc'
to deleg from Pres.
② Options for Pres on key issues
distrib'd by Monday COB
③ If disagree on options,
mt Tuesday
If no disagreemt, move to Pres.
quickly
④ Options = A) So Partic
B) Chem's
C) Voting
D) Monitoring, Verific &
Rept'g
E) Auto vs. Aff. Votes

⑤ Group shld include = Hodel, Thomas, State, [illegible], [illegible]

(2) To Pres. next wk.

THE WHITE HOUSE

WASHINGTON

June 18, 1987

MEMORANDUM FOR THE PRESIDENT

FROM: THE DOMESTIC POLICY COUNCIL

SUBJECT: Stratospheric Ozone

ISSUE: What guidance should the U.S. delegation be given for the next stages of international negotiation of an agreement for regulation of chemicals believed capable of future depletion of stratospheric ozone?

BACKGROUND:

Beginning in the 1970's, concerns were expressed in some parts of the scientific community that continued growth in the use of certain chemicals would result in future depletion of stratospheric ozone. Scientists' models predict this could cause adverse health and environmental effects, including increased skin cancer deaths, cataracts, effects on the immune system, damage to crops and materials and impacts on aquatic life. Other scientists believe that some of these projections, which extend as far as the year 2165, do not accurately account for numerous scientific uncertainties and for future technological, scientific, medical and behavioral changes that may occur. The chemicals in question, chlorofluorocarbons (CFCs) and Halons, are used commercially in refrigerators, building and mobile air-conditioners, foam insulation and fire extinguishers, and by the electronics industry. Some of them have important national defense applications for which there are currently no substitutes.

Based on their models, most scientists now believe that significant ozone depletion is likely to occur by the year 2040 unless global action is taken to control the chemicals at issue, even though there are numerous medical and scientific uncertainties about the potential impacts of such depletion. Ideally, any freeze or reduction in CFCs should be based on reliable scientific evidence that use of CFCs will cause depletion of stratospheric ozone. While there are differing views within the Council on the reliability of the scientific evidence available at this time, the long life of CFC accumulations, and the consequent risk assessments associated with projected ozone depletion argue for strong action to secure an international agreement this year, with provision for future scientific assessment. Since U.S. participation in an international agreement will require domestic regulations, the Domestic Policy Council will address these and potential non-regulatory options as additional policy guidance is needed.

Congressional Interest. Concern over the predicted depletion of ozone led Congress to add an ozone protection section to the Clean Air Act in 1977 and led EPA to ban CFC aerosols in 1978. Some other countries subsequently implemented partial bans of CFC aerosol use. Currently, there is strong congressional pressure for additional action to protect the ozone layer. The Senate has passed a resolution calling for a strong international agreement, and urging an automatic reduction in CFC production of fifty percent. If an effective international agreement is not reached, and we fail to secure firm and concrete commitments from other countries, Congress and the courts may require unilateral domestic reductions of the chemicals in question. Such U.S. action, alone, would not protect the ozone layer and would disadvantage American businesses in world markets.

International Negotiations. The U.S. is a party to the 1985 Vienna Convention for Protection of the Ozone Layer. (Note: Although the Convention is not in effect yet, we expect it will be ratified by a sufficient number of countries.) Your ratification message to the Senate stated that this Convention addresses stratospheric ozone depletion "primarily by providing for international cooperation in research and exchange of information . . . and could also serve as a framework for negotiation of regulatory measures that might in the future be considered necessary. . . ." The U.S. has received considerable credit by some in Congress for its leadership role in the three negotiating sessions held thus far to develop an international agreement on control of the chemicals in question. However, some are concerned that not all emerging industrialized nations have participated in the negotiations. The U.S. interagency delegation has been guided by a Circular 175 approved under the authority of the Secretary of State, following approval by some agencies at various staff levels. The next negotiating session is scheduled for June 29, 1987 with a plenipotentiary conference scheduled in Montreal in September to sign the agreement.

Cost-Benefit. In a cost benefit analysis relying on EPA estimates of ozone depletion effects on cancer deaths thought 2165, the potential benefits of taking some actions to protect the ozone layer were found to be substantially greater than the costs of controlling the relevant chemicals. Cost benefit analysis suggests that both a freeze and a further 20-percent reduction of the ozone-depleting chemicals are economically justified. Further reductions are also indicated in a majority of cases, depending on information that will be acquired prior to taking such steps.

DISCUSSION: The most recent international negotiations have produced a Chairman's Text for an agreement based on the structure presented by the U.S. Each country has been asked to review this Text prior to the June 29 meetings. The Domestic Policy Council met on May 20 and June 11 to discuss the Chairman's Text, as well as the overall negotiations. The Council agreed that we should continue with negotiations; however, your further guidance on the following issues and options is requested.

ISSUE 1 -- PARTICIPATION AND ENTRY INTO FORCE OF THE PROTOCOL

Ideally, all nations that produce or use ozone-depleting chemicals should participate in the protocol if it is to address globally the ozone depletion problem. Otherwise, production of CFCs by nonparticipants could eventually offset reductions by the participating countries. The Council believes we should seek maximum participation.

Which of the following positions should the U.S. delegation seek with regard to entry into force (EIF) and continuing effect of the protocol?

_____ Option 1. Entry into force of the protocol should occur only when a substantial proportion of producing/consuming countries as determined by the U.S. delegation have signed and ratified it.

This option is supported by State, EPA, DOD, DOE and HHS.

_____ Option 2. Entry into force should occur only when, according to a pre-determined formula, essentially all major producing/consuming countries have signed and ratified the protocol.

This option is supported by Interior, Commerce, Justice and OSTP.

_____ Option 3. Entry into force should occur when the specific minimum number of countries required by the Convention have signed and ratified the protocol, regardless of their production or consumption.

ISSUE 2 -- GRACE PERIOD FOR LESSER DEVELOPED COUNTRIES

To encourage participation by all countries, should lesser developed nations be given a limited grace period up to the year 2000, to allow some increases in their domestic consumption? This has been the U.S. position and is unanimously supported by the Council.

Yes_____ No_____

ISSUE 3 -- VOTING

Should the U.S. delegation seek to negotiate a system of voting for protocol decisions that gives due weight to the significant producing and consuming countries? This proposal has unanimous support of the Council.

Yes_____ No_____

ISSUE 4 -- MONITORING AND ENFORCEMENT

Should the U.S. delegation seek strong provisions for monitoring, reporting, and enforcement to secure the best possible compliance with the protocol? This proposal has unanimous support of the Council.

Yes_____ No_____

ISSUE 5 -- CREDITS FOR PREVIOUS ACTION

Should the delegation seek a system of credits for emissions reduction, resulting from the 1978 U.S. ban of non-essential aerosols? In previous negotiations, other countries rejected this proposal, claiming that the U.S. is still the largest consumer of CFCs.

_____ Option 1. Yes.

This would assure the consideration of previous actions taken to deal with ozone depletion and is supported by Interior, CEQ and OSTP.

_____ Option 2. No.

State feels this could stalemate the negotiations, and will stimulate unnecessary proposals from other parties. This option is supported by State, EPA, Justice, HHS, DOE and USTR.

ISSUE 6 -- FREEZE

Should the U.S. delegation seek a freeze at 1986 levels on production/consumption of all seriously ozone-depleting chemicals (CFCs 11, 12, 113, 114, 115; Halons 1201 and 1311), to take effect one or two years after the protocol entry into force? This proposal is consistent with the Chairman's Text and has unanimous support of the Council.

Yes_____ No_____

A freeze will achieve a majority of the health and environmental benefits derived from retention of the ozone layer. It will also spur industry to develop substitutes for ozone-depleting chemicals. Halons are not presently mentioned in the Chairman's Text, but it is intended that they will be included. The earliest expected entry into force (EIF) date is 1988.

ISSUE 7 -- SCHEDULED 20% REDUCTION

Should the U.S. delegation seek a 20% reduction from 1986 levels of CFCs 11, 12, 113, 114 and 115, four years after EIF, about 1992, following the 1990 international review of updated scientific evidence? The Council supports this action, but is divided over options for how the reductions should be implemented:

_____ Option 1. The 20% reduction should take place automatically, unless reversed by a 2/3 vote of the parties.

This is consistent with the Chairman's Text and the Circular 175. It is supported by EPA, State, Justice, CEQ, HHS, DOE and USTR. Commerce and DOD support this option for all chemicals except CFC 113; 113 has national defense applications for which there are currently no available substitutes.

_____ Option 2. The 20% reduction should take place only if a majority of the parties vote in favor following the 1990 scientific review.

This option is supported by Interior.

_____ Option 3. Further reductions should not be scheduled at this time. We may later decide to seek these in light of future scientific evidence.

This option is supported by OSTP.

ISSUE 8 -- SECOND PHASE REDUCTION

Should the U.S. delegation seek a second-phase CFC reduction of an additional 30% from 1986 levels, consistent with the Chairman's Text? This would occur about 8 years after EIF (about 1996).

_____ Option 1. Yes, and this should occur automatically, unless reversed by a 2/3 vote of parties, following scientific review.

This is supported by EPA and State.

_____ Option 2. Yes, and this should occur only if a majority of the protocol parties vote in favor, following scientific reviews.

HHS, Justice, DOE, DOD, CEQ and USTR support this.

_____ Option 3. Further reductions should not be scheduled at this time. We may later decide to seek these in light of scientific evidence not now available about the results of a freeze and any other reduction.

This would curtail future reductions, and require a new protocol. Commerce, Interior and OSTP support this.

ISSUE 9 -- LONG RANGE OBJECTIVE

Should the U.S. delegation support the ultimate objective of protecting the ozone layer by eventual elimination of realistic threats from man-made chemicals, and support actions determined to be necessary based on regularly scheduled scientific assessments.

Yes_____ No_____

This proposal has unanimous support of the Council members. CEQ believes the ultimate objective is development of substitute non-ozone-depleting chemicals.

ISSUE 10 -- TRADE PROVISIONS

The international negotiations have focused on a trade provision 1) to insure that countries are not able to profit from not participating in the international agreement, and 2) to insure that U.S. industry is not disadvantaged in any way through participation.

What should be the nature of any trade article sought for the protocol by the U.S. delegation?

_____ Option 1. Seek a provision which will best protect U.S. industry in world markets, by authorizing trade restrictions against CFC-related imports from countries which do not join or comply with the protocol provisions.

This option is supported by Justice, Interior, OSTP, EPA, DOE, USTR, HHS and State. Note: Commerce is against the use of trade restrictions unless there is no other way to protect U.S. industry.

_____ Option 2. Do not seek a trade article for the protocol.

Ralph C. Bledsoe
Executive Secretary
Domestic Policy Council

Attachment

Confidential

THE WHITE HOUSE

WASHINGTON

May 7, 1987

MEMORANDUM FOR NANCY J. RISQUE

FROM: VICKI MASTERMAN

SUBJECT: Stratospheric Ozone -- Agency Positions

All Federal agencies continue to agree with the U.S. position as broadly stated in the State Department Circular 175 on protection of the stratospheric ozone layer. The Circular 175 authorized the State Department to negotiate an international agreement requiring a near-term freeze on emissions of ozone-depleting chemicals and a long-term reduction of emissions by as much as 95 percent depending upon scientific developments.

There is also inter-agency agreement on: (1) the goals of the international and domestic policy processes relating to stratospheric ozone; (2) the relative importance of the issues involved in the regulation of ozone-depleting agents; (3) the need for a phased reduction of emissions of ozone-depleting chemicals beginning with a freeze of most emissions at 1986 levels and a 20 percent automatic reduction in certain emissions two to four years after the freeze; (4) the need to specify the the next emissions reduction step after the 20 percent reduction; (5) the need for periodic reviews of the science, technology, and economics, and for the integration of these reviews into future decisionmaking on ozone protection; (6) the desirability of international action over unilteral domestic action; and (7) the need for an international agreement to contain enforceable trade provisions and to include as many countries as possible.

The remaining differences relate to the steps following the automatic 20 percent reduction in emissions. Commerce, OMB, Interior, and OSTP believe the steps after a 20 percent reduction should be:

* a 20-50 percent reduction
* within 8-10 years after entry of agreement
* subject to confirmation by contracting parties;

and

* a 20-95 percent reduction
* within 14-16 years after entry of agreement
* subject to confirmation by contracting parties.

EPA believes the steps following the 20 percent reduction should require automatic reductions of specified amounts, with the opportunity for the contracting parties to overrule these required reductions in the future. EPA agrees with the Chairman's draft resulting from last week's Geneva negotiations which would specify an additional 30 percent reduction as the step after the 20 percent reduction. Whether the reductions following the 20 percent cut should be automatic or should be subject to confirmation by the contracting parties is a remaining disagreement.

[illegible] 6/2

1) Copy of AG letter to Shultz

Tuin – Legal / Legislative

LITIG 1980 – Adv. Notice Prop'd Rulemaking
Admin'r Flgs on ozone
1984 – NRDC lawsuit to compel issuance of ozone regs
(Dec. 1 – negot'd delay -- Admin'r make decis whether will reg.)
Lando: Absent Int'l Protocol, will likely see some domestic reg either thru litig or legis

CAA §157 – Reqs auth'd if activ "may reasably be antic'd to affect stratosphere & reasably be antic'd to affect health."

If negot's go beyond Dec, DC ~ likely to force domestic
1) no auth at DC [illegible] in AC
2) DC Cir – give Admin'r as much time as nec.
NRDC wld attempt to find him in contempt of Admin'r
If Admin'r say ~ reg, → likely be a/c & wld impose sched for reg.

[illegible] Senate: Baucus – [illegible]
[illegible]
[illegible] – [illegible]
[illegible] – opposed [illegible]

Hse: 1) Dingell – wait & see – avoid unilat domestic
2) Waxman – unilat if nec.
3) Sikorski – unilat if nec. 4) [illegible] opposed to any

If have freeze + 20% → ~~Hrys~~ → see FCs + Halons + the methylchloroform as well.
If have freeze + 50% → no add'l reducs.

OMB: No threat of Regis passing.

NOAA — Albritton

I

Pres add to 175 --
Will add'l instruc's come up
└ don't bother to come back.

→ Shld St. Dept go pursuant to 175 or shld there be specific instruc's

II) Interior = (Drop Dead plus)

① the chg's ought to be a chg in the 175 rather than reflected in the instruc's going to the deleg as reflecting guidance of DPC.

② Pearlman -- not want agency's to have views. Let Cabinet speak to one another.

③ Want discussion of what domestic regulatory scheme wld be like implementing the int'l agreement.

→ EPA can do that.

DO NOT Reflect agency positions.

III) → list what chemicals are included & what is not included.

[illegible] the Freeze [illegible] the reduction [illegible].

Defense = sensitive to Halons = want in stmt that it's coming.

IV DPC will be committing their agencies

A. → OSTP actively challenges the freeze
will act ? "Those who do not support the freeze argue ... "

B. Science -- all agree

→ C. OSTP's - question - shld. it be in?
└ EPA, no
└ OPD, no
(others yes)

Remaining Questions

A. Mike will be submitting analysis of timing re sci study 1990.

B. - Richard - paper, not reflect, diplomatic cost of not going ahead with negotiations in [illegible].

- who have [illegible] been negot. ?

Should we structure paper in [illegible]

→ Assuming there is an automatic reduction, what chemicals shld it cover?

~~11, 12, 114, 115~~

1st set -- 11, 12

shld 113? } Commerce NASA pro's & cons

shld Halons? } Defense pros's & cons
114 & 115?

#6 - Divide question --

① Particip
② system of voting

Particip -- ID gp's. (Becky)

└ LDC's = UNEP is funding them, & they ~show up otherwise. They're stretched ∴ really

└ Need producers. -- ID producers & consumers.

Richard list's & pts.

(Can prevent them from profitting from trade)
(yet can't prevent them from internal development)

Steve └ if protocol in place, then as countries develop, then they will be likely to particip when they are able.

Ozone → Richard phon con 8/12

→ who shld. Richard talk to when he is in Montreal

→ RCB attend [illegible] final deleg mtg.

→ Cong'l reps.

Mtg Richard's Office 8/13

Hoffman "Dgr" → ① If go to 80% Japan cld hold up entry into force.

② Need better data on imports & produc — for Art. 15 wld be P + I. ↓ incl'g the EC

getting data

→ [Precisely.] why we need 80%

We all want US, EC, Jap. (+ USSR)

but if we get all to x% but not Japan, then --

[Incl'g I wld ↓ the EC weight]

(?) = Is there any scenario we wld want an agreemt w/o Japan?

→ if delay entry into force, then we'll be doing everything ~~so~~ req'd anyway & Japanese won't.

→ Trade provision wld bring Japan in ∴ want EIF so can get Japan yet on other hand, may not be able to domestically enforce trade s

→ Japan's particip may be dependent upon other provisions

Also → We cld be isolated in Montreal if we [illegible] to 80% & if we are sign[illegible] won't sign and look bad -- [illegible] like Admin is holding out.

Now

- data P&I
- polit outlook Japan
- actual ratif in Japan if sign in Montreal
- St. + EPA + USTR
  - paper by 1 wk

175

→ gen'l Pres instrucs
→ need to satis proced's & get auth to sign
→ ag's need to feel they have signed onto something
→ St. not need a detailed instruc.

OUR COMMON FUTURE

FROM ONE EARTH TO ONE WORLD

AN OVERVIEW

BY THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

FROM ONE EARTH TO ONE WORLD

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FROM ONE EARTH TO ONE WORLD

An Overview by the World Commission on Environment and Development

In the middle of the 20th century, we saw our planet from space for the first time. Historians may eventually find that this vision had a greater impact on thought than did the Copernican revolution of the 16th century, which upset the human self-image by revealing that the Earth is not the centre of the universe. From space, we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery, and soils. Humanity's inability to fit its doings into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life-threatening hazards. This new reality, from which there is no escape, must be recognized—and managed.

Fortunately, this new reality coincides with more positive developments new to this century. We can move information and goods faster around the globe than ever before; we can produce more food and more goods with less investment of resources; our technology and science gives us at least the potential to look deeper into and better understand natural systems. From space, we can see and study the Earth as an organism whose health depends on the health of all its parts. We have the power to reconcile human affairs with natural laws and to thrive in the process. In this our cultural and spiritual heritages can reinforce our economic interests and survival imperatives.

This Commission believes that people can build a future that is more prosperous, more just, and more secure. Our report, *Our Common Future*, is not a prediction of ever increasing environmental decay, poverty, and hardship in an ever more polluted world among ever decreasing resources. We see instead the possibility for a new era of economic growth, one that must be based on policies that sustain and expand the environmental resource base. And we believe such growth to be absolutely essential to relieve the great poverty that is deepening in much of the developing world.

But the Commission's hope for the future is conditional on decisive political action now to begin managing environmental resources to ensure both sustainable human progress and human survival. We are

not forecasting a future; we are serving a notice—an urgent notice based on the latest and best scientific evidence—that the time has come to take the decisions needed to secure the resources to sustain this and coming generations. We do not offer a detailed blueprint for action, but instead a pathway by which the peoples of the world may enlarge their spheres of co-operation.

I. THE GLOBAL CHALLENGE

Successes and Failures

Those looking for success and signs of hope can find many: Infant mortality is falling; human life expectancy is increasing; the proportion of the world's adults who can read and write is climbing; the proportion of children starting school is rising; and global food production increases faster than the population grows.

But the same processes that have produced these gains have given rise to trends that the planet and its people cannot long bear. These have traditionally been divided into failures of 'development' and failures in the management of our human environment. On the development side, in terms of absolute numbers there are more hungry people in the world than ever before, and their numbers are increasing. So are the numbers who cannot read or write, the numbers without safe water or safe and sound homes, and the numbers short of woodfuel with which to cook and warm themselves. The gap between rich and poor nations is widening—not shrinking—and there is little prospect, given present trends and institutional arrangements, that this process will be reversed.

There are also environmental trends that threaten to radically alter the planet, that threaten the lives of many species upon it, including the human species. Each year another 6 million hectares of productive dryland turns into worthless desert. Over three decades, this would amount to an area roughly as large as Saudi Arabia. More than 11 million hectares of forests are destroyed yearly, and this, over three decades, would equal an area about the size of India. Much of this forest is converted to low-grade farmland unable to support the farmers who settle it. In Europe, acid precipitation kills forests and lakes and damages the artistic and architectural heritage of nations; it may have acidified vast tracts of soil beyond reasonable hope of repair. The burning of fossil fuels puts into the atmosphere carbon dioxide, which is causing gradual global warming. This 'greenhouse effect' may by early next century have increased average global

The World Commission on Environment and Development first met in October 1984, and published its report 900 days later, in April 1987. Over those few days:

- The drought-triggered, environment-development crisis in Africa peaked, putting 35 million people at risk, killing perhaps a million.
- A leak from a pesticides factory in Bhopal, India, killed more than 2,000 people and blinded and injured over 200,000 more.
- Liquid gas tanks exploded in Mexico City, killing 1,000 and leaving thousands more homeless.
- The Chernobyl nuclear reactor explosion sent nuclear fallout across Europe, increasing the risks of future human cancers.
- Agricultural chemicals, solvents, and mercury flowed into the Rhine River during a warehouse fire in Switzerland, killing millions of fish and threatening drinking water in the Federal Republic of Germany and the Netherlands.
- An estimated 60 million people died of diarrhoeal diseases related to unsafe drinking water and malnutrition; most of the victims were children.

temperatures enough to shift agricultural production areas, raise sea levels to flood coastal cities, and disrupt national economies. Other industrial gases threaten to deplete the planet's protective ozone shield to such an extent that the number of human and animal cancers would rise sharply and the oceans' food chain would be disrupted. Industry and agriculture put toxic substances into the human food chain and into underground water tables beyond reach of cleansing.

There has been a growing realization in national governments and multilateral institutions that it is impossible to separate economic development issues from environment issues; many forms of development erode the environmental resources upon which they must be based, and environmental degradation can undermine economic development. Poverty is a major cause and effect of global environmental problems. It is therefore futile to attempt to deal with environmental problems without a broader perspective that encompasses the factors underlying world poverty and international inequality.

These concerns were behind the establishment in 1983 of the World Commission on Environment and Development by the UN General Assembly. The Commission is an independent body, linked to but outside the control of governments and the UN system. The Commission's mandate gave it three objectives: to re-examine the critical environment and development issues and to formulate realistic proposals for dealing with them; to propose new forms of international co-operation on these issues that will influence policies and events in

the direction of needed changes; and to raise the levels of understanding and commitment to action of individuals, voluntary organizations, businesses, institutes, and governments.

Through our deliberations and the testimony of people at the public hearings we held on five continents, all the commissioners came to focus on one central theme: many present development trends leave increasing numbers of people poor and vulnerable, while at the same time degrading the environment. How can such development serve next century's world of twice as many people relying on the same environment? This realization broadened our view of development. We came to see it not in its restricted context of economic growth in developing countries. We came to see that a new development path was required, one that sustained human progress not just in a few places for a few years, but for the entire planet into the distant future. Thus 'sustainable development' becomes a goal not just for the 'developing' nations, but for industrial ones as well.

The Interlocking Crises

Until recently, the planet was a large world in which human activities and their effects were neatly compartmentalized within nations, within sectors (energy, agriculture, trade), and within broad areas of concern (environmental, economic, social). These compartments have begun to dissolve. This applies in particular to the various global 'crises' that have seized public concern, particularly over the past decade. These are not separate crises: an environmental crisis, a development crisis, an energy crisis. They are all one.

The planet is passing through a period of dramatic growth and fundamental change. Our human world of 5 billion must make room in a finite environment for another human world. The population could stabilize at between 8 billion and 14 billion sometime next century, according to UN projections. More than 90 per cent of the increase will occur in the poorest countries, and 90 per cent of that growth in already bursting cities.

Economic activity has multiplied to create a $13 trillion world economy, and this could grow five- or tenfold in the coming half-century. Industrial production has grown more than fiftyfold over the past century, four-fifths of this growth since 1950. Such figures reflect and presage profound impacts upon the biosphere, as the world invests in houses, transport, farms, and industries. Much of the economic growth pulls raw material from forests, soils, seas, and waterways.

A mainspring of economic growth is new technology, and while this technology offers the potential for slowing the dangerously rapid consumption of finite resources, it also entails high risks, including new forms of pollution and the introduction to the planet of new variations of life forms that could change evolutionary pathways. Meanwhile, the industries most heavily reliant on environmental resources and most heavily polluting are growing most rapidly in the developing world, where there is both more urgency for growth and less capacity to minimize damaging side effects.

These related changes have locked the global economy and global ecology together in new ways. We have in the past been concerned about the impacts of economic growth upon the environment. We are now forced to concern ourselves with the impacts of ecological stress—degradation of soils, water regimes, atmosphere, and forests—upon our economic prospects. We have in the more recent past been forced to face up to a sharp increase in economic interdependence among nations. We are now forced to accustom ourselves to an accelerating ecological interdependence among nations. Ecology and economy are becoming ever more interwoven—locally, regionally, nationally, and globally—into a seamless net of causes and effects.

Impoverishing the local resource base can impoverish wider areas: Deforestation by highland farmers causes flooding on lowland farms; factory pollution robs local fishermen of their catch. Such grim local cycles now operate nationally and regionally. Dryland degradation sends environmental refugees in their millions across national borders. Deforestation in Latin America and Asia is causing more floods, and more destructive floods, in downhill, downstream nations. Acid precipitationand nuclear fallout have spread across the borders of Europe. Similar phenomena are emerging on a global scale, such as global warming and loss of ozone. Internationally traded hazardous chemicals entering foods are themselves internationally traded. In the next century, the environmental pressure causing population movements may increase sharply, while barriers to that movement may be even firmer than they are now.

Over the past few decades, life-threatening environmental concerns have surfaced in the developing world. Countrysides are coming under pressure from increasing numbers of farmers and the landless. Cities are filling with people, cars, and factories. Yet at the same time these developing countries must operate in a world in which the resources gap between most developing and industrial nations is widening, in which the industrial world dominates in the rule-making of some key international bodies, and in which the industrial world

has already used much of the planet's ecological capital. This inequality is the planet's main 'environmental' problem; it is also its main 'development' problem.

International economic relationships pose a particular problem for environmental management in many developing countries. Agriculture, forestry, energy production, and mining generate at least half the gross national product of many developing countries and account for even larger shares of livelihoods and employment. Exports of natural resources remain a large factor in their economies, especially for the least developed. Most of these countries face enormous economic pressures, both international and domestic, to overexploit their environmental resource base.

The recent crisis in Africa best and most tragically illustrates the ways in which economics and ecology can interact destructively and trip into disaster. Triggered by drought, its real causes lie deeper. They are to be found in part in national policies that gave too little attention, too late, to the needs of smallholder agriculture and to the threats posed by rapidly rising populations. Their roots extend also to a global economic system that takes more out of a poor continent than it puts in. Debts that they cannot pay force African nations relying on commodity sales to overuse their fragile soils, thus turning good land to desert. Trade barriers in the wealthy nations—and in many developing ones—make it hard for Africans to sell their goods for reasonable returns, putting yet more pressure on ecological systems. Aid from donor nations has not only been inadequate in scale, but too often has reflected the priorities of the nations giving the aid, rather than the needs of the recipients. The production base of other developing world areas suffers similarly both from local failures and from the workings of international economic systems. As a consequence of the 'debt crisis' of Latin America, that region's natural resources are now being used not for development but to meet financial obligations to creditors abroad. This approach to the debt problem is short-sighted from several standpoints: economic, political, and environmental. It requires relatively poor countries simultaneously to accept growing poverty while exporting growing amounts of scarce resources.

A majority of developing countries now have lower per capita incomes than when the decade began. Rising poverty and unemployment have increased pressure on environmental resources as more people have been forced to rely more directly upon them. Many governments have cut back efforts to protect the environment and to bring ecological considerations into development planning.

The deepening and widening environmental crisis presents a threat

The Commission has sought ways in which global development can be put on a sustainable path into the 21st century. Some 5,000 days will elapse between the publication of our report and the first day of the 21st century. What environmental crises lie in store over those 5,000 days?

During the 1970s, twice as many people suffered each year from 'natural' disasters as during the 1960s. The disasters most directly associated with environment/development mismanagement—droughts and floods—affected the most people and increased most sharply in terms of numbers affected. Some 18.5 million people were affected by drought annually in the 1960s, 24.4 million in the 1970s. There were 5.2 million flood victims yearly in the 1960s, 15.4 million in the 1970s. Numbers of victims of cyclones and earthquakes also shot up as growing numbers of poor people built unsafe houses on dangerous ground.

The results are not in for the 1980s. But we have seen 35 million afflicted by drought in Africa alone and tens of millions affected by the better managed and thus less-publicized Indian drought. Floods have poured off the deforested Andes and Himalayas with increasing force. The 1980s seem destined to sweep this dire trend on into a crisis-filled 1990s.

to national security—and even survival—that may be greater than well-armed, ill-disposed neighbours and unfriendly alliances. Already in parts of Latin America, Asia, the Middle East, and Africa, environmental decline is becoming a source of political unrest and international tension. The recent destruction of much of Africa's dryland agricultural production was more severe than if an invading army had pursued a scorched-earth policy. Yet most of the affected governments still spend far more to protect their people from invading armies than from the invading desert.

Globally, military expenditures total about $1 trillion a year and continue to grow. In many countries, military spending consumes such a high proportion of gross national product that it itself does great damage to these societies' development efforts. Governments tend to base their approaches to 'security' on traditional definitions. This is most obvious in the attempts to achieve security through the development of potentially planet-destroying nuclear weapons systems. Studies suggest that the cold and dark nuclear winter following even a limited nuclear war could destroy plant and animal ecosystems and leave any human survivors occupying a devastated planet very different from the one they inherited.

The arms race—in all parts of the world—pre-empts resources that might be used more productively to diminish the security threats created by environmental conflict and the resentments that are fuelled by widespread poverty.

Many present efforts to guard and maintain human progress, to

meet human needs, and to realize human ambitions are simply unsustainable—in both the rich and poor nations. They draw too heavily, too quickly, on already overdrawn environmental resource accounts to be affordable far into the future without bankrupting those accounts. They may show profits on the balance sheets of our generation, but our children will inherit the losses. We borrow environmental capital from future generations with no intention or prospect of repaying. They may damn us for our spendthrift ways, but they can never collect on our debt to them. We act as we do because we can get away with it: future generations do not vote; they have no political or financial power; they cannot challenge our decisions.

But the results of the present profligacy are rapidly closing the options for future generations. Most of today's decision makers will be dead before the planet feels the heavier effects of acid precipitation, global warming, ozone depletion, or widespread desertification and species loss. Most of the young voters of today will still be alive. In the Commission's hearings it was the young, those who have the most to lose, who were the harshest critics of the planet's present management.

Sustainable Development

Humanity has the ability to make development sustainable—to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth. The Commission believes that widespread poverty is no longer inevitable. Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfil their aspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes.

Meeting essential needs requires not only a new era of economic growth for nations in which the majority are poor, but an assurance that those poor get their fair share of the resources required to sustain that growth. Such equity would be aided by political systems that secure effective citizen participation in decision making and by greater democracy in international decision making.

Sustainable global development requires that those who are more affluent adopt life-styles within the planet's ecological means—in their use of energy, for example. Further, rapidly growing populations can increase the pressure on resources and slow any rise in living standards; thus sustainable development can only be pursued if population size and growth are in harmony with the changing productive potential of the ecosystem.

Yet in the end, sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs. We do not pretend that the process is easy or straightforward. Painful choices have to be made. Thus, in the final analysis, sustainable development must rest on political will.

The Institutional Gaps

The objective of sustainable development and the integrated nature of the global environment/development challenges pose problems for institutions, national and international, that were established on the basis of narrow preoccupations and compartmentalized concerns. Governments' general response to the speed and scale of global changes has been a reluctance to recognize sufficiently the need to change themselves. The challenges are both interdependent and integrated, requiring comprehensive approaches and popular participation.

Yet most of the institutions facing those challenges tend to be independent, fragmented, working to relatively narrow mandates with closed decision processes. Those responsible for managing natural resources and protecting the environment are institutionally separated from those responsible for managing the economy. The real world of interlocked economic and ecological systems will not change; the policies and institutions concerned must.

There is a growing need for effective international co-operation to manage ecological and economic interdependence. Yet at the same time, confidence in international organizations is diminishing and support for them dwindling.

The other great institutional flaw in coping with environment/development challenges is governments' failure to make the bodies whose policy actions degrade the environment responsible for ensuring that their policies prevent that degradation. Environmental concern arose from damage caused by the rapid economic growth following

the Second World War. Governments, pressured by their citizens, saw a need to clean up the mess, and they established environmental ministries and agencies to do this. Many had great success—within the limits of their mandates—in improving air and water quality and enhancing other resources. But much of their work has of necessity been after-the-fact repair of damage: reforestation, reclaiming desert lands, rebuilding urban environments, restoring natural habitats, and rehabilitating wild lands.

The existence of such agencies gave many governments and their citizens the false impression that these bodies were by themselves able to protect and enhance the environmental resource base. Yet many industrialized and most developing countries carry huge economic burdens from inherited problems such as air and water pollution, depletion of ground-water, and the proliferation of toxic chemicals and hazardous wastes. These have been joined by more recent problems—erosion, desertification, acidification, new chemicals, and new forms of waste—that are directly related to agricultural, industrial, energy, forestry, and transportation policies and practices.

The mandates of the central economic and sectoral ministries are also often too narrow, too concerned with quantities of production or growth. The mandates of ministries of industry include production targets, while the accompanying pollution is left to ministries of environment. Electricity boards produce power, while the acid pollution they also produce is left to other bodies to clean up. The present challenge is to give the central economic and sectoral ministries the responsibility for the quality of those parts of the human environment affected by their decisions, and to give the environmental agencies more power to cope with the effects of unsustainable development.

The same need for change holds for international agencies concerned with development lending, trade regulation, agricultural development, and so on. These have been slow to take the environmental effects of their work into account, although some are trying to do so.

The ability to anticipate and prevent environmental damage requires that the ecological dimensions of policy be considered at the same time as the economic, trade, energy, agricultural, and other dimensions. They should be considered on the same agendas and in the same national and international institutions.

This reorientation is one of the chief institutional challenges of the 1990s and beyond. Meeting it will require major institutional development and reform. Many countries that are too poor or small or that have limited managerial capacity will find it difficult to do this unaided. They will need financial and technical assistance and training. But the changes required involve all countries, large and small, rich and poor.

II. THE POLICY DIRECTIONS

The Commission has focused its attention in the areas of population, food security, the loss of species and genetic resources, energy, industry, and human settlements—realizing that all of these are connected and cannot be treated in isolation one from another. This section contains only a few of the Commission's many recommendations.

Population and Human Resources

In many parts of the world, the population is growing at rates that cannot be sustained by available environmental resources, at rates that are outstripping any reasonable expectations of improvements in housing, health care, food security, or energy supplies.

The issue is not just numbers of people, but how those numbers relate to available resources. Thus the 'population problem' must be dealt with in part by efforts to eliminate mass poverty, in order to assure more equitable access to resources, and by education to improve human potential to manage those resources.

Urgent steps are needed to limit extreme rates of population growth. Choices made now will influence the level at which the population stabilizes next century within a range of 6 billion people. But this is not just a demographic issue; providing people with facilities and education that allow them to choose the size of their families is a way of assuring—especially for women—the basic human right of self-determination.

Governments that need to do so should develop long-term, multifaceted population policies and a campaign to pursue broad demographic goals: to strengthen social, cultural, and economic motivations for family planning, and to provide to all who want them the education, contraceptives, and services required.

Human resource development is a crucial requirement not only to build up technical knowledge and capabilities, but also to create new values to help individuals and nations cope with rapidly changing social, environmental, and development realities. Knowledge shared globally would assure greater mutual understanding and create greater willingness to share global resources equitably.

Tribal and indigenous peoples will need special attention as the forces of economic development disrupt their traditional life-styles—life-styles that can offer modern societies many lessons in the management of resources in complex forest, mountain, and dryland ecosystems. Some are threatened with virtual extinction by insensitive development over which they have no control. Their traditional rights should be recognized and they should be given a decisive voice in formulating policies about resource development in their areas.

Food Security: Sustaining the Potential

Growth in world cereal production has steadily outstripped world population growth. Yet each year there are more people in the world who do not get enough food. Global agriculture has the potential to grow enough food for all, but food is often not available where it is needed.

Production in industrialized countries has usually been highly subsidized and protected from international competition. These subsidies have encouraged the overuse of soil and chemicals, the pollution of both water resources and foods with these chemicals, and the degradation of the countryside. Much of this effort has produced surpluses and their associated financial burdens. And some of this surplus has been sent at concessional rates to the developing world, where it has undermined the farming policies of recipient nations. There is, however, growing awareness in some countries of the environmental and economic consequences of such paths, and the emphasis of agricultural policies is to encourage conservation.

Many developing countries, on the other hand, have suffered the opposite problem: farmers are not sufficiently supported. In some, improved technology allied to price incentives and government services has produced a major breakthrough in food production. But elsewhere, the food-growing small farmers have been neglected. Coping with often inadequate technology and few economic incentives, many are pushed onto marginal land: too dry, too steep, lacking in nutrients. Forests are cleared and productive drylands rendered barren.

Most developing nations need more effective incentive systems to encourage production, especially of food crops. In short, the 'terms of trade' need to be turned in favour of the small farmer. Most industrialized nations, on the other hand, must alter present systems in order to cut surpluses, to reduce unfair competition with nations that may have real comparative advantages, and to promote ecologically sound farming practices.

Food security requires attention to questions of distribution, since hunger often arises from lack of purchasing power rather than lack of available food. It can be furthered by land reforms, and by policies to protect vulnerable subsistence farmers, pastoralists, and the landless—groups who by the year 2000 will include 220 million households. Their greater prosperity will depend on integrated rural development that increases work opportunities both inside and outside agriculture.

Species and Ecosystems: Resources for Development

The planet's species are under stress. There is a growing scientific consensus that species are disappearing at rates never before witnessed on the planet, although there is also controversy over those rates and the risks they entail. Yet there is still time to halt this process.

The diversity of species is necessary for the normal functioning of ecosystems and the biosphere as a whole. The genetic material in wild species contributes billions of dollars yearly to the world economy in the form of improved crop species, new drugs and medicines, and raw materials for industry. But utility aside, there are also moral, ethical, cultural, aesthetic, and purely scientific reasons for conserving wild beings.

A first priority is to establish the problem of disappearing species and threatened ecosystems on political agendas as a major economic and resource issue.

Governments can stem the destruction of tropical forests and other reservoirs of biological diversity while developing them economically. Reforming forest revenue systems and concession terms could raise billions of dollars of additional revenues, promote more efficient, long-term forest resource use, and curtail deforestation.

The network of protected areas that the world will need in the future must include much larger areas brought under some degree of protection. Therefore, the cost of conservation will rise—directly and in terms of opportunities for development foregone. But over the long term the opportunities for development will be enhanced. International development agencies should therefore give comprehensive and systematic attention to the problems and opportunities of species conservation.

Governments should investigate the prospect of agreeing to a 'Species Convention', similar in spirit and scope to other international conventions reflecting principles of 'universal resources'. They should also consider international financial arrangements to support the implementation of such a convention.

Energy: Choices for Environment and Development

A safe and sustainable energy pathway is crucial to sustainable development; we have not yet found it. Rates of increase in energy use have been declining. However, the industrialization, agricultural development, and rapidly growing populations of developing nations will need much more energy. Today, the average person in an industrial market economy uses more than 80 times as much energy as someone in sub-Saharan Africa. Thus any realistic global energy scenario must provide for substantially increased primary energy use by developing countries.

To bring developing countries' energy use up to industrialized country levels by the year 2025 would require increasing present global energy use by a factor of five. The planetary ecosystem could not stand this, especially if the increases were based on non-renewable fossil fuels. Threats of global warming and acidification of the environment most probably rule out even a doubling of energy use based on present mixes of primary sources.

Any new era of economic growth must therefore be less energy-intensive than growth in the past. Energy efficiency policies must be the cutting edge of national energy strategies for sustainable development, and there is much scope for improvement in this direction. Modern appliances can be redesigned to deliver the same amounts of energy-services with only two-thirds or even one-half of the primary energy inputs needed to run traditional equipment. And energy efficiency solutions are often cost-effective.

After almost four decades of immense technological effort, nuclear energy has become widely used. During this period, however, the nature of its costs, risks, and benefits have become more evident and the subject of sharp controversy. Different countries world-wide take up different positions on the use of nuclear energy. The discussion in the Commission also reflected these different views and positions. Yet all agreed that the generation of nuclear power is only justifiable if there are solid solutions to the unsolved problems to which it gives rise. The highest priority should be accorded to research and development on environmentally sound and ecologically viable alternatives, as well as on means of increasing the safety of nuclear energy.

Energy efficiency can only buy time for the world to develop 'low-energy paths' based on renewable sources, which should form the foundation of the global energy structure during the 21st century. Most of these sources are currently problematic, but given innovative development, they could supply the same amount of primary energy

the planet now consumes. However, achieving these use levels will require a programme of coordinated research, development, and demonstration projects commanding funding necessary to ensure the rapid development of renewable energy. Developing countries will require assistance to change their energy use patterns in this direction.

Millions of people in the developing world are short of fuelwood, the main domestic energy of half of humanity, and their numbers are growing. The wood-poor nations must organize their agricultural sectors to produce large amounts of wood and other plant fuels.

The substantial changes required in the present global energy mix will not be achieved by market pressures alone, given the dominant role of governments as producers of energy and their importance as consumers. If the recent momentum behind annual gains in energy efficiency is to be maintained and extended, governments need to make it an explicit goal of their policies for energy pricing to consumers. Prices needed to encourage the adoption of energy-saving measures may be achieved through several means. Although the Commission expresses no preference, 'conservation pricing' requires that governments take a long-term view in weighing the costs and benefits of the various measures. Given the importance of oil prices on international energy policy, new mechanisms for encouraging dialogue between consumers and producers should be explored.

A safe, environmentally sound, and economically viable energy pathway that will sustain human progress into the distant future is clearly imperative. It is also possible. But it will require new dimensions of political will and institutional co-operation to achieve it.

Industry: Producing More with Less

The world manufactures seven times more goods today than it did as recently as 1950. Given population growth rates, a five- to tenfold increase in manufacturing output will be needed just to raise developing-world consumption of manufactured goods to industrialized world levels by the time population growth rates level off next century.

Experience in the industrialized nations has proved that anti-pollution technology has been cost-effective in terms of health, property, and environmental damage avoided, and that it has made many industries more profitable by making them more resource-efficient. While economic growth has continued, the consumption of raw materials has held steady or even declined, and new technologies offer further efficiencies.

Nations have to bear the costs of any inappropriate indus-

trialization, and many developing countries are realizing that they have neither the resources nor—given rapid technological change—the time to damage their environments now and clean up later. But they also need assistance and information from industrialized nations to make the best use of technology. Transnational corporations have a special responsibility to smooth the path of industrialization in the nations in which they operate.

Emerging technologies offer the promise of higher productivity, increased efficiency, and decreased pollution, but many bring risks of new toxic chemicals and wastes and of major accidents of a type and scale beyond present coping mechanisms. There is an urgent need for tighter controls over the export of hazardous industrial and agricultural chemicals. Present controls over the dumping of hazardous wastes should be tightened.

Many essential human needs can be met only through goods and services provided by industry, and the shift to sustainable development must be powered by a continuing flow of wealth from industry.

The Urban Challenge

By the turn of the century, almost half of humanity will live in cities; the world of the 21st century will be a largely urban world. Over only 65 years, the developing world's urban population has increased tenfold, from around 100 million in 1920 to 1 billion today. In 1940, one person in 100 lived in a city of 1 million or more inhabitants; by 1980, one in 10 lived in such a city. Between 1985 and the year 2000, Third World cities could grow by another three-quarters of a billion people. This suggests that the developing world must, over the next few years, increase by 65 per cent its capacity to produce and manage its urban infrastructure, services, and shelter merely to maintain today's often extremely inadequate conditions.

Few city governments in the developing world have the power, resources, and trained personnel to provide their rapidly growing populations with the land, services, and facilities needed for an adequate human life: clean water, sanitation, schools, and transport. The result is mushrooming illegal settlements with primitive facilities, increased overcrowding, and rampant disease linked to an unhealthy environment. Many cities in industrial countries also face problems—deteriorating infrastructure, environmental degradation, inner-city decay, and neighbourhood collapse. But with the means and resources to tackle this decline, the issue for most industrial countries is ultimately one of political and social choice. Developing countries are not in the same situation. They have a major urban crisis on their hands.

Governments will need to develop explicit settlements strategies to guide the process of urbanization, taking the pressure off the largest urban centres and building up smaller towns and cities, more closely integrating them with their rural hinterlands. This will mean examining and changing other policies—taxation, food pricing, transportation, health, industrialization—that work against the goals of settlements strategies.

Good city management requires decentralization—of funds, political power, and personnel—to local authorities, which are best placed to appreciate and manage local needs. But the sustainable development of cities will depend on closer work with the majorities of urban poor who are the true city builders, tapping the skills, energies, and resources of neighbourhood groups and those in the 'informal sector'. Much can be achieved by 'site and service' schemes that provide households with basic services and help them to get on with building sounder houses around these.

III. INTERNATIONAL CO-OPERATION AND INSTITUTIONAL REFORM

The Role of the International Economy

Two conditions must be satisfied before international economic exchanges can become beneficial for all involved. The sustainability of ecosystems on which the global economy depends must be guaranteed. And the economic partners must be satisfied that the basis of exchange is equitable. For many developing countries, neither condition is met.

Growth in many developing countries is being stifled by depressed commodity prices, protectionism, intolerable debt burdens, and declining flows of development finance. If living standards are to grow so as to alleviate poverty, these trends must be reversed.

A particular responsibility falls to the World Bank and the International Development Association as the main conduit for multilateral finance to developing countries. In the context of consistently increased financial flows, the World Bank can support environmentally sound projects and policies. In financing structural adjustment, the International Monetary Fund should support wider and longer term development objectives than at present: growth, social goals, and environmental impacts.

The present level of debt service of many countries, especially in

By the same token, the various regional organizations need to do more to integrate environment fully in their goals and activities. New regional arrangements will especially be needed among developing countries to deal with transboundary environmental issues.

All major international bodies and agencies should ensure that their programmes encourage and support sustainable development, and they should greatly improve their coordination and co-operation. The Secretary-General of the United Nations Organization should provide a high-level centre of leadership for the UN system to assess, advise, assist, and report on progress made towards this goal.

Dealing with the Effects

Governments should also reinforce the roles and capacities of environmental protection and resource management agencies. This is needed in many industrialized countries, but most urgently in developing countries, which will need assistance in strengthening their institutions. The UN Environment Programme (UNEP) should be strengthened as the principal source on environmental data, assessment, and reporting and as the principal advocate and agent for change and international co-operation on critical environment and natural resource protection issues.

Assessing Global Risks

The capacity to identify, assess, and report on risks of irreversible damage to natural systems and threats to the survival, security, and well-being of the world community must be rapidly reinforced and extended. Governments, individually and collectively, have the principal responsibility to do this. UNEP's Earthwatch programme should be the centre of leadership in the UN system on risk assessment.

However, given the politically sensitive nature of many of the most critical risks, there is also a need for an independent but complementary capacity to assess and report on critical global risks. A new international programme for co-operation among largely non-governmental organizations, scientific bodies, and industry groups should therefore be established for this purpose.

Making Informed Choices

Making the difficult choices involved in achieving sustainable development will depend on the widespread support and involvement of an informed public and of non-governmental organizations, the scientific community, and industry. Their rights, roles, and participation in development planning, decision making, and project implementation should be expanded.

Providing the Legal Means

National and international law is being rapidly outdistanced by the accelerating pace and expanding scale of impacts on the ecological basis of development. Governments now need to fill major gaps in existing national and international law related to the environment, to find ways to recognize and protect the rights of present and future generations to an environment adequate for their health and well-being, to prepare under UN auspices a universal Declaration on environmental protection and sustainable development and a subsequent Convention, and to strengthen procedures for avoiding or resolving disputes on environment and resource management issues.

Investing in Our Future

Over the past decade, the overall cost-effectiveness of investments in halting pollution has been demonstrated. The escalating economic and ecological damage costs of not investing in environmental protection and improvement have also been repeatedly demonstrated—often in grim tolls of flood and famine. But there are large financial implications: for renewable energy development, pollution control, and achieving less resource-intensive forms of agriculture.

Multilateral financial institutions have a crucial role to play. The World Bank is presently reorienting its programmes towards greater environmental concerns. This should be accompanied by a fundamental commitment to sustainable development by the Bank. It is also essential that the regional Development Banks and the International Monetary Fund incorporate similar objectives in their policies and programmes. A new priority and focus is also needed in bilateral aid agencies.

Given the limitations on increasing present flows of international aid, proposals for securing additional revenue from the use of international commons and natural resources should now be seriously considered by governments.

IV. A CALL FOR ACTION

Over the course of this century, the relationship between the human world and the planet that sustains it has undergone a profound change.

When the century began, neither human numbers nor technology had the power radically to alter planetary systems. As the century closes, not only do vastly increased human numbers and their activities have that power, but major, unintended changes are occurring

in the atmosphere, in soils, in waters, among plants and animals, and in the relationships among all of these. The rate of change is outstripping the ability of scientific disciplines and our current capabilities to assess and advise. It is frustrating the attempts of political and economic institutions, which evolved in a different, more fragmented world, to adapt and cope. It deeply worries many people who are seeking ways to place those concerns on the political agendas.

The onus lies with no one group of nations. Developing countries face the obvious life-threatening challenges of desertification, deforestation, and pollution, and endure most of the poverty associated with environmental degradation. The entire human family of nations would suffer from the disappearance of rain forests in the tropics, the loss of plant and animal species, and changes in rainfall patterns. Industrial nations face the life-threatening challenges of toxic chemicals, toxic wastes, and acidification. All nations may suffer from the releases by industrialized countries of carbon dioxide and of gases that react with the ozone layer, and from any future war fought with the nuclear arsenals controlled by those nations. All nations will have a role to play in changing trends, and in righting an international economic system that increases rather than decreases inequality, that increases rather than decreases numbers of poor and hungry.

The next few decades are crucial. The time has come to break out of past patterns. Attempts to maintain social and ecological stability through old approaches to development and environmental protection will increase instability. Security must be sought through change. The Commission has noted a number of actions that must be taken to reduce risks to survival and to put future development on paths that are sustainable. Yet we are aware that such a reorientation on a continuing basis is simply beyond the reach of present decision-making structures and institutional arrangements, both national and international.

This Commission has been careful to base our recommendations on the realities of present institutions, on what can and must be accomplished today. But to keep options open for future generations, the present generation must begin now, and begin together.

To achieve the needed changes, we believe that an active follow-up of this report is imperative. It is with this in mind that we call for the UN General Assembly, upon due consideration, to transform this report into a UN Programme on Sustainable Development. Special follow-up conferences could be initiated at the regional level. Within an appropriate period after the presentation of this report to the General Assembly, an international conference could be convened to

review progress made, and to promote follow-up arrangements that will be needed to set benchmarks and to maintain human progress.

First and foremost, this Commission has been concerned with people—of all countries and all walks of life. And it is to people that we address our report. The changes in human attitudes that we call for depend on a vast campaign of education, debate, and public participation. This campaign must start now if sustainable human progress is to be achieved.

The members of the World Commission on Environment and Development came from 21 very different nations. In our discussions, we disagreed often on details and priorities. But despite our widely differing backgrounds and varying national and international responsibilities, we were able to agree to the lines along which change must be drawn.

We are unanimous in our conviction that the security, well-being, and very survival of the planet depend on such changes, now.