

FOIA MARKER

This is not a textual record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Council of Economic Advisers
Series/Staff Member: Joseph Stiglitz
Subseries:

OA/ID Number: 9555
FolderID:

Folder Title:
IPCC [Intergovernmental Panel on Climate Change] Working Group III Lead Authors Meeting
Vienna, Austria November 1994

Stack:	Row:	Section:	Shelf:	Position:
S	20	5	7	1

Withdrawal/Redaction Sheet

Clinton Library

DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
001. fax	To Hotel Rathauspark from Joseph Stiglitz, re: Request (response) (1 page)	11/15/1994	Personal Misfile
002. fax	To Hotel Rathauspark from Joseph Stiglitz, re: Request (original) (1 page)	11/15/1994	Personal Misfile

COLLECTION:

Clinton Presidential Records
Council of Economic Advisers
Stiglitz, Joseph
OA/Box Number: 9555

FOLDER TITLE:

IPCC [Intergovernmental Panel on Climate Change] Working Group III Lead Authors
Meeting Vienna, Austria November 1994

2017-1095-F
bg243

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P1 National Security Classified Information [(a)(1) of the PRA]
- P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
- P3 Release would violate a Federal statute [(a)(3) of the PRA]
- P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).

RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

- b(1) National security classified information [(b)(1) of the FOIA]
- b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
- b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
- b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
- b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
- b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS

15ad

note

~~over~~

~~OSE~~

[misc.]

\$15aday

yes:

~~James~~

Arbitration

NASA

e. Aeronautics Space

Admin

358-0273

Rm 522, 15th Flr

300 "E" St, SW

1

Trans. Sec. Conf. Rm
seats 40

may move Kondratieff



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

cc: SK
RS

September 27, 1994

Dr. Joseph Stiglitz
Council of Economic Advisors
White House
315 Old Executive Office Building
Washington, D.C. 20500
U.S.A.

Dear Dr. Stiglitz:

The Working Group III Bureau yesterday reviewed the schedule for completion of its Second Assessment Report. This includes meetings of the Lead Authors on November 28 to 30 at IIASA (Vienna) and on March 13 to 15 at a location yet to be determined. 28-

During the discussion, I raised your suggestion that the meetings be structured as two days of 12 to 15 hours, rather than three days of 8 hours. The Bureau felt that the number of comments, especially from peer review, could be quite large. Therefore, they decided to schedule the Lead Authors meeting for three days in case three 12 hours days are needed.

The Bureau appreciates the contribution of the Lead Authors and wishes to use their valuable time as efficiently as possible. We will make every effort to run productive meetings and to keep them as short as possible.

Sincerely yours,

Erik F. Haites
Head, Technical Support Unit
IPCC, WG III

EFH:II

P938005.7Jgr.140

cc: for
Lute May



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

MEMORANDUM

TO: Working Group III Bureau and Lead Authors

FROM: Erik Haites *Erik*

RE: Future Schedule

DATE: September 16, 1994

The draft chapters for peer review are **DUE IN TORONTO ON MONDAY, OCTOBER 3.**

Please use the following format: (1) Single spacing and (2) Line numbering on the left, all lines numbered, numbering begins anew on each page.

Please send me a print copy as well as an electronic copy.

As a result of suggestions received during the meeting in Geneva we propose:

- A meeting of ALL WORKING GROUP III LEAD AUTHORS on November 28 through 30 to address the peer review comments. The objective will be to do as much of the editing as possible during the meeting, so it is important that you plan to attend. We will try to hold this meeting in Vienna (rather than Ottawa) for the convenience of Lead Authors who plan to attend the EMF 14 workshop at IIASA beginning the next day. We hope to finalize these arrangements within the next two weeks.
- A meeting of ALL WORKING GROUP III LEAD AUTHORS on March 13 through 15, 1995 to address the government review comments. Again the objective will be to do as much of the editing as possible during the meeting. The location of this meeting has not yet been decided.

The presentation of the draft report for Nobel Laureates planned for October has been cancelled.

1-938005.7\memo.454

Post-it Fax Note	7671E	Date	09/19/94	# of Pages	2
To	Joseph Stiglitz	From	Erik Haites		
Co Recd.		Co.			
Phone #		Phone #			
Fax #	(202) 395-6947	Fax #	(416) 369-0922		

PLEASE DELIVER IMMEDIATELY! THANK YOU!

EXECUTIVE OFFICE OF THE PRESIDENT

COUNCIL OF ECONOMIC ADVISERS
17TH AND PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20500



THE OLD EXECUTIVE OFFICE BUILDING

TO: ATTN: PAT WAGNER
Raymond Squitieri

OFFICE: IIASA
Laxenburg, Austria

FAX NUMBER:

TEL NUMBER:

9-011-43-1-2236-71313

9-011-43-1-2236-807

FROM: Lisa Branch/Joe Stiglitz

FAX NUMBER: 202-395-6958

TEL NUMBER: 202-395-5036

ROOM: 314, OEOB

NO. OF PAGES (inc cover) 8

DATE: 11/28/94

SUBJECT: _____

MESSAGE:

Ray, your voice mail message you left this morning was garbled. I suggest
you faxed your questions/concerns to us. Also, fyi, Joe does not listen to
voice mail messages. Finally, a copy of this fax was also sent to your
hotel.

Lisa

CEA WDC

(AUTO)

THE FOLLOWING FILE(S) ERASED

FILE	FILE TYPE	OPTION	TEL NO.	PAGE	RESULT
010	TRANSMISSION		901143223671313	08	OK

ERRORS

1) HANG UP OR LINE FAIL 2) BUSY 3) NO ANSWER 4) NO FACSIMILE CONNECTION



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

Handwritten initials: e:SK

MEMBER

November 28, 1994

Ray:

I had a chance to read through part of Chapter 2. It is a disaster. I have written comments on the first 20 pages, but ran out of time. You might pass along these comments, with the enclosed letter to Erik and Jim.

Handwritten signature: Joz
Joe Stiglitz

Raymond Squitieri
c/o Hotel Rathauspark
Vienna



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

November 28, 1994

Dear Erik and Jim,

Sorry I couldn't make the meeting. I did have a chance to take a look at Chapter 2 over the weekend. I am writing because I am quite concerned about the nature and tone of the chapter. These concerns were raised at our previous meeting at Geneva, and have not been adequately addressed. The chapter makes assertions which are inconsistent with those in other chapters, its assertions are not backed up by analysis, and most importantly, it does not focus on the issues which it should have focused upon, but rather touches lightly on issues discussed at greater depth elsewhere. Something major has to be done with this chapter.

With best wishes,

Joseph E. Stiglitz

Erik Haites
James Bruce
c/o Raymond Squitieri
@ Hotel Rathauspark
Vienna, Austria

Chapter 2

1. A major problem with the chapter is that it does not distinguish clearly areas which remain subject of controversy, and those on which there is some consensus. At some points, the underlying assumptions are not articulated clearly. In other cases, references to the scientific literature supporting (or attacking) the indicated conclusion is not provided. In few cases are the conclusions related to the findings of the other chapters. The following provide some illustrations:

Figure 1: There is some controversy over the relationship between climate change and the occurrence of extreme events.¹ (See references in scope chapter)

(Question: Is there consensus that with a 6 degree change, it is likely that there would be an extreme event affecting "mankind as a whole"?)

(These issues can be handled by saying that the different curves are meant to represent qualitative differences between "small" climate change and "large" climate change, and the range of temperatures corresponding to each curve remains a subject of discussion.)

(In any case, references to the relevant literature need to be provided. In particular, this is not the chapter to assess these risks; reference should be made to the results cited in later chapters.)

Figure 2. and accompanying discussion. The fact that A represents a larger risk than B is based on two hypotheses: (a) There is some risk that at even the low levels of concentration associated with A before the year 2050 significantly adverse climate effects set in; and (b) Cumulative absorption, say as of the year 2050, on A is the same as on B. Most models would suggest that absorption will be greater on A than on B. (For methane, the case is even stronger.)

(The discussion would be clearer if a simple differential equation were presented in a footnote, e.g. in simplistic form

$$\begin{aligned}a &= f(c) \\ dc/dt &= e - a\end{aligned}$$

Absorption is a function of atmospheric concentrations; while the change in concentration is equal to emissions minus absorption. In this equation, steady state concentration levels are given by

$$\begin{aligned}f(c) &= e \\ \text{or} \\ c &= f^{-1}(e) = g(e).\end{aligned}$$

¹The issue arises again on p. 17

Thus, if concentration levels below c_s are considered safe, then emission levels below

$$e_s = f(c_s)$$

can safely be absorbed.)

2. The chapter does not clearly delineate ethical issues from other issues. Thus, while the title of the chapter suggests that it is concerned with a decision making framework, it mixes together normative statements with analytic statements. Illustrations:

p. 10 While the statement about the level of "safe" emissions per capita can be interpreted as a analytic statement, the following sentence, "those who emit less than this amount are not responsible for climate change effects" is not. It presumes an "entitlement" on a per capita basis--saying nothing about "responsibilities" for population control. Clearly, this is not the chapter to go into either set of issues.

p. 12 "Therefore there would have to be simultaneous trends of the privileged...reducing and the underprivileged...increasing their emissions, till some equality is reached." The distribution of emission levels should be a question of economic efficiency (based, eg. on tradeable permits or an international carbon tax). The distribution of emission rights is really what the discussion here should be about, but emission rights is an ethical matter, not a matter of efficiency.

This is not the correct place for the discussion of ethical principles. (In any case, its treatment is inadequate.²)

²For instance, while emphasizing repeatedly the "responsibility" of the North for the increased concentration of greenhouse gases, no discussion of the responsibility of the South for failing to control population or of the credit that the North should get for improving agricultural productivity and other technological benefits conferred upon the South. What items to be included in the ledger, and what are basic rights, are questions which require some thought; the treatment throughout the chapter is simply too cavalier.

3. Policy conclusions are mixed with seemingly analytic statements in a way which may discredit the overall report. Illustrations:

p. 12 After a seeming analytic discussion of risks, the chapter jumps to the conclusion that

Therefore, COP should exogenously decide on a risk minimization strategy in terms of concentrations of GHG, which the North should be asked to lead.

4. The discussion of the nature of risk raises basic problems. (a) It does not incorporate the effects of new information. Thus, with new information, it is not correct that the risks perceived at time $t + 1$ are greater than those at time t . (b) It does not incorporate an analysis of how costs change over time, and is thus inconsistent with discussions in other chapters.

The assertion that "learning curves is usually slow in the beginning" is not consistent with most empirically derived learning curves in economics I have seen.

A balanced account would describe the risks associated with early abatement versus the risks of late abatement, and show that risk aversion implies a strategy of earlier abatement than would be appropriate with risk neutrality. References to either monte carlo or theoretical studies establishing this proposition should be provided, with a discussion of underlying assumptions.

5. The economic analysis behind some of the assertions is missing and/or wrong. Illustrations:

p. 11 "... Even one or two additional extreme events compared to the expected average are likely to bankrupt insurance companies. Increase in the risk premia would be too large {for what??} ..." With reinsurance, the first statement is simply false. Moreover, to the extent that there is a problem, some countries are presently undertaking or considering programs of government provided reinsurance for disaster. The question is not whether insurance markets currently adequately deal with these risks, but could be adapted to do so?

p.18 "This substitutability assumption is highly questionable."

No argument is given: only an assertion, which does not help the discussion in any way. Most economists, from Solow on, believe that there is some degree of substitutability. Who are we to believe? If the IPCC report makes assertions

like this, without even an attempt at an argument, the whole report will be discredited. (Reviews of the report will focus on assertions like this one.)

6. Some care should be exercised in the use of language, so that normative overtones are not given to analytic statements. Illustrations:

p. 12 referring to the North as "privileged" and the South as "underprivileged" does not advance the argument. Just refer to the North or the South, or the Rich and the Poor countries.

7. I do not think that this is the place for a legal exegesis of the 1992 FCCC. For instance, the assertion that the convention implied that "the industrialized nations must assume the prime share of the effort..." is one about which there may be some disagreement. The only responsibilities that they assumed were those explicitly stated.
8. In assessing the impacts of global climate change, the discussion focuses on only one set of potential responses, i.e. reducing greenhouse gas emissions. While this is natural, given the focus of the IPCC report, others have to be included, if one is to assess the relative merits of this versus other strategies. For instance, the less developed countries could more than offset the deleterious effects on per capita food output and at the same time reduce emission levels simply by reducing population growth rates. A 6% reduction in food production would be offset by a change in the population growth rate of .1% annually.

Other Points

p. 11: The sentence "...climate risk is endogenous, collective, and correlate" may be true, but it is neither substantiated nor explained.

p. 12: The sentence beginning, "In the next five decades...." is either unclear, incorrect, or, at best, controversial. Is the assertion that in the year 2045, of the molecules of CO₂ in the atmosphere, more than half will have originated in the North? But if the serious problems of global warming do not arise until somewhat later, even if true, of what relevance is this observation?

p. 12: The sentences beginning, "Here, the North...." need to be rewritten.

p. 13: The argument that collective decision making has to be based on non-utility based criteria seems misguided, and to be based on a misconception of the role of the social welfare function in collective decision making. The social welfare function provides a framework for exploring in a systematic way the consequences of alternative ethical principles.

One aspect of a social welfare function approach is to take account of risk. But the issues of forming judgments about utilities of different stakeholder is not resolved by simply talking about risk: different groups face different risks, and there remains the question of how these different risks are integrated.

The sentences about how contributions to past pollution should affect participation rights in decision making are, at best, obscure and argumentative. If this chapter is to be given any "scientific" weight, a set of axioms on which such a conclusion could rest has to be presented. The fact that there is some paper making the assertion does not suffice.

The box contains a number of statements that are confusing or wrong. For instance, there is no way of removing all risk involved in the decision problem; I think what is meant is that all climate risks are removed; but then there remains the risk that money would have been wasted on a potential environmental hazard that turns out to be last dangerous than previously thought. To justify a zero risk based strategy requires infinite climate risk aversion--and this needs to be said.

p. 14: One does one mean by saying, "...when one is unaware of the probabilities..." The discussion of the use of zero and bounded risk needs to be derived from some axioms, so that one can understand the underlying assumptions.

p. 19: There again seems to be a confusion about the role of ethical analysis: exploring the consequences of different social welfare functions can be a useful part of the political decision making process.

CEA WDC

(AUTO)

THE FOLLOWING FILE(S) ERASED

FILE	FILE TYPE	OPTION	TEL NO.	PAGE	RESULT
011	TRANSMISSION		901143140412761	08	OK

ERRORS

1) HANG UP OR LINE FAIL 2) BUSY 3) NO ANSWER 4) NO FACSIMILE CONNECTION

PLEASE DELIVER IMMEDIATELY! THANK YOU!



**EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS**

Date: November 28, 1994

Please deliver to: Raymond Squitieri
c/o Hotel Rathauspark
Vienna

FAX number of addressee: 9-011-43-1-40-412-761

Telephone number of addressee: _____

From: Joseph Stiglitz/Lisa Branch

FAX number of sender: 202- 395-6958

Telephone number of sender: 202- 395-5036

Number of pages, including cover sheet: 8

Ray: Your voice mail message to us was garbled. Please fax your concerns/
questions. Also, fyi, Joe does not listen to voice mail messages.

Lisa

P.S. This fax is also being sent to the meeting site c/o Pat Wagner.

PLEASE DELIVER THIS FAX TO MR. SQUITIERI WHEN HE ARRIVES AT YOUR HOTEL
ON SUNDAY, NOVEMBER 27. THANK YOU.



**EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS**

Date: 11/25/94

Please deliver to: RAYMOND SQUITIERI
c/o Hotel Rathauspark
VIENNA

FAX number of addressee: 9-011-43-1-40-412-761

Telephone number of addressee: 9-011-43-1-40-412

From: Joseph Stiglitz/Lisa Branch

FAX number of sender: 202- 395-6958

Telephone number of sender: 202- 395-5036

Number of pages, including cover sheet: 3

RAY: Please confirm receipt of this document (via fax). Thanks. Lisa

Discounting

Delete first par. and add

The approach upon which this chapter focuses is sometimes called the *prescriptive* approach. It simply asks, given a plausible social welfare function, whether a particular program would make society better off. The discounting rules specify how consumption at different dates should be valued to provide the "correct" answer to that question.

There is an alternative view which focuses on *intertemporal efficiency* and *opportunity costs*, and to distinguish itself from the prescriptive approach is sometimes referred to as the descriptive approach. It asks, is the proposed program consistent with intertemporal efficiency, i.e. could we increase consumption at one date without decreasing it at any other? If a policy is not intertemporally efficient, it should not be adopted. The fact that opportunity costs (market rates of return) typically exceed SRTTP suggests that there frequently exists alternatives which dominate a program which just barely satisfies, say, a 2% rate of return criteria. The central problem in evaluating these alternatives, however, is ascertaining the relevant constraints: why is that the SRTTP has not been brought into accord with observed market rates of return? Thus, there may be some reason that the proposed dominating alternative may not really be a feasible alternative.

*****To be added somewhere

Thus, the central difference between the two approaches is that one asks, is the proposed program an improvement? while the other asks, is this the best of all possible actions?

****To be added somewhere

It is important to emphasize that in using the SRTTP approach, we value the *total* change in consumption at each date, not just the direct outputs of the project. If the project displaces private investment, which has a high marginal productivity, then there will be a large loss in output and consumption resulting from the displacement. The prescriptive view takes into account opportunity costs in calculating changes in consumption, but in valuing the changes in consumption, uses the SRTTP.

Green GDP:

Add par.

Appropriately designed systems of green GDP can not only provide a more reliable estimate of an economies true level of "national income" but also be an important tool in policymaking.

DEC WBS

c/o Ministry of Housing, Lands
& Town & Country Planning
Edith cavell Street,
Port Louis
Mauritius

22 November 1994

Dr Joe Stiglitz
Council of Economic Advisers
17th Pennsylvania Ave NW RM 314
Washington DC
USA
Fax 00-1-202-3956958

Dear Joe,

Thank you for your facsimile.

2. I have been twice through the scope chapter and also through the Equity and Decision making chapters.

3. I wish to let you know in advance that I am *not* happy with the Scope chapter, mainly on the *equity* side. If I understand correctly that the Scope chapter opens a window on the overall report, then more prominence than exists now needs to be given to the equity discourse.

4. I am not satisfied that the equity issues which come out in the other teams' report, and which in my view, seem to have been very thoroughly and fairly researched and which I subsequently highlighted in a previous fax to Ray are sufficiently 'signalled'.

5. You may wish to consider before the Vienna Meeting which I hope to be able to attend.

6. Please give my regards to Ray and looking forward to seeing you in Vienna.

Best Regards, Ruby
(V L SAHA) Mrs

Fax 230 212 9369
230 212 4240

Comments on Revised Policy Makers Summary

1. Cost benefit analysis. The criticisms of cost benefit analysis are, at best, confusing, at worse, simply wrong. Cost benefit analysis can be viewed as a broad methodology which says little more than that one should take a systematic look at the costs and benefits associated with any project or policy. It is true that *standard* ways of undertaking cost benefit analysis may leave something to be desired. But there exists techniques for including risk, distribution, environmental impacts, existence values, etc. into the analysis.

As an aside, the U.S. government requires cost benefit analysis of all major decisions; the cost benefit analysis is instructed to include all of the concerns raised in the discussion (such as distributional impacts).

Specific changes.

Delete first sentence of section, p. 6
par. 3 of section makes no sense: one can only impose weights, if one has quantification. Replace with:

In some cases, a variety of concerns beyond direct impacts, such as on consumption may be brought into the analysis. Such impacts include distributional considerations, environmental impacts, and impacts on health and life expectancy. Techniques for quantifying these impacts have been developed, though many such techniques remain controversial. Multi-criteria analysis permits the decision maker to assign weights to these various impacts.

Delete last phrase:

"but is not able to fully answer those questions."

p. 7 We conclude that benefit cost analysis can and should be use to analyze key aspects of climate change policy. In doing so, care must be exercised to ensure property treatment of risk, uncertainty, economic valuation, irreversibility, and long time horizons as well as selection of the discount rate.

2. The point that issues of efficiency and equity need to be separated should receive more emphasis:

Whatever strategies adopted should be cost effective. International negotiations should work to establish a framework for ensuring that mitigation occurs in a cost effective way. This can significantly lower costs of mitigation.

3. Perhaps more contentiously, the policymakers' summary should address briefly what can be said about the obligations of LDCs:

There appears to be a consensus that, at least under the more

SUMMARY FOR POLICY MAKERS
SECOND ASSESSMENT REPORT, WORKING GROUP III
EXECUTIVE SUMMARY

The Context

Over 150 countries have signed the United Nations Framework Convention on Climate Change. Its ultimate objective is "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."¹ Working Group III prepared its report with the aim of assisting Parties to carry out the intent of the Convention.

The level at which concentrations are to be stabilized and the date by which this is to be achieved are not specified in the Convention, although several considerations to be taken into account when establishing a stabilization objective are mentioned in Article 2. Conceptually, the stabilization target establishes a framework for decision making related to climate change: the level and date at which concentrations are to be stabilized is chosen, then the least cost strategy for achieving this objective is selected.

Selection of A Stabilization Objective

A stabilization objective could be based upon an absolute standard, a safe minimum standard, or a cost-benefit analysis.² Working Group III lead authors were specifically requested to assess whether benefit-cost analysis is applicable to climate change. We conclude that benefit cost analysis *could* be used to analyse some aspects of climate change policy, but do *not* conclude that it *should* be used to develop climate change policy. Policy makers can select a stabilization objective using several techniques that balance the risks of climate change and the costs of controlling atmospheric concentrations based on ethical, scientific and economic considerations.³

¹ United Nations Framework Convention on Climate Change, Article 2.

² The Intergovernmental Negotiation Committee (INC) requested that the IPCC assess the scientific evidence that might help policy makers interpret Article 2 of the Convention. This topic will be addressed in the IPCC's Second Assessment Report to be published in 1995.

³ It is not clear from the Convention whether the ultimate objective is to stabilize the atmospheric concentration of each gas at a particular level or to stabilize greenhouse gas concentrations, expressed in terms of CO₂ equivalents, at a particular level. The latter interpretation is preferable from the scientific and economic perspectives, but the choice of interpretation does not affect the substance of the discussion.

To-date there have been few studies of the costs and benefits of stabilizing atmospheric concentrations of greenhouse gases at different levels. Emissions profiles consistent with stabilization of atmospheric concentrations have only recently been calculated. And the integrated assessment models best suited to such analyses are quite new. The costs and benefits of stabilizing greenhouse gas concentrations at different concentrations is likely to be the topic of considerable research over the next few years, but the results are likely to continue to be subject to a wide margin of uncertainty.

Stabilization of atmospheric concentrations of greenhouse gases will require intervention. Currently, the atmospheric concentration is about 360 ppmv; the pre-industrial concentration was about 280 ppmv.⁴ Regardless of the level at which atmospheric concentrations are to be stabilized within the range of 350 to 750 ppmv, global CO₂ emissions must ultimately be reduced by over 50% from the current rate. Stabilization of the atmospheric concentrations of other greenhouse gases requires lesser reductions, but nevertheless reductions, of the emissions of those gases.

Beginning the Process of Stabilizing Atmospheric Concentrations

The decisions to be taken today and in the near future will necessarily have to be taken under great uncertainty. Fortunately, the decisions to be taken in the short term are not very sensitive to the level at which atmospheric concentrations are ultimately stabilized. To *begin* the process of stabilizing atmospheric concentrations of greenhouse gases the following actions are needed:

- Implementation of cost-effective measures to limit anthropogenic emissions and enhance sinks and reservoirs of greenhouse gases. To ultimately stabilize atmospheric concentrations, global anthropogenic emissions of greenhouse gases must peak and begin to decline over the next several decades.
- Research to develop non-fossil energy sources that can be implemented commercially on a large scale. The emissions reductions that can be achieved with the cost-effective abatement options currently available are probably not sufficient to reduce future global emissions to levels consistent with stabilization. New technologies often take several decades to achieve commercial viability, so research on these options should be accelerated.

To reduce uncertainty and enhance the overall understanding of interactions between ecological and economic systems, scientific research on climate and the impacts of climate change should be continued. The information produced by such research can help improve

⁴ ppmv is parts per million by volume, a measure of concentration.

decision making related to selection of the stabilization target and the optimal trajectory for achieving that target.

In the long run of course, more specific international agreement for achieving a significant reduction from current rates of anthropogenic emissions of CO₂ and smaller reductions from current anthropogenic emissions of other greenhouse gases on a global basis is needed. This agreement must address both the implementation of abatement measures as well as the manner in which the costs are to be shared. This requires that capacity building be an important part of the initial policy response.

A Portfolio of Actions to Limit Climate Change

Among the actions countries can take, individually or jointly, to limit climate change and its impacts include:

- phasing out existing distortionary policies, such as subsidies to fossil fuels, that reduce welfare and directly or indirectly increase greenhouse gas emissions. Emissions reductions of 10% to 20% are possible in many countries from phasing out such policies;
- implementing cost-effective measures to reduce emissions of greenhouse gases. There is broad agreement that measures to reduce emissions of greenhouse gases are available at negative to slightly positive costs in most countries;
- implementing cost-effective measures to enhance sinks or reservoirs of greenhouse gases. Increases in sinks are estimated to represent up to 40% of the total cost-effective abatement potential over the next few decades;
- instituting joint implementation, technology transfer and other forms of international cooperation to limit greenhouse gas emissions;
- undertaking research aimed at better understanding the causes and impacts of climate change. Evidence suggests that such research can yield high returns;
- conducting research aimed at improving the cost-effectiveness of greenhouse gas adaptation and mitigation technologies such as energy efficiency and non-fossil energy sources. The cost of non-fossil energy technologies is one of the major determinants of addressing climate change in the long run;
- planning, and implementing as necessary, measures to adapt to the consequences of climate change; and

- developing insurance arrangements to cover specific damages due to climate change.

The specific actions available vary from country to country; the existence of inefficient resource allocation and taxes vary, the costs and availability of measures to reduce greenhouse gas emissions vary, the costs and availability of measures to enhance sinks and reservoirs of greenhouse gases vary, research capabilities vary, the existence of local secondary benefits from reducing greenhouse gas emissions vary, the damages due to climate change and the measures for adapting to these damages vary. Thus, the actions taken will differ from country to country. It should be underlined, however, that climate change is a global problem and that the total cost of limiting climate change will depend on the institutional arrangements that can be implemented internationally.

Appropriate Actions Vary by Country and Over Time

Each country can select a portfolio of climate change actions that reflect its objectives and constraints. The actions taken by a particular country may reflect considerations such as their cost, secondary benefits, the impacts on different socio-economic groups, international equity, intergenerational equity, the expected damage due to climate change or sea level rise within the country, and economic strategies based on development of new technologies.⁵ A country's climate change policy will also reflect other priorities aimed at sustainable development, such as eradication of poverty and increased levels of education.

Continuing with the portfolio analogy, a country must decide upon the size of its investment in climate change limitation and on the allocation of that investment among possible actions. The size of the investment will reflect the country's obligations under international agreements, adjusted for resources transferred to or received from other countries, as well as domestic goals and priorities. The mix of assets in a portfolio is normally adjusted so that the risk-return ratio is equal at the margin. Only sketchy information is available on the expected costs and benefits of climate change actions, so governments will need to assess the mix of actions with considerable subjective judgement.

Governments can *adjust* their climate change portfolio in response to new information and developments. Indeed, both the investment in climate change limitation and the mix of policies *should* change over time. That does not imply complete flexibility. Many of the measures involve capital and technology commitments with long life times. Reversing such

⁵ This is not meant to imply that the actions of a particular country can have a significant effect on global greenhouse gas emissions. However, if a particular country is vulnerable to damage due to climate change or sea level rise it may well affect both the nature and magnitude of the actions it may wish to take.

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

commitments could be relatively costly, however that risk should be incorporated into the analysis of the options before the commitments are made. This is particularly important for developing countries with rapidly growing economies where significant infrastructure investments will be made over the next few decades.

Cost-Effective Response Options

Options to reduce anthropogenic emissions of greenhouse gases and to protect and enhance greenhouse gas sinks and reservoirs that appear to be cost-effective are shown in Table 1.

Insert Table 1.

Measures to limit anthropogenic emissions and enhance sinks and reservoirs of greenhouse gases should be implemented in a manner that minimizes the net cost to society. This means capturing any potential economic and ancillary environmental benefits as well as implementing the measures efficiently.

Costs of Response Options

A wide range of estimates of the costs of response options is found in the literature. The wide range is due to differences in the underlying assumptions concerning market imperfections, secondary economic and environmental benefits, the baseline scenario, the design of the abatement policy, and the time frame for implementation of the measures. Differences among the models are less significant than differences in the underlying assumptions.

Macroeconomic models that assume the use of a carbon tax, no reducible market imperfections and inefficient recycling of the tax revenue imply that any measures to reduce emissions are quite costly.

Other approaches assume the existence of market imperfections that can be reduced by emission reduction measures as well as ancillary economic and environmental benefits. These studies suggest that energy efficiency improvements equivalent to 10% to 30% of current consumption can be realized at negative to slightly positive costs, depending on the baseline scenario and the time frame. Measures to reduce greenhouse gas emissions often reduce emissions of acid rain and urban smog precursors as well as toxic compounds. Such ancillary benefits may amount to 30% to 100% of the greenhouse gas reduction benefits depending on the measure and local conditions.

Equity Considerations

Equity considerations are an inescapable aspect of climate change policy. Inaction is likely

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

to impose costs on future generations and on regions where damages occur. Action to address climate change is likely to impose costs on the present generation. Since actions to address climate change are deliberate, explicit decisions can be made as to how to share these burdens. The Convention recognizes the differentiated responsibilities of the Parties, but it does not include an explicit formula for sharing the costs of addressing climate change. It also lists factors to be considered in determining how the burden should be shared and provides for development of mechanisms for sharing the burdens.

A variety of ethical principles are relevant to sharing the burden of addressing climate change. No single rule will command universal agreement. Furthermore, any arrangement may need to change over time in order to continue to be perceived as equitable and to take new developments into account. Analysts can not prescribe how the burden of addressing climate change should be shared, they can only clarify the ethical implications of different principles.

Precise arrangements for sharing the burden of addressing climate change now and for the future remain to be settled. Countries differ in terms of greenhouse gas emissions (in total, per unit of GDP, or per capita), vulnerability to climate change, wealth, resource endowments, and institutional capacity to respond effectively. The Convention provides that these circumstances be reflected in differentiated responsibilities. Assistance to enable all Parties to participate effectively in negotiations will improve the prospects for agreements that benefit all.

Discount Rate

The discount rate raises some of the most profound philosophical issues of policy toward climate change, because it confronts the trade-off between the interests of the present and future generations. The discount rate is the mechanism used to make economic effects at different points in time comparable. The choice of discount rate is important in climate change analyses because the time horizon is extremely long and the abatement costs tend to come earlier than the benefits of avoided damages.

The economic literature suggests that the proper rate for discounting *consumption* at different points in time and across generations is the social rate of time preference (SRTP). Assuming long term per capita growth rate of no more than 1% per year, the social rate of time preference is about 1.5% per year. The SRTP discounting approach is equally relevant for developing and developed countries, however, low income countries would be expected to have higher SRTPs initially.

Typically the rate of return on private investment will be higher than the SRTP. The proper discount rate for public policy will only by chance equal observed market interest rates. Increasing the discount rate because of risk is generally inappropriate. However, because

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

one component of the SRTP can involve uncertainty about the future growth rate, risk considerations might justify *reducing*, rather than raising, the SRTP. There should not be a different discount rate for environmental issues. However, because the relative price of environmental services is unlikely to rise over time the *effective* discount rate for environmental services can be lower than the goods discount rate, and even negative.

// X
Policy Instruments

Policy instruments to promote implementation of abatement measures for climate change must be assessed at the international and domestic levels. Policy instruments can help participating countries comply with multilateral commitments on climate change abatement, including international transfers of resources and technology. The international and domestic policy instruments need not be the same, but international agreements may constrain the choice of domestic policy instruments.

The policy instruments available internationally include: non-tradeable quotas, tradeable quotas, joint implementation, harmonized domestic carbon taxes, international carbon taxes, various international standards and technology transfer. Domestic policy instruments include carbon taxes, tradeable permits, deposit-refund systems, technology standards, performance standards, product bans, voluntary agreements, energy taxes, energy efficiency subsidies, and non-fossil fuel subsidies.

Among the criteria that governments can use to select from among the available policy instruments are: efficiency or cost-effectiveness, distributional (including intergenerational) equity, flexibility in the face of technological change and new information, compatibility with the institutional structure and existing policies, and understandability to the general public. Governments may apply different criteria with different weights to the selection of international and domestic policy instruments.

A mix of policy instruments can be used domestically and internationally. Indeed, a mix of instruments may be needed to achieve the best results. Some instruments are more cost-effective than others. An inefficient policy instrument can significantly increase the cost of achieving a specific target. Cost-effectiveness should always be a criteria for selecting policy instruments, but it becomes more important at both the international and domestic levels as the abatement effort becomes more stringent. The more cost-effective instruments include carbon taxes and tradeable quotas. Tradeable quotas and an international tax allow for maximal flexibility in the choice of domestic policy instruments.] *Continue*

**SUMMARY FOR POLICY MAKERS
SECOND ASSESSMENT REPORT, WORKING GROUP III**

WHY ARE COUNTRIES INTERESTED IN ADDRESSING CLIMATE CHANGE?

Based on the concern that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, over 150 countries have signed the United Nations Framework Convention on Climate Change. Increased atmospheric concentrations of greenhouse gases "enhance the natural greenhouse effect and ... this will result on average in a warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind."¹ Working Group III prepared its report with the aim of assisting Parties to carry out the intent of the Convention.

Climate change links countries environmentally and economically. No country can be confident that it will escape the impacts of climate change damage. All anthropogenic (human caused) emissions of greenhouse gases, regardless of location, contribute to such potential damage. Costs of abatement and impacts also affect all countries directly and through international trade and capital flows.

Equity and social considerations are central to addressing climate change. Regardless of the action, or inaction, to address climate change, abatement and impact costs will be spread over time and across regions. The distribution of abatement costs can be managed, but the incidence of damages from climate change impacts can not be controlled. Achieving an equitable distribution of the overall cost of addressing climate change will therefore be complex.

HOW DOES UNCERTAINTY AFFECT DECISION MAKING RELATED TO CLIMATE CHANGE?

Decision making related to climate change is profoundly affected by uncertainty related to the response of the climate system, the impacts of climate change on natural and human systems, as well as the social and economic consequences of actions to manage anthropogenic emissions of greenhouse gases. Climate change poses unique challenges for analysis of decision making under uncertainty because of its long-term, global scope and because it is driven by human activities which are inherently difficult to predict.

Several methods are available to incorporate risk into decision analyses. [Risk is described

as a distribution of possible situations each with an associated probability of occurrence. Uncertainty is distinguished from risk by the absence of a distribution of possible situations. The analytical tools designed for risk analysis are not well suited for uncertainty analysis.

Appropriate strategies for dealing with the uncertainty related to climate change include:

- using scenarios spanning a broad range of possible situations to assess the robustness of decisions;
- incorporating the opportunity for learning into the decision making framework by adjusting actions based on research results;
- implementing precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects;² and
- employing approaches to diversify the risks, such as a portfolio of response measures and insurance.

Uncertainty related to climate change is not a justification for inaction. Rather uncertainty requires the use of strategies to deal with that uncertainty.

WHAT DECISION MAKING FRAMEWORK DOES THE CLIMATE CHANGE CONVENTION ESTABLISH?

The ultimate objective of the Convention is "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."³ The level at which concentrations are to be stabilized and the date by which this is to be achieved are not specified, although several considerations to be taken into account when establishing the stabilization objective are mentioned in Article 2.

This objective establishes a framework for decision making related to climate change. Conceptually, once the stabilization target — the level and date at which concentrations are

² This is one of the principles of the Convention, see Paragraph 3 of Article 3.

³ *United Nations Framework Convention on Climate Change*, Article 2. It is not clear from the Convention whether the ultimate objective is to stabilize the atmospheric concentration of each gas at a particular level or to stabilize greenhouse gas concentrations, expressed in terms of CO₂ equivalents, at a particular level. The latter interpretation is preferable from the scientific and economic viewpoints, but the choice of interpretation does not affect the substance of the discussion.

¹ *United Nations Framework Convention on Climate Change*, preamble.

to be stabilized — is chosen, then the least cost strategy for achieving this objective can be selected. The stabilization objective can be based on an absolute standard, a safe minimum standard, or a cost-benefit analysis. The strategy for achieving the objective could be selected on the basis of cost-effectiveness, subject to ethical, environmental and other constraints.⁴

Decisions related to climate change over the next few decades can be modified as circumstances change. Neither the ultimate stabilization target, nor the strategy for achieving that objective need to be fixed immediately. There will be ample opportunity to adjust as new information becomes available. As discussed below, the level at which atmospheric concentrations are stabilized, within a broad range, has little impact on the short term strategy for addressing climate change. However, immediate action to implement cost-effective measures is important to achieving ultimate stabilization of atmospheric concentrations consistent with the objective of the Convention.

HOW CAN ATMOSPHERIC CONCENTRATIONS OF GREENHOUSE GASES BE STABILIZED?⁵

To stabilize atmospheric concentrations of CO₂ at any level between 350 to 750 ppmv requires that anthropogenic emissions ultimately be reduced significantly below the current level.⁶ Stabilization of atmospheric concentrations of methane (CH₄) and nitrous oxide (N₂O) requires smaller reductions from current anthropogenic emissions.⁷

⁴ Cost-effectiveness is closely related to benefit-cost analysis. Benefit-cost analysis applies monetary values to both the benefits and the costs of the policy under consideration. A cost-effectiveness analysis seeks to achieve a given policy objective, such as an atmospheric concentration of a particular greenhouse gas, at the lowest cost.

⁵ This section is based on the 1994 Special Report of the IPCC.

⁶ ppmv is parts per million by volume, which is a measure of concentration. The pre-industrial concentration of CO₂ in the atmosphere was approximately 280 ppmv and the current concentration is about 360 ppmv.

⁷ If CH₄ emissions were maintained at today's levels, atmospheric concentrations would effectively stabilize within 50 years at a level about 11% higher than the current concentration. To stabilize the concentration at today's level would require a reduction of roughly 10% from current anthropogenic emissions.

If N₂O emissions were maintained at today's levels, at levels, atmospheric concentrations would stabilize at 30% to 50% above the current concentration after several centuries. To

1 Profiles of atmospheric CO₂ concentration consistent with stabilization at levels between
2 350 and 750 ppmv were developed by Working Group I and were reported in the IPCC
3 1994 Special Report. They were chosen to produce smooth changes in emissions between
4 current levels and the eventual stabilization target. Thus, stabilization at higher
5 concentrations occurs later than stabilization at lower concentrations. In all cases
6 stabilization is achieved after 2100.
7 Figure 1 illustrates patterns of annual anthropogenic emissions of CO₂ consistent with
8 stabilization of atmospheric concentrations at different levels.⁸ The profiles shown in
9 Figure 1 are only indicative of annual emissions patterns consistent with stabilization at the
10 specified concentration. To a first approximation, the eventual stabilized concentration is
11 governed more by the accumulated CO₂ emissions from now until the time of stabilization,
12 and less by the exact path taken to reach stabilization. This means that the area under the
13 curve is more important than the shape of the curve. As long as the area under the curve
14 remained the same, the shape of the emissions profile could vary yet the impact on climate
15 would be roughly the same.
16

17 Figure 2 shows selected IPCC emissions scenarios as well as the emissions profiles
18 consistent with stabilization from Figure 1 for the period 1990 to 2050.⁹ The IPCC
19 emissions scenarios illustrate the range of emissions possible given a range of reasonable
20 assumptions concerning population, economic growth, energy-intensity and carbon
21 emissions per unit of energy. The IPCC emissions scenarios shown do not reflect the effect
22 of measures to limit emissions of greenhouse gases.
23

24 In the absence of action to limit anthropogenic CO₂ emissions, the scenario with the
25 highest emissions (IS92e) exceeds the profile for stabilization at 750 ppmv before 2100.
26 The "central" emissions scenario (IS92a) exceeds the profile for stabilization at 750 ppmv
27 about 2010. The lowest emissions scenario (IS92c), which assumes declining world
28 population and low economic growth, is consistent with stabilization between 450 and 550

29 stabilize the atmospheric concentration at today's level would require a reduction of more than
30 50% from current anthropogenic emissions.
31

32 Aerosols and tropospheric ozone are rapidly removed from the atmosphere and stabilization
33 of precursor emissions would quickly lead to stable atmospheric concentrations.

34 ⁸ Stabilization of atmospheric CO₂ concentration at 350 ppmv is qualitatively different
35 from stabilization at higher concentrations. Stabilization at 350 ppmv would require sharp
36 reductions of global CO₂ emissions immediately. Stabilization at higher concentrations allows
37 some increase in global CO₂ emissions in the short run followed by larger long run reductions.

38 ⁹ The emissions profiles assume carbon sequestration by forests, but some emissions
39 scenarios assume complete elimination of forests after 2050.

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

ppmv. All of the IS92 scenarios show rising anthropogenic emissions of CH₄ and N₂O in the absence of control measures.

In summary, intervention is needed to stabilize atmospheric concentrations of greenhouse gases. Stabilization of atmospheric CO₂ concentration at a level below 750 ppmv will require that emissions ultimately be reduced substantially below current levels.

HOW SHOULD THE STABILIZATION OBJECTIVE BE SELECTED?

Selection of the level at which the atmospheric concentration of each greenhouse gas should be stabilized can be based on ethical, environmental or economic criteria. For example:

- Ethical considerations or scientific information concerning damages due to climate change may argue for limiting atmospheric concentrations below a particular level regardless of cost. This is an absolute standards approach. Economic considerations are irrelevant under this approach.
- The atmospheric concentration may be constrained to a particular level based on ethical and environmental evidence as long as the cost of achieving that target is not "unacceptable." This safe minimum standard approach considers adaptation and mitigation costs, but only to ensure that they are not unacceptable.
- Under a benefit-cost approach, the concentration target selected is the one that minimizes the difference between the benefits of damage avoided by limiting climate change and the costs of achieving that atmospheric concentration. A benefit-cost approach requires all impacts to be valued in monetary terms.

Figure 3 illustrates these approaches.

Selection of the level at which the atmospheric concentration of each greenhouse gas should be stabilized will be a matter for international negotiation by the Parties to the Convention. Some Parties may prefer to different criteria than others.

Article 2 states that the level at which atmospheric concentrations are stabilized "should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

development to proceed in a sustainable manner."¹⁰ These concerns over the impacts of the speed and magnitude of climate change, as well as the cost, suggest either a safe minimum standard or a benefit-cost approach to selection of the level at which atmospheric concentrations are stabilized.

Policy makers will need to select a stabilization objective for each greenhouse gas (individually or as total CO₂ equivalent) that balances the risks of climate change and the costs of controlling atmospheric concentrations based on ethical, scientific and economic considerations.¹¹

IS BENEFIT-COST ANALYSIS APPLICABLE TO CLIMATE CHANGE?

Benefit-cost analysis has many advocates, but also many detractors. Despite its many imperfections, benefit-cost analysis forces decision makers to compare the consequences of alternative actions, including that of no action, on a quantitative basis. The process of systematic reasoning that lies at the core of benefit-cost analysis provides insights not available from purely rhetorical argument.

Benefit-cost analysis requires that monetary values be applied to impacts such as risk of mortality, environmental refugees from sea level rise and drought, conflict over scarce resources of water and arable land, the well being derived from healthy ecosystems, and reduced risk of species extinction, for the purpose of policy formulation. The literature contains monetary estimates for some of these damages, but these must be taken with considerable caution as they do not reflect the full impact of climate change on society.

Decision makers who prefer not to apply monetary values to particular impacts can use multi-criteria analysis. This permits the decision maker to assign weights to monetized and non-monetized benefits.

Working Group III was specifically requested to assess whether benefit-cost analysis is applicable to climate change. We conclude that in principle, it can be used to help analyse how much emissions of greenhouse gases should be reduced and what measures should be used to reduce emissions. Benefit-cost analysis is able to contribute to analyses of when emissions should be reduced and who should reduce emissions but is not able to fully answer those questions.

¹⁰ United Nations Framework Convention on Climate Change, Article 2.

¹¹ The Intergovernmental Negotiating Committee (INC) requested that the IPCC assess the scientific evidence that might help policy makers interpret Article 2 of the Convention. This topic will be addressed in the IPCC's Second Assessment report to be published in 1995.

We conclude therefore that benefit cost analysis *could* be used to analyse some aspects of climate change policy, but do *not* conclude that it *should* be used to develop climate change policy. If benefit-cost analysis is used it should adopt a global perspective, balancing only national benefits and costs results in inferior solutions. Furthermore, if benefit-cost analysis is used, care must be exercised to ensure proper treatment of risk, uncertainty, economic valuation, irreversibility, and long time horizons as well as selection of the discount rate.

WHAT DO WE KNOW ABOUT THE BENEFITS OF STABILIZING GREENHOUSE GAS CONCENTRATIONS?

The benefits of limiting atmospheric greenhouse gas concentrations are the climate change damages avoided. Since some increase in atmospheric concentration from the current level is virtually inevitable, some impacts and damages due to climate change are unavoidable.

The literature contains estimates of the global damage associated with an equilibrium climate consistent with an atmospheric concentration of CO₂ of 560 ppmv. The estimates suggest that if a concentration of 560 ppmv occurred now it would impose net damages equivalent to between 1.5% and 2.5% of world GDP on the present world economy. This is not expected to occur for several decades and damages in the interim would be smaller. The regional variation in climate change damage is substantial. Damage in developing countries is estimated to be at least 2% with small islands and low lying coastal areas being particularly vulnerable.

Most estimates of the additional damage done by CO₂ emitted *now* range from \$5 to \$25 per tonne of carbon, although a few estimates range up to \$125 per tonne of carbon.¹² The models used to develop these estimates are simplistic and are poor representations of dynamic processes, but they reflect the current state of the art. The wide range of estimates reflects variations in models, scenarios, discount rates and other assumptions.

WHAT DO WE KNOW ABOUT THE COSTS OF STABILIZING GREENHOUSE GAS CONCENTRATIONS?

Only one study of the cost of stabilizing atmospheric concentrations in the range of 350 to 750 ppmv is available. It estimated the cost of stabilizing atmospheric concentrations of CO₂ at approximately 500 ppmv by 2100 to be between 0.5% and 0.75% of world GDP. This estimate is very sensitive to the discount rate used. With a discount rate of 3%, the present value of the cost of stabilizing emissions is minimized by allowing short term

¹² A tonne is a metric ton or 1,000 kg.

*efficient,
perfectly
described
option value
non-inferior
Risk premium*

increases in emissions followed by long run decreases of emissions.

It is not surprising that relatively little information is available concerning the costs of stabilization at different atmospheric concentrations. Emissions profiles consistent with stabilization of atmospheric concentrations have only recently been calculated (Figure 2).

WILL RESEARCH PROVIDE BETTER ESTIMATES OF THE BENEFITS AND COSTS OF STABILIZING GREENHOUSE GAS CONCENTRATIONS?

Analysis of the benefits and costs of stabilizing atmospheric concentrations of greenhouse gases is best undertaken using integrated assessment models. Until this year only a few such models were available. Many more are now under development. Analyses of the costs and benefits of stabilizing atmospheric concentrations of greenhouse gases will become more common over the next few years.

While considerable research on the costs and benefits of stabilizing atmospheric concentrations of greenhouse gases will be undertaken over the next few years, it will not produce precise results because:

- The costs of limiting greenhouse gas emissions are determined primarily by the projected costs of non-fossil energy sources. The projected costs of these technologies account for approximately two-thirds of the variation in costs and obviously can not be resolved in the near future.
- Between one-third and two-thirds of the estimated damage is due to non-market impacts such as impacts on the risk of human mortality, damage to ecosystems, and risk of species loss. Narrowing the uncertainty of the estimates for such damages is also difficult.
- The value of the discount rate has a major impact on the analysis. The impact on the analysis of the value chosen for the discount rate can be significant.

The costs and benefits of stabilizing greenhouse gas concentrations at different concentrations is likely to be the topic of considerable research over the next few years, but the results are likely to continue to be subject to a wide margin of uncertainty.

WHAT IS THE APPROPRIATE DISCOUNT RATE FOR CLIMATE CHANGE ANALYSES?

The discount rate raises some of the most profound philosophical issues of policy toward

*Speculative
2/3
non-market*

Spurs →

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

climate change, because it confronts the trade-off between the interests of the present and future generations. The discount rate is the mechanism used to make economic effects at different points in time comparable. The choice of discount rate is important in climate change analyses because the time horizon is extremely long and the abatement costs tend to come earlier than the benefits of avoided damages.

The economic literature suggests that the proper rate for discounting consumption at different points in time and across generations is the social rate of time preference (STRP). The STRP is composed of two components, "pure time preference" and the incremental welfare derived from future consumption:

- Pure time preference is simply a reflection of impatience. Although there is debate in the literature, there is a strong case for setting this rate at or very close to zero.
- The incremental welfare of future consumption accounts for rising per capita income over time and the resulting decline in the incremental welfare (marginal utility) derived from the higher future consumption. With a plausible long term per capita growth rate of no more than 1%, discounting this factor gives about 1.5% per year.

The resulting social rate of time preference is about 1.5% per year. The STRP discounting approach is just as relevant for developing countries as for developed countries. However, low income countries would be expected to have higher STRPs initially.

Typically the rate of return on private investment will be higher than the STRP. In policy analysis it is necessary to convert all investment and capital effects into their consumption equivalents before discounting at the STRP. [One way to make this conversion is to apply a shadow price to capital.]

The proper discount rate for public policy will only by chance equal observed market interest rates. The STRP and market interest rates would only be equal if government intervened for optimal reallocation of consumption over time, taxation imposed no distortions on investment and consumption decisions, and other conditions were met.

Increasing the discount rate because of risk is generally inappropriate. Instead risk should be taken into account by a probabilistic treatment of alternative scenarios for future consumption streams. However, because one component of the STRP can involve uncertainty about the future growth rate, risk considerations might justify *reducing*, rather than raising, the STRP.

There should not be a different discount rate for environmental issues. However, because

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

the relative price of environmental services is unlikely to rise over time the *effective* discount rate for environmental services can be lower than the goods discount rate, and even negative.

WHAT DOES THE STABILIZATION OBJECTIVE IMPLY FOR CLIMATE CHANGE POLICY TODAY?

Fortunately, the decisions to be taken in the short term are not very sensitive to the level at which atmospheric concentrations are ultimately stabilized. Figure 1 indicates that regardless of the level at which atmospheric concentrations are to be stabilized within the range of 350 to 750 ppmv, global CO₂ emissions from industrial sources must ultimately be reduced by over 50% from the current rate. Stabilization of the atmospheric concentrations of other greenhouse gases requires lesser reductions, but nevertheless reductions, of the emissions of those gases.

To begin the process of stabilizing atmospheric concentrations of greenhouse gases the following actions are needed:

- Implementation of cost-effective measures to limit anthropogenic emissions and enhance sinks and reservoirs of greenhouse gases. To ultimately stabilize atmospheric concentrations, global anthropogenic emissions of greenhouse gases must peak and begin to decline over the next several decades.
- Research to develop non-fossil energy sources that can be implemented commercially on a large scale. The emissions reductions that can be achieved with the abatement options currently available are probably not sufficient to reduce future global emissions to levels consistent with stabilization. New technologies often take several decades to achieve commercial viability, so research on these options should be accelerated to ensure that they will be available when needed.

Although it does not contribute directly to stabilization of atmospheric concentrations of greenhouse gases, scientific research on climate and the impacts of climate change should be continued. The information produced by such research can help improve decision making related to selection of the stabilization target and the optimal trajectory for achieving that target. The available studies suggest a net benefit to further research in these fields.

In the long run of course, more specific international agreement for achieving a significant reduction from current rates of anthropogenic emissions of CO₂ and smaller reductions from current anthropogenic emissions of other greenhouse gases on a global basis is

needed. This agreement must address both the implementation of abatement measures as well as the manner in which the costs are to be shared.

In short, stabilization of atmospheric concentrations is a long run process that requires early action to begin to control anthropogenic emissions and to develop the mechanisms that will enable global emissions to be reduced to well below current levels — research on non-fossil energy technologies and an international agreement for managing global anthropogenic greenhouse gas emissions.

WHAT IS THE IMPACT OF CURRENT COMMITMENTS?

The Convention commits Annex 1 countries to undertake to "... adopt national policies and take corresponding measures on mitigation of climate change, by limiting [their] anthropogenic emissions of greenhouse gases ... [demonstrating] that developed countries are taking the lead in modifying longer term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and greenhouse gases ... would contribute to such modification ..."¹³ This undertaking is generally interpreted to mean a return to 1990 emissions by 2000.

Current commitments reduce the rate of growth of global anthropogenic CO₂ emissions to varying degrees depending upon the emissions scenario assumed and the assumptions about the nature of the commitments after 2000. Figure 4 shows adjustments to the IPCC emissions scenarios assuming that CO₂ emissions by Annex 1 countries are limited to 1990 levels indefinitely.¹⁴ Such a commitment, even if extended indefinitely, is not sufficient to prevent further increases in atmospheric concentrations of CO₂ under scenarios IS92a and IS92e.¹⁵

The current commitments interpreted in this way delay the date at which anthropogenic emissions exceed the profile for stabilization at a particular level and enable stabilization of concentrations at a lower level. The date at which scenario IS92e exceeds the profile for

¹³ *United Nations Framework Convention on Climate Change*, Clause 2(a) of Article 4.

¹⁴ It is not clear whether the "current commitment" means holding constant emissions of greenhouse gases individually or as a group. The undertaking in the Convention does not extend beyond the end of the decade.

¹⁵ The current commitments have no effect on scenario IS92c since the emissions of Annex 1 countries in this scenario remain below 1990 levels due to declining population, low economic growth and improvements in energy efficiency and energy intensity.

stabilization at 750 ppmv is delayed by 20 years until after 2015 and the date at which scenario IS92a exceeds the profile for stabilization at 750 ppmv is delayed by 30 years until after 2040. By 2000 the IPCC emissions scenarios, adjusted for current commitments, are consistent with stabilization of concentrations between 450 and 550 ppmv. However, the profile for stabilization at 500 ppmv is exceeded shortly after 2000 by scenario IS92e and shortly after 2005 by scenario IS92a.

WHAT ARE THE AVAILABLE ABATEMENT OPTIONS?

Conceptually, cost-effective measures to limit anthropogenic emissions and enhance sinks and reservoirs of greenhouse gases are selected to achieve an atmospheric concentration path consistent with the ultimate stabilization target. However, the climate change problem is not that simple. The ultimate atmospheric concentration target probably will not be decided for some time. Fortunately, this is not critical since the allowable emissions trajectory is broadly similar over a wide range of atmospheric concentration targets.

Since the allowable emissions trajectory is not very precisely defined, selection of the most cost-effective measures can only be approximate. The options that appear to be cost-effective are shown in Table 1.

Insert table summarizing the available response options.

Make the point that these options are not sufficient to achieve stable concentrations; new non-fossil technologies will be needed in the long run, thus the importance of research now.

WHAT ARE THE COSTS OF CONTROLLING GREENHOUSE GAS CONCENTRATIONS?

Implementation of cost-effective measures to limit anthropogenic emissions and enhance sinks and reservoirs of greenhouse gases presupposes that the costs can be estimated. This is more complicated than might be expected. The literature contains five different concepts of the cost of reducing emissions, or enhancing sinks, of greenhouse gases. These five cost concepts are illustrated schematically in Figure 5.

The highest cost estimates, curve A, assume no reducible market imperfections and inefficient recycling of tax revenues. A carbon tax is added to the existing tax structure and the revenue is used for government programs or to reduce the deficit. The tax needed

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

to reduce emissions rises from \$30 to \$700 per tonne of carbon as emissions reductions increase from 20% to 70%. This is estimated to reduce GDP by _% to _%. Most macro-economic modelling follows these assumptions.

The carbon tax revenue can be used to reduce other taxes in a manner that stimulates economic growth. With such efficient tax recycling, the net cost of emissions reductions is lower and could be negative as illustrated by curve B. The economic stimulus that can be achieved depends upon the magnitude of the carbon tax, the structure of the existing tax system, and which of the existing taxes are reduced.

The alternative illustrated by line C assumes that market imperfections exist and that they can be reduced by emissions reduction measures. Analyses for many countries suggest that market imperfections in the energy, transportation, agriculture, sectors inhibit energy efficiency and fuel switching measures to reduce carbon releases. Implementing appropriate energy efficiency and fuel switching measures could reduce emissions 10% to 30% at no net cost or with net economic benefits.

If existing market imperfections are eliminated and the savings are used to stimulate economic growth the situation is described by curve D. Elimination of subsidies to fossil fuel, agriculture, forestry or transportation and use of the revenue saved to stimulate economic growth is an example of such a strategy.

Finally, curve E illustrates a situation where the measures described by curve D also reduce emissions of other pollutants and so yield benefits in addition to those due to reduced greenhouse gas emissions. Reduced fossil fuel use usually also lowers emissions of precursors to urban smog, acid rain, and toxic compounds. Depending on the sources and local conditions, these ancillary environmental benefits can amount to 30% to 100% of the greenhouse gas reduction benefits.

Measures to limit anthropogenic emissions and enhance sinks and reservoirs of greenhouse gases should be implemented in a manner that minimizes the net cost to society. This requires capturing these potential economic and ancillary environmental benefits as well as implementing the measures efficiently.

WHAT INFLUENCES THE COSTS OF ABATEMENT OPTIONS?

The wide range of cost estimates in the literature is misleading because the differences are mainly due to differences in the underlying assumptions. In addition to the assumptions concerning existing market imperfections and secondary economic and environmental benefits mentioned above, differences are due to assumptions concerning the baseline scenario, the design of the abatement policy, and the time frame for implementation of the

5th Best

polluting
in G
place

✓

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

measures. Differences among the models used to derive the estimates are less significant than the differences in the underlying assumptions.

- **The Baseline Scenario.** Cost estimates are particularly sensitive to population growth, economic development, the price and income elasticities of final demand for energy and transport services, assumptions about fossil fuel resources and prices, and the costs and penetration of non-fossil energy technologies.
- **Policy Design.** Some policy instruments are more cost-effective than others. Reliance on inefficient policies raises the cost of achieving the objective. Cost-effectiveness becomes more important as the abatement effort becomes more stringent.
- **Time Frame.** Many abatement measures involve changes of capital equipment. Implementing such measures as part of the normal replacement cycle is generally more cost effective than accelerating replacement of equipment. The savings are often 30% or more. This should be interpreted as an argument for cost-effective long-term action, not inaction.

While there is considerable debate on the scale of market imperfections, there is broad agreement that energy efficiency improvements equivalent to 10% to 30% of current consumption can be realized at negative to slightly positive costs, depending on the baseline scenario and the time frame.

The overall cost of greenhouse gas abatement measures will ultimately be determined by the extent to which accelerated replacement of capital equipment is necessary and the costs of the alternatives. This means that appropriate long run signals must be provided to guide capital investment and research decisions. While immediate implementation of low cost abatement measures is an important step toward ultimately stabilizing atmospheric concentrations of greenhouse gases, the costs of these measures are too low to provide the correct long term signal. Additional signals such as future technology or performance standards or a future carbon tax may be necessary.

WHO SHOULD IMPLEMENT THE ABATEMENT OPTIONS?

The Convention commits all Parties to address climate change while sharing the burdens in a manner that reflects their common but differentiated responsibilities.¹⁶ All Parties should

¹⁶ United Nations Framework Convention on Climate Change, Article 4.

implement cost-effective measures to abate anthropogenic emissions of greenhouse gases, to enhance sinks and reservoirs of greenhouse gases, and to adapt to climate change. The burden of implementing these measures can be shared through mechanisms such as financial assistance with the incremental costs of measures, technology transfer, and joint implementation.¹⁷

More specific international agreements to reduce current rates of anthropogenic emissions of greenhouse gases on a global basis must address both the implementation of measures as well as the manner in which the costs are to be shared. The Convention suggests that measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.¹⁸ This suggests that cost-effective measures be implemented regardless of where they occur.

Once the abatement options have been selected. The burden can then be distributed through the transfer of technology and financial resources. No such mechanism is yet established.

WHO SHOULD BEAR THE COSTS OF THE ABATEMENT OPTIONS?

Equity considerations are an inescapable aspect of climate change policy. Inaction is likely to impose costs on future generations and the regions where damages occur. Action to address climate change is likely to impose costs on the present generation. Since actions to address climate change are deliberate, explicit decisions can be made as to how to share these burdens. The Convention recognizes the differentiated responsibilities of the Parties, but it does not include an explicit formula for sharing the costs of addressing climate change. It also lists factors to be considered in determining how the burden should be shared and provides mechanisms for sharing the burdens.

A variety of ethical principles are relevant to sharing the burden of addressing climate change. No single rule will command universal agreement. Furthermore, any arrangement may need to change over time in order to continue to be perceived as equitable and to take new developments into account. Analysts can not prescribe how the burden of addressing climate change should be shared; they can only clarify the implications of different

¹⁷ Subparagraph 2(a) of Article 4 of the Convention states that developed country Parties "shall adopt national policies and corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. ... These Parties may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph."

¹⁸ *United Nations Framework Convention on Climate Change*, Clause 3, Article 3.

least system work
on that further
obligations

principles.

An international agreement will not be achieved, or if achieved may not be effective, unless it is perceived to be equitable by the Parties. It is useful to distinguish four issues related to the equity of international responses to climate change: distribution of the costs of coping, distribution of future emission rights, distribution of the costs of abatement, and procedural fairness.

- **Costs of Coping.** Most (perhaps all) ethical approaches, statements in the Stockholm and Rio Declarations, as well as provisions in the Convention indicate that Annex II countries bear responsibility for helping poorer countries cope with the impacts of climate change.
- **Future "Emission Rights."** Various criteria have been proposed for the distribution of future "emission rights." No single criterion dominates. Furthermore, the evidence suggests that the distribution of "emission rights" may need to change over time.
- **Abatement Costs.** Provisions in the Convention commit developed countries to implement measures to limit their anthropogenic emissions of greenhouse gases and to enhance greenhouse gas sinks and reservoirs. Other provisions commit developed countries to provide financial resources and to transfer technology to developing countries to assist them with implementation of abatement measures.²⁰
- **Procedural Equity.** Stabilization of atmospheric concentrations of greenhouse gases will take the better part of a century or even more to achieve. Over that time the circumstances of individual countries can be expected to change significantly. The extent and timing of these changes can not be foreseen. Hence, the arrangements for ensuring that the burdens of addressing climate change are shared equitably will need to be modified over time. The procedures for effecting such changes must be considered fair.

¹⁹ The term "emission rights" should not be interpreted to mean internationally binding emission quotas by country. Parties may wish to proceed through voluntary commitments to reduce emissions and enhance sinks and reservoirs which together meet agreed targets.

²⁰ Paragraph 3 of Article 4 of the Convention commits developed country Parties "... [to] provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article and are agreed between a developing country Party and the international entity or entities referred to in Article 11."

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

Negotiations concerning an international agreement for reducing anthropogenic emissions of greenhouse gases on a global basis are in their infancy. Such an agreement must address both the implementation of measures as well as the manner in which the costs are to be borne. The resulting agreement is more likely to be perceived as equitable if all of the Parties are able to participate effectively in the negotiations. Many countries do not have the expertise and resources to analyse information and proposals and hence to participate fully in international negotiations effectively. Assistance to enable more effective participation would improve the prospects for agreements that benefit all Parties.

Climate change will affect various groups differently and may trigger social responses, such as migration. Not only do the populations directly affected suffer, those affected by the social response may also suffer. Some groups — the poor, children and women — are more vulnerable and may need to be protected against excessive impacts from climate change. Concern about equity and social impacts points to the need to strengthen institutional capabilities, particularly in developing countries, to make and implement collective decisions within a country in a legitimate and equitable manner. These may include, inter alia, institutions of research and analysis and institutions charged with protecting the rights of vulnerable groups.

In summary, the Convention indicates that developed countries bear responsibility for helping poorer countries with the costs of abatement measures and the costs coping with the impacts of climate change. However, precise arrangements for sharing the burden of addressing climate change now and for the future remain to be settled. Countries differ in terms of greenhouse gas emissions (on a range of different measures), vulnerability to climate change, wealth, resource endowments, and institutional capacity to respond effectively. The Convention provides that these circumstances be reflected in differentiated responsibilities. Assistance to enable all Parties to participate effectively in negotiations will improve the prospects for agreements that benefit all.

WHICH POLICY INSTRUMENTS ARE SUITED TO IMPLEMENTATION OF THE ABATEMENT OPTIONS?

Policy instruments to promote implementation of abatement measures for climate change must be assessed at the international and domestic levels. Policy instruments can help participating countries comply with multilateral commitments on climate change abatement, including international transfers of resources and technology. Countries will also need to select policy instruments domestically to comply with their national goals or obligations. The international and domestic policy instruments need not be the same, but international agreements may constrain the choice of domestic policy instruments.

Among the criteria that governments can use to select from among the available policy

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

instruments are: efficiency or cost-effectiveness, distributional (including intergenerational) equity, flexibility in the face of technological change and new information, compatibility with the institutional structure and existing policies, and understandability to the general public. Governments may apply different criteria with different weights to the selection of international and domestic policy instruments.

International Policy Instruments

The policy instruments available internationally include: non-tradeable quotas, tradeable quotas, joint implementation, harmonized domestic carbon taxes, international carbon taxes, various international standards and technology transfer.²¹ Non-tradeable quotas are specific national limits on greenhouse gas emissions expressed as an allowable quantity or a change from a baseline. Tradeable quotas specify an emissions limit for each participating country, but allow countries to sell surplus quota to other countries. Joint implementation can be thought of as a form of tradeable quota established by the Convention. Carbon taxes can be harmonized and implemented domestically or levied by an international agency. In either case international redistribution of revenue is needed. Standards governing greenhouse gas emissions by particular sources, such as automobiles and appliances, could be adopted internationally. Parties also may wish to proceed through voluntary commitments to reduce emissions and enhance sinks and reservoirs which together meet agreed targets.

Some of these policy instruments facilitate international transfers of resources to achieve an agreed sharing of the burden of addressing climate change. The redistribution of carbon tax revenues, the allocation of quotas under a tradeable quotas system, and joint implementation all lead to international resource transfers. In the case of international standards and non-tradeable quotas, international resource transfers would need to be effected by other means, such as the financial mechanism established by the Convention.²²

The Convention allows joint implementation as a means of meeting commitments. As a policy instrument, joint implementation is unique to the Convention. It is not yet well defined. Conceptually it is a form of internationally tradeable quota where the quota involved in each trade must be defined. The administrative costs of such trades may be relatively high due to the expenses associated with defining the quota to be traded.

²¹ The terms "quota" and "permit" are used simply to distinguish the international and domestic policy instruments.

²² *United Nations Framework Convention on Climate Change*, Article 11. Resource transfers could occur under international policy instruments, such as a carbon tax or tradeable quotas, as well as the financial mechanism established by the Convention.

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

A tradeable quotas system among Annex 1 countries is consistent with the joint implementation provisions of the Convention. Experiments with such systems should be encouraged since they may entail lower administrative costs than joint implementation projects. Domestic experiments with tradeable permit systems should be encouraged to gain additional experience with this policy instrument.

Domestic Policy Instruments

In principle individual countries can choose from among a large set of policy instruments, including carbon taxes, tradeable permits, deposit-refund systems, technology standards, performance standards, product bans, voluntary agreements, energy taxes, energy efficiency subsidies, and non-fossil fuel subsidies. The choice of policy instruments internationally may proscribe the domestic choice; harmonized carbon taxes or international standards require that the same instruments be used domestically. Tradeable quotas and an international tax allow for maximal flexibility in the choice of domestic policy instruments.

Existing policies may subsidize activities that give rise to greenhouse gas emissions. Examples of such policies include subsidies to fossil fuels; subsidies, tax policies and regulations that encourage deforestation; underpricing of water for agriculture; and failure to impose the full social cost on road transportation. Phasing out such policies may lead reduce greenhouse gas emissions and yield economic benefits.

A mix of policy instruments can be used domestically and internationally. Indeed, a mix of instruments is likely to be needed to achieve the best results.

Some instruments are more cost-effective than others. An inefficient policy instrument can significantly increase the cost of achieving a specific target. Cost-effectiveness should always be a criteria for selecting policy instruments, but it becomes more important at both the international and domestic levels as the abatement effort becomes more stringent. The economics literature suggests that carbon taxes and tradeable quotas (permits) are among the more cost-effective instruments.

The consequences of climate change policy will be determined by the choice of policy instrument as well as the abatement measures whose implementation is being promoted by the policy.

WHAT ACTIONS SHOULD AN INDIVIDUAL COUNTRY TAKE?

The actions countries can take, individually or jointly, to limit climate change and its impacts include:

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

- phasing out existing distortionary policies, such as subsidies to fossil fuels, that reduce welfare and directly or indirectly increase greenhouse gas emissions. Emissions reductions of 10% to 20% are possible in many countries from phasing out such policies;
- implementing cost-effective measures to reduce emissions of greenhouse gases. There is broad agreement that measures to reduce emissions of greenhouse gases are available at negative to slightly positive costs in most countries;
- implementing cost-effective measures to enhance sinks or reservoirs of greenhouse gases. Increases in sinks are estimated to represent up to 40% of the total cost-effective abatement potential over the next few decades;
- instituting joint implementation, technology transfer and other forms of international cooperation to limit greenhouse gas emissions;
- undertaking research aimed at better understanding the causes and impacts of climate change. Evidence suggests that such research can yield high returns;
- conducting research aimed at improving the cost-effectiveness of greenhouse gas adaptation and mitigation technologies such as energy efficiency and non-fossil energy sources. The cost of non-fossil energy technologies is one of the major determinants of addressing climate change in the long run;
- planning, and implementing as necessary, measures to adapt to the consequences of climate change; and
- developing insurance arrangements to cover specific damages due to climate change.

In addition countries can contribute to negotiation of a specific international agreement for achieving a significant reduction from current rates of global anthropogenic emissions of greenhouse gases and sharing the burden of addressing climate change.

The specific actions available vary from country to country; the existing inefficient policies vary, the costs and availability of measures to reduce greenhouse gas emissions vary, the costs and availability of measures to enhance sinks and reservoirs of greenhouse gases vary, research capabilities vary, the damages due to climate change and the measures for adapting to these damages vary. Thus, the actions taken will differ from country to country.

Countries can select a portfolio of climate change actions that reflect its objectives and

PRELIMINARY DRAFT. DO NOT QUOTE. FOR REVIEW ONLY

constraints. The actions taken by a particular country may reflect considerations such as their cost, secondary benefits, the impacts on different socio-economic groups, international equity, intergenerational equity, the expected damage due to climate change or sea level rise within the country, and economic strategies based on development of new technologies.²³ A country's climate change policy will also reflect other priorities aimed at sustainable development, such as eradication of poverty and increased levels of education.

Continuing with the portfolio analogy, a country must decide upon the size of its investment in climate change limitation and on the allocation of that investment among possible actions. The size of the investment will reflect the country's obligations under international agreements, adjusted for resources transferred to or received from other countries, as well as domestic goals and priorities. The mix of assets in a portfolio is normally adjusted so that the risk-return ratio is equal at the margin. Since only sketchy information is available on the expected costs and benefits of the climate change actions, governments will need to assess the mix of actions subjectively.

Governments can adjust their climate change portfolio in response to new information and developments. Indeed, both the investment in climate change limitation and the mix of policies should change over time. That does not imply complete flexibility. Many of the measures involve capital and technology commitments with long life times. Reversing such commitments could be relatively costly, however that risk should be incorporated into the analysis of the options before the commitments are made. This is particularly important for rapidly growing developing countries where significant infrastructure investments will be made over the next few decades.

²³ This is not meant to imply that the actions of a particular country can have a significant effect on global greenhouse gas emissions. However, if a particular country is vulnerable to damage due to climate change or sea level rise it may well affect both the nature and magnitude of the actions taken.

Figure 1
Illustrative Anthropogenic Emissions of CO₂ Leading to Stabilisation
at Concentrations of 350 to 750 ppmv Following the Profiles Shown in
Figure 1 Using a Mid-range Carbon Cycle Model.

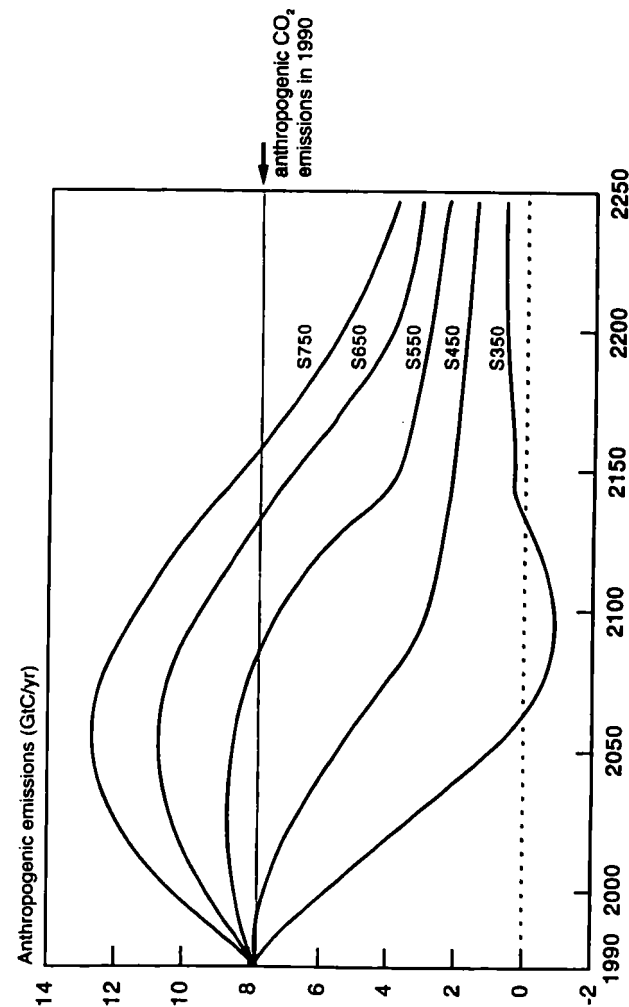
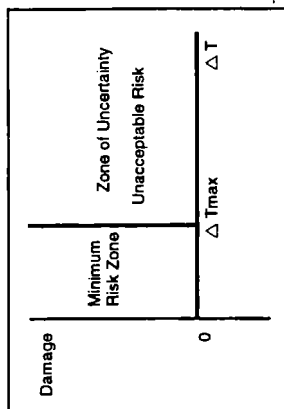
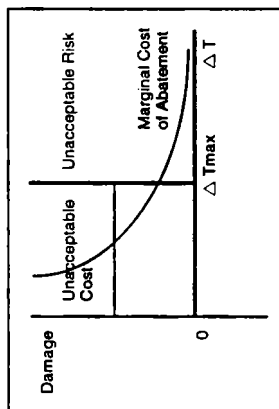


Figure 3

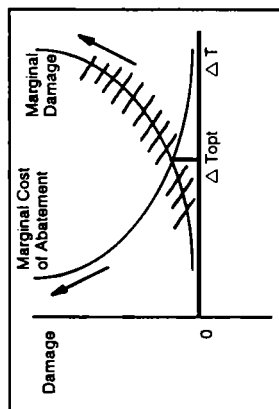
Global Warming, Cost-Benefit Analysis and Sustainable Development



(a) Absolute Standard Approach



(b) Safe Minimum Standard Approach



(c) Cost-Benefit Approach

938005.jpg 9/94 ap

Figure 2

Comparison of IPCC Emissions Scenarios and Emissions Profiles Consistent with Stabilization of Atmospheric Concentrations of 350 to 750 ppmv

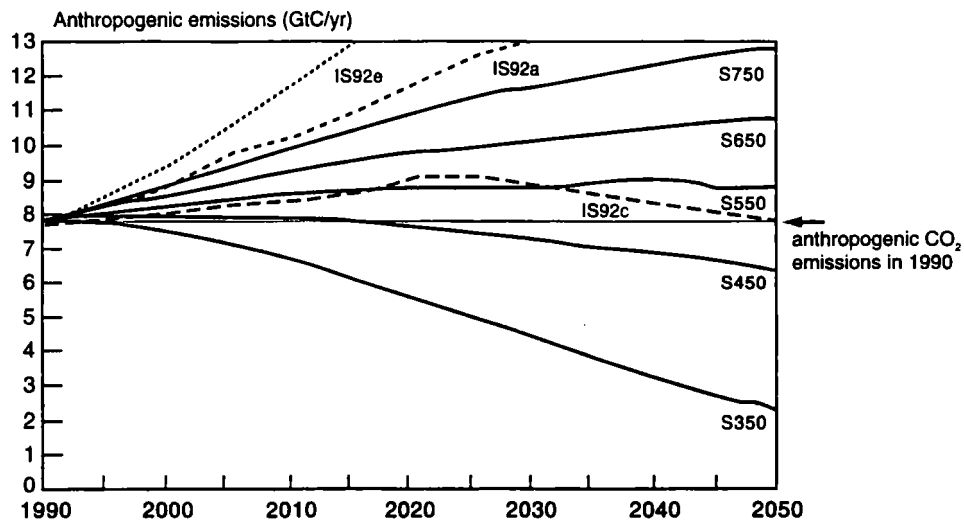
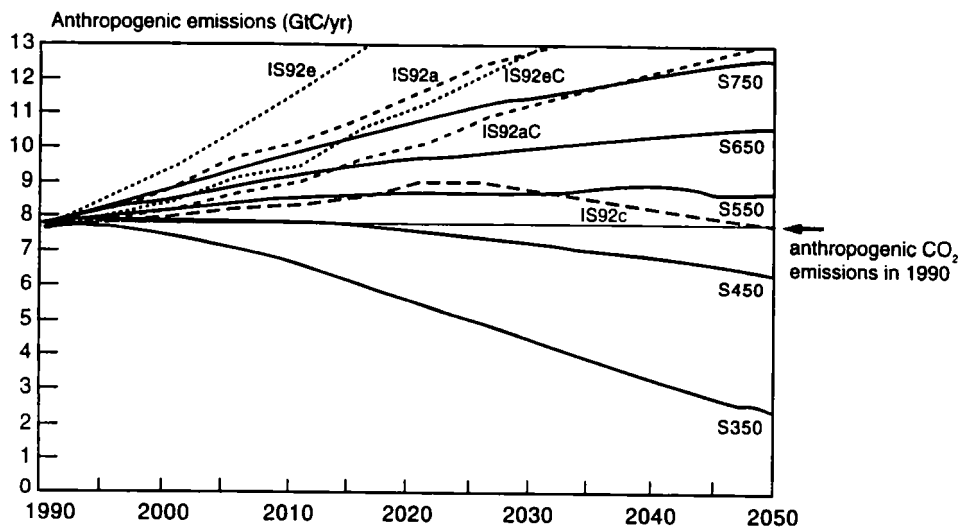


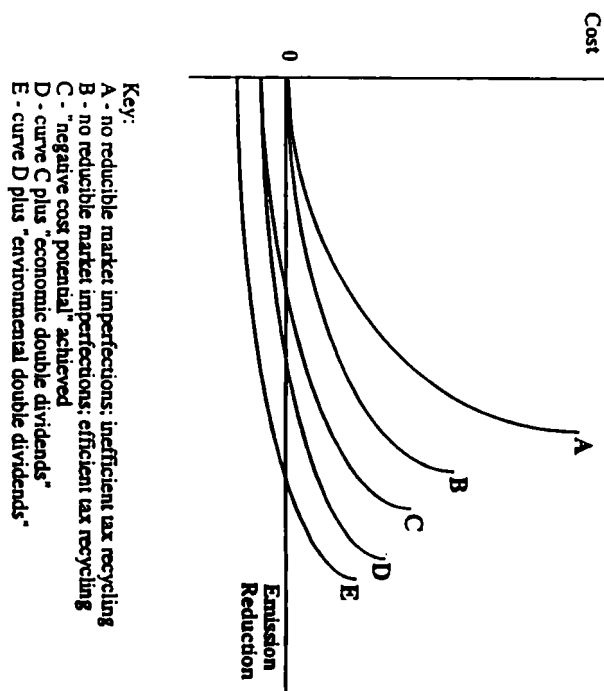
Figure 4

Comparison of IPCC Emissions Scenarios Adjusted for "Current Commitments" and Emissions Profiles Consistent with Stabilization of Atmospheric Concentrations of 350 to 750 ppmv



938005 6pg 9/94 ap

Figure 5
Alternative Views on Costs of Emission Reduction





EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

November 25, 1994

Dear Erik:

I'm sorry that I won't be able to make the meeting in Vienna. I'm sending some comments on the policymakers' summary, which I would have made had I been there. I hope they can be incorporated. Similar remarks apply to the executive summary. I though that the current version was much improved over the previous versions, and is beginning to provide an excellent summary of a fairly complicated, and sometimes controversial, subject.

With best wishes,

A handwritten signature in dark ink, appearing to be 'JES', is written over the typed name.

Joseph E. Stiglitz

Erik F. Haites
Head, Technical Support Unit
IPCC, WG III
145 King Street, Suite 1002
Toronto, Ontario M5H 3X6
CANADA

Comments on Revised Policy Makers Summary

1. Cost benefit analysis. The criticisms of cost benefit analysis are, at best, confusing, at worse, simply wrong. Cost benefit analysis can be viewed as a broad methodology which says little more than that one should take a systematic look at the costs and benefits associated with any project or policy. It is true that *standard* ways of undertaking cost benefit analysis may leave something to be desired. But there exists techniques for including risk, distribution, environmental impacts, existence values, etc. into the analysis.

As an aside, the U.S. government requires cost benefit analysis of all major decisions; the cost benefit analysis is instructed to include all of the concerns raised in the discussion (such as distributional impacts).

Specific changes.

Delete first sentence of section, p. 6
par. 3 of section makes no sense: one can only impose weights, if one has quantification. Replace with:

In some cases, a variety of concerns beyond direct impacts, such as on consumption may be brought into the analysis. Such impacts include distributional considerations, environmental impacts, and impacts on health and life expectancy. Techniques for quantifying these impacts have been developed, though many such techniques remain controversial. Multi-criteria analysis permits the decision maker to assign weights to these various impacts.

Delete last phrase:

"but is not able to fully answer those questions."

Modify the conclusion on p. 7 to read:

We conclude that benefit cost analysis can and should be use to analyze key aspects of climate change policy. In doing so, care must be exercised to ensure proper treatment of risk, uncertainty, economic valuation, irreversibility, and long time horizons as well as selection of the discount rate.

2. The point that issues of efficiency and equity need to be separated should receive more emphasis. The following paragraph should be added somewhere, perhaps at the end of section on "What are the Available Abatement Options?"

Whatever strategies adopted should be cost effective. International negotiations should work to establish a framework for ensuring that mitigation occurs in a cost effective way. This can significantly lower costs of

mitigation. The issues of how the economic burden of mitigation should be distributed among the countries can be separated from the issue of designing a framework for the design and implementation of efficient mitigation strategies.

(You may want to insert an explicit reference to joint implementation at this point.)

3. Perhaps more contentiously, the policymakers' summary should address briefly what can be said about the obligations of LDCs:

There appears to be a consensus that, at least under the more pessimistic baseline scenarios and/or the most stringent target concentration levels, success at addressing the problems of global warming requires the active participation of the developing countries. As noted, without their active participation, emission controls by the Annex 1 countries only delays the date at which the target concentration levels are exceeded by a short span of time. In some analyses, control actions by Annex I countries, without active participation by the developing countries, may actually increase world wide emissions. While there is no consensus among the magnitude of these "leakages," efficient reduction of emissions will require developing countries to assume obligations. With appropriate assignment of emission rights, however, these obligations need not have an adverse impact on the growth of the developing countries, relative to the baseline.

4. The factors to be included in the discussion of the considerations in burden sharing need to be expanded:

p. 16 add bullet

- o Benefits from mitigating climate change. Many standard theories concerned with distributing burdens of "taxes" place a heavy emphasis on relating taxes to benefits, where those benefits can be assessed.

I think you were perhaps correct in eliding the issue frequently raised by the developing countries, that the burden should be imposed in proportion to their "contributions" to the problem. But unless we address the question squarely, it will remain one of the more contentious issues in the debate. I suggest adding a brief paragraph:

While some have argued that financial burdens be assigned according to the principle of "polluters pay," there is neither agreement on the validity of that principle or what it implies. In particular, the issue of retroactive liability--responsibility for actions, before their full consequences were realized--has been questioned; and if the principle is accepted, there is not agreement about how to incorporate the consequences of population growth (that is, if the developed

countries are penalized for their earlier emissions, should they be credited with their earlier control of population and the development of low emission technologies, both of which, in the long run, will be the primary determinants of greenhouse gas concentrations.) In any case, by the year 2100, of the molecules of CO₂ that are in the atmosphere, under the baseline scenario, it is estimated that (less than 50%) will have originated from the Annex I countries.

The par. following abatement costs describes provisions of the Convention, but contains no "argument."

The structure of the argument of the whole section is not clear. Some of these are "issues" (assignment of emission rights), some are factors that might be considered in the distribution of financial burdens (costs of coping), and some with the process of how decisions will be made (procedural equity.)

I would organize the section slightly differently.

- o Factors influencing distribution of abatement costs
- o Mechanisms for distribution of abatement costs
 - emission rights
 - tax revenues
- o Processes for determining distribution of abatement costs (procedural equity)

Here are a few more detailed comments:

p. 1 Discussion of risk--distinction between risk and uncertainty--has a dated flavor (if not incorrect). I would just delete three sentences beginning "Risk is described..."

p. 3 One should emphasize that what is required is not the stabilization of each of the gasses, but the overall reduction of greenhouse gasses (radiative equivalents). The way the section is currently written suggests that there must be particular reductions for particular greenhouse gasses.

p. 4 At end of first par. ... would be roughly the same...you should perhaps add a parenthetical to the effect that the factor adjusting current methane reductions to the impact on long run concentrations may be relatively small.

p. 5 In summary, under most plausible scenarios, intervention is needed....

pp. 4/5 Perhaps you should note one of the most important uncertainties determining whether intervention is needed: the time until alternative non-fossil fuels become cost-effective.

p.5 I think the discussion of "How should the Stabilization Objective be Selected" needs considerable work, and I am not sure

that it is well supported by the rest of the report.

In particular, few economists would agree with a statement such as the first bullet: "...may argue for limiting atmospheric concentrations below a particular level regardless of cost." If a sentence like that is included, it should be clear that few economists subscribe to this perspective. Similarly, most economists would find the second bullet too vague as to be meaningless: what does unacceptable mean?

I would rephrase the whole discussion in terms of judgments concerning (a) the emphasis placed on risks (including those associated with non-linearities and irreversibilities) and (b) environmental factors other than those directly impacting GDP.

Something along the following lines would be preferable:

Since whatever policies are chosen today will inevitably be revised as more information becomes available--both scientific information about greenhouse gas warming, as well as economic information, e.g. about non-fossil fuel alternatives, growth paths of different economies, etc.--the determination of a stabilization objective is only relevant in so far as it affects current policies. Fortunately, what appear to be desirable current policies seem relatively insensitive to a wide range of plausible stabilization objectives.

Factors determining current policies as well as ultimate concentration levels include (a) analyses of (expected) costs of global warming and mitigation; (b) analyses of risks (including those associated with non-linearities and irreversibilities), and judgments about how risk averse society should be; (c) equity judgments (including those related to intertemporal equity as well as equity across and within countries.); and (d) valuation of non-market factors, such as those relating to the environment. With a high degree of risk aversion, a strong concern about future generations, and a high valuation on biodiversity and other environmental objectives, a lower current stabilization target and more stringent current policies would seem appropriate. Using the best available scientific information, including the best estimates of impacts and costs and benefits, policy makers will need to select strategies that balance the risks of climate change and the costs of controlling atmospheric concentrations, incorporating these considerations.

p. 8 You need to emphasize the speculative nature of the non-market impacts (that is, that there is a much lower degree of consensus among economists on these than on the valuation of the market impacts).

These estimates play an important role on p. 7 in the discussion of net damages, and should be emphasized there as well.

p. 7 Make sure that it is clear that when you say "cost of stabilizing..." you mean annual costs.

p. 9 The par. beginning "Typically...." is difficult to understand, and may well be misunderstood. The following par. is a suggested replacement:

In policy analyses using the STRP it is necessary to assess the total impacts on consumption (or consumption certainty equivalents, to take into account risk and environmental impacts).

Typically, the rate of return on private investment will be higher than the STRP. This means that in assessing a program, e.g. of climate mitigation, taking into account intertemporal effects, there may exist an alternative investment program (e.g. devoting resources to human capital accumulation) which would dominate the proposed program. In assessing the desirability of any proposed program, one may want to ask not only whether "social welfare" is increased (relative to the status quo) but also whether there exists *feasible* alternatives which are preferable.

(p. 12 The sentence, "By 2000 the IPCC..." was not clear to me.)

p. 13 The paragraph beginning the "The carbon tax..." should be rewritten

The carbon tax can be used to reduce other taxes which impose distortions in the economy. In that case, the net cost of emissions reductions is lower and, in some cases, could be negative. The economic gains that can be achieved depend upon the magnitude of the carbon tax, the structures of the existing tax system, and which of the existing taxes are reduced.

Sentence at bottom of page. I'm not sure what is meant by "capturing these potential economic and ancillary environmental benefits..."

The sentence beginning, "The wide range of cost estimates..." is confusing. In your list of factors determining disagreements, you do not list several that would appear to be important: (a) the extent of leakages; and (b) the factors contributing to the failure to adopt available energy efficient technologies.

I think that a similar paragraph on the nature of the disagreements should be added in the benefits section, including factors such as disagreements about (a) magnitude of climate change impacts; (b) costs of adaptation (e.g. changing crops); and valuation of non-market impacts.

p. 14 "...an argument for putting into place cost-effective, long term actions, not for inaction."

PLEASE DELIVER IMMEDIATELY! THANK YOU!



**EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS**

Date: 11/25/94

Please deliver to: Erik Haites
IPCC, WGI
CANADA

FAX number of addressee: 9-1-416-369-0922

Telephone number of addressee: _____

From: Joseph Stiglitz/Lisa Branch

FAX number of sender: 202- 395-6958

Telephone number of sender: 202- 395-5036

Number of pages, including cover sheet: 7

PLEASE DELIVER THIS FAX TO MR. SQUITIERI WHEN HE ARRIVES AT YOUR HOTEL ON
SUNDAY, NOVEMBER 27. THANK YOU.

EXECUTIVE OFFICE OF THE PRESIDENT

COUNCIL OF ECONOMIC ADVISERS
17TH AND PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20500



THE OLD EXECUTIVE OFFICE BUILDING

RAYMOND SQUITIERI (Guest)
TO: c/o HotelRathauspark

OFFICE: Rathausstrasse 17,
A-1010 Vienna

FAX NUMBER:

TEL NUMBER:

9-011-43-1-40-412-761

9-011-43-1-40-412

FROM: JOSEPH E. STIGLITZ

FAX NUMBER: 202-395-6958

TEL NUMBER: 202-395-5036

ROOM: 314, OEOB

NO. OF PAGES (inc cover) 1

DATE: November 25, 1994

SUBJECT: CANCELLATION OF MY TRIP TO VIENNA

MESSAGE:

Due to unexpected WH meetings next week, I've decided to cancel my trip
to Vienna. I will be sending you several pages of comments on the policy
summary. Please express my regrets to all concern, and I will talk with
you later.

Joe

EXECUTIVE OFFICE OF THE PRESIDENT

COUNCIL OF ECONOMIC ADVISERS
17TH AND PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20500



THE OLD EXECUTIVE OFFICE BUILDING

ATTENTION: Hdn. Herr Roll
TO: Hotel Rathauspark

OFFICE: Rathausstrasse 17,
A-1010 Vienna

FAX NUMBER:

TEL NUMBER:

9-011-43-1-40=412-761

9-011-43-1-40-412

FROM: Joseph E. Stiglitz

FAX NUMBER: 202-395-6958

TEL NUMBER: 202-395-5036

ROOM: 314, OEOB

NO. OF PAGES (inc cover) 1

DATE: November 25, 1994

SUBJECT: CANCEL HOTEL RESERVATIONS--Nights of 11/29 - 12/1

MESSAGE:

Due to unavoidable circumstances, I must now cancel my hotel reservations for the nights of November 29 and 30. Also cancel my request for a roll-away bed in the room for the night 11/30.

Thank you for your assistance.

Joseph Stiglitz



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

MEMORANDUM

TO: Working Group III Bureau and Lead Authors
 FROM: Erik Haites *EH Haites*
 RE: Lead Authors Meeting at IIASA (Vienna)
 DATE: November 7, 1994

REMINDER NOTICE!!

9-6pm each day
 As you know a Working Group III Lead Authors meeting has been scheduled for November 28 to 30 at IIASA in Laxenburg just outside Vienna. *20-30 Nov 94 to Laxenburg*

The meeting will deal with the comments received through the peer review. The revised chapters will need to be ready by the end of December, so it is important to deal with the peer review comments as quickly as possible. We also plan to discuss possible journal publication of articles based on the material in the report.

IIASA has negotiated special rates at the following hotels:

Hotel Rathauspark
 Rathausstrasse 17, A-1010 Vienna
 Tel: 43 1 40 412
 Fax: 43 1 40 412 761
 Attn: Hdn. Herr Roll
 Rate: AS 930 (approx. US \$85) single

Hotel Bellevue
 Althanstrasse 5, A-1000 Vienna
 Tel: 43 1 313 48
 Fax: 43 1 348 801
 Attn: Hdn. Frau Zimmermann
 Rate: AS 520 (approx. US \$50) single

IIASA will charter a bus to pick up participants at Hotel Bellevue first and then Hotel Rathauspark. These are the same hotels that will be used for the Energy Modelling Forum meeting immediately after our Lead Authors meeting.

F938005.7memo.509

Post-It™ Fax Note 7671E		Date	Nov. 7	# of pages	1
To	Dr. Joseph Hignitz		From	Erik Haites	
Co./Dept.			Co.		
Phone #			Phone #		
Fax #	(202) 395 6958		Fax #		



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

MEMORANDUM

*cc: S/K
Rays*

TO: Working Group III Bureau and Lead Authors
FROM: Erik Haites *Eik*
RE: Lead Authors Meeting at IIASA (Vienna)
DATE: October 10, 1994

As you know a Working Group III Lead Authors meeting has been scheduled for November 28 to 30 at IIASA in Laxenburg just outside Vienna.

The meeting will deal with the comments received through the peer review. There may be a few general comments we will wish to discuss in plenary session, but we expect that writing teams will meet separately for most of each day to deal with comments related to their particular chapter. The revised chapters will need to be ready by the end of December, so it is important to deal with the peer review comments as quickly as possible.

We also plan to discuss possible journal publication of articles based on the material in the report.

IIASA has negotiated special rates at the following hotels:

Hotel Rathauspark
Rathaustasse 17, A-1010 Vienna
Tel: 43 1 40 412
Fax: 43 1 40 412 761
Attn: Hdn. Herr Roll
Rate: AS 930 (approx. US \$85) single

Hotel Bellevue
Althanstrasse 5, A-1000 Vienna
Tel: 43 1 313 48
Fax: 43 1 348 801
Attn: Hdn. Frau Zimmermann
Rate: AS 520 (approx. US \$50) single

IIASA will charter a bus to pick up participants at Hotel Bellevue first and then Hotel Rathauspark. These are the same hotels that will be used for the Energy Modelling Forum meeting immediately after our Lead Authors meeting.

Post-it™ Fax Note	7671E	Date	# of pages
To	<i>Dr. Shogitz</i>	From	
Co./Dept.		Co.	
Phone #		Phone #	
Fax #		Fax #	

NOV 07 1994 11:55 HOTEL RATHAUSPARK WIEN 40412/761
CEA

202 395 6958 P.001.001

EXECUTIVE OFFICE OF THE PRESIDENT

COUNCIL OF ECONOMIC ADVISERS
17TH AND PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20500



THE OLD EXECUTIVE OFFICE BUILDING

ATTENTION: Hdn. Herr Roll
TO: Hotel Rathauspark

OFFICE: Rathausstrasse 17,
A-1010 Vienna

FAX NUMBER:

9-011-43-1-40-412-761

TEL NUMBER:

9-011-43-1-40-412

FROM: Lisa Branch, Executive Assistant to Dr. Stiglitz

FAX NUMBER: 202-395-6958

TEL NUMBER: 202-395-5036

ROOM: 314, DEOB

NO. OF PAGES (inc cover) 1

DATE: November 4, 1994

HOTEL RATHAUSPARK
RATHAUSSTRASSE 17

SUBJECT: Hotel Accommodations for Dr. Joseph E. Stiglitz, CEA Member, WIEN

TELEFON (0222) 404 12-0 SERIE

MESSAGE:

Dr. Joseph E. Stiglitz will be participating in IIASA Working Group III Lead
~~Authors meeting in Vienna, 11/29-30/94. The IIASA organizers has informed~~
our office that they arranged with your hotel a block of rooms for meeting
~~participants at a special rate of AS 930 (approx. US \$85). This notice is to~~
request a reservation for Dr. Stiglitz for the nights of November 29 and 30,
~~checking out on Thursday, December 1. Dr. Stiglitz will arrive Vienna at~~
9:20 a.m. on 11/29; therefore, I also request early arrival check-in.

Please respond quickly to confirm reservation and early arrival check-in. I
am reachable at the numbers mentioned above. Thank you.

Lisa Branch

Dear Sir,
I confirm your
reservation
Best regards
Doppe



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

MEMORANDUM

TO: Working Group III Bureau and Lead Authors
FROM: Erik Haites *Eik*
RE: Lead Authors Meeting at IIASA (Vienna)
DATE: October 10, 1994

As you know a Working Group III Lead Authors meeting has been scheduled for November 28 to 30 at IIASA in Laxenburg just outside Vienna.

The meeting will deal with the comments received through the peer review. There may be a few general comments we will wish to discuss in plenary session, but we expect that writing teams will meet separately for most of each day to deal with comments related to their particular chapter. The revised chapters will need to be ready by the end of December, so it is important to deal with the peer review comments as quickly as possible.

We also plan to discuss possible journal publication of articles based on the material in the report.

IIASA has negotiated special rates at the following hotels:

✓ Hotel Rathauspark
Rathaustasse 17, A-1010 Vienna
Tel: 43 1 40 412
Fax: 43 1 40 412 761
Attn: Hdn. Herr Roll
Rate: AS 930 (approx. US \$85) single

Hotel Bellevue
Althanstrasse 5, A-1000 Vienna
Tel: 43 1 313 48
Fax: 43 1 348 801
Attn: Hdn. Frau Zimmermann
Rate: AS 520 (approx. US \$50) single

IIASA will charter a bus to pick up participants at Hotel Bellevue first and then Hotel Rathauspark. These are the same hotels that will be used for the Energy Modelling Forum meeting immediately after our Lead Authors meeting.

Post-it™ Fax Note	7671E	Date	# of pages
To	Dr. Stiglitz	From	
Co./Dept.		Co.	
Phone #		Phone #	
Fax #		Fax #	

Withdrawal/Redaction Marker

Clinton Library

DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
--------------------------	---------------	------	-------------

001. fax	To Hotel Rathauspark from Joseph Stiglitz, re: Request (response) (1 page)	11/15/1994	Personal Misfile
----------	--	------------	------------------

COLLECTION:

Clinton Presidential Records
Council of Economic Advisers
Stiglitz, Joseph
OA/Box Number: 9555

FOLDER TITLE:

IPCC [Intergovernmental Panel on Climate Change] Workign Group III Lead Authors
Meeting Vienna, Austria November 1994

2017-1095-F
bg243

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P1 National Security Classified Information [(a)(1) of the PRA]
P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P3 Release would violate a Federal statute [(a)(3) of the PRA]
P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).

RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

b(1) National security classified information [(b)(1) of the FOIA]
b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

1) Double room rate
\$130 ^(approx.) per night

2) Single room con-
taining normal
size bed (1 meter x
90 centimeters) w/
chair

Withdrawal/Redaction Marker

Clinton Library

DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
002. fax	To Hotel Rathauspark from Joseph Stiglitz, re: Request (original) (1 page)	11/15/1994	Personal Misfile

COLLECTION:

Clinton Presidential Records
Council of Economic Advisers
Stiglitz, Joseph
OA/Box Number: 9555

FOLDER TITLE:

IPCC [Intergovernmental Panel on Climate Change] Working Group III Lead Authors
Meeting Vienna, Austria November 1994

2017-1095-F
bg243

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P1 National Security Classified Information [(a)(1) of the PRA]
- P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
- P3 Release would violate a Federal statute [(a)(3) of the PRA]
- P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).

RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

- b(1) National security classified information [(b)(1) of the FOIA]
- b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
- b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
- b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
- b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
- b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

From: Sally M. Kane (KANE_S)
To: Stiglitz J
Date: Monday, November 21, 1994 11:33 am
Subject: SES and IPCC Travel

SES DEADLINES HAVE BEEN MET, SCHEDULE FOR MEETING FUTURE DEADLINES IS CONTAINED IN BRIEFING PAPER (LISA HAS THE PAPER).

IPCC and EMF meetings next week in Vienna.

Your travel: We are still waiting to hear from NASA.

My plans: As we discussed, I have made tentative plans to attend both meetings and have funding from NOAA. Is there staff assistance that you would like for the IPCC efforts??? I would like to participate in the discussions on the focus of the SCOPE chapter and the tone/content of the executive summary and policy makers summary. I do not believe there is a problem if Ray is also planning to attend, based on conversations with E. Haites.

COMMENTS THUS FAR ON SCOPE CHAPTER ARE BEING SENT TO US BY COURIER TODAY, AT OUR REQUEST.

IPCC WGIII meeting plan: brief overview of comments that pertain the report and workplan for the meeting will be covered Monday morning. All work will be done at IIASA facilities. I have inquired about transportation to IIASA mid-day. As far as I can tell, bus service is being provided twice a day: drop off in the morning and retrieval in the afternoon. You should go directly to

CC: Branch_L

IIASA from the airport. The taxi fare is \$20. No bus service is provided mid-day.

SALES PERSON: 50
CUSTOMER NBR: 1695000020

ITINERARY
QBMYAE

DATE: 18 NOV 94
PAGE: 01

TO: WHITE HOUSE TRAVEL
1600 PENNSYLVANIA AVE
WASH DC 20500

FOR: STIGLITZ/JOSEPH

28 NOV 94 - MONDAY

AIR TRANS WORLD AIRLINES FLT:7748 COACH
WASHINGTON NATL-NEW YORK JFK OPERATED BY TRANS WORLD EXP
LV WASHINGTON NATL 1635 EQP: DASH 7 TPROP
AR NEW YORK JFK 1750 NON-STOP
STIGLITZ/JOSEPH SEAT-4B TW-14967761
AIR TRANS WORLD AIRLINES FLT:762 BUSINESS
LV NEW YORK JFK 1905 EQP: BOEING 767
DINNER

29 NOV 94 - TUESDAY

AR VIENNA 0920 NON-STOP
STIGLITZ/JOSEPH SEAT-28 TW-14967761

01 DEC 94 - THURSDAY

AIR DELTA AIR LINES INC FLT:501 BUSINESS LUNCH
VIENNA-NEW YORK JFK OPERATED BY AUSTRIAN AIRLINES
LV VIENNA 1135 EQP: AIRBUS A310
AR NEW YORK JFK 1530 NON-STOP
STIGLITZ/JOSEPH SEAT-3J
AIR DELTA AIR LINES INC FLT:4631 COACH
NEW YORK JFK-WASHINGTON NATL OPERATED BY BUSINESS EXPRESS
LV NEW YORK JFK 1700 EQP: SAAB 340 TPROP
AR WASHINGTON NATL 1825 NON-STOP
STIGLITZ/JOSEPH SEAT-12B

CONTINUED ON PAGE 2

The Castle in LAXENBURG

International
Institute of
Applied Systems
Analysis

LAXENBURG, AUSTRIA



SALES PERSON: 50
CUSTOMER NBR: 1695000020

ITINERARY
QBMYAE

DATE: 18 NOV 94
PAGE: 02

TO: WHITE HOUSE TRAVEL
1600 PENNSYLVANIA AVE
WASH DC 20500

FOR: STIGLITZ/JOSEPH

TICKET TOTALS USD1370.65-

PLEASE RECONFIRM ALL FLIGHTS 72 HOURS IN ADVANCE
INTL FLIGHTS REQUIRE AT LEAST 2 HR ADVANCE CHECK IN

FOR AFTER HOUR EMERGENCIES
CALL 800-847-0242/YOUR HOTLINE CODE IS S-KC52

.....
.....REMINDER.....
ALL FREQUENT FLYER BENEFITS EARNED ON OFFICIAL TRAVEL
ARE THE SOLE PROPERTY OF THE U.S. GOVERNMENT AND CANNOT
BE REDEEMED FOR PERSONAL USE.

.....
ALL UNUSED TICKETS ARE TO BE RETURNED TO AMERICAN
EXPRESS OR YOUR TRAVEL COORDINATOR IMMEDIATELY UPON
RETURN FROM TRAVEL OR WHEN TRIP HAS BEEN CANCELED.

.....
THANK YOU FOR TRAVELING WITH AMERICAN EXPRESS.
UG-MK15,1

SALES PERSON: 50
CUSTOMER NBR: 1695000020

ITINERARY
QEMYAE

DATE: 05 OCT 94
PAGE: 01

TO: WHITE HOUSE TRAVEL
1600 PENNSYLVANIA AVE
WASH DC 20500

11/28-12/1

FOR: STIGLITZ/JOSEPH

28 NOV 94 - MONDAY

AIR TRANS WORLD AIRLINES FLT:7748 COACH
WASHINGTON NATL-NEW YORK JFK OPERATED BY TRANS WORLD EXP
LV WASHINGTON NATL 435P EQP: DASH 7 TPROP
AR NEW YORK JFK 550P NON-STOP
AIR TRANS WORLD AIRLINES FLT:762 BUSINESS
LV NEW YORK JFK 705P EQP: BOEING 767

29 NOV 94 - TUESDAY

AR VIENNA 920A NON-STOP

01 DEC 94 - THURSDAY

AIR DELTA AIR LINES INC FLT:501 BUSINESS LUNCH
VIENNA-NEW YORK JFK OPERATED BY AUSTRIAN AIRLINES
LV VIENNA 1135A EQP: AIRBUS A310
AR NEW YORK JFK 330P NON-STOP
STIGLITZ/JOSEPH SEAT-3J
AIR DELTA AIR LINES INC FLT:1597 COACH
LV NEW YORK JFK 540P EQP: MD-80
AR WASHINGTON NATL 700P NON-STOP
STIGLITZ/JOSEPH SEAT-16D

TWA on Thurs, 12/1

. TOTAL AIR FARE USD 1384.00
FOR AFTER HOUR EMERGENCIES
CALL 800-847-0242/YOUR HOTLINE CODE IS S-KC52

.....REMINDER.....
ALL FREQUENT FLYER BENEFITS EARNED ON OFFICIAL TRAVEL
ARE THE SOLE PROPERTY OF THE U.S. GOVERNMENT AND CANNOT
BE REDEEMED FOR PERSONAL USE.

.....
ALL UNUSED TICKETS ARE TO BE RETURNED TO AMERICAN
EXPRESS OR YOUR TRAVEL COORDINATOR IMMEDIATELY UPON
RETURN FROM TRAVEL OR WHEN TRIP HAS BEEN CANCELED.

.....
THANK YOU FOR TRAVELING WITH AMERICAN EXPRESS.

LV 11:10
AR 2:50 JFK
LV 4:20
AR 5:30 NATL

TO Vienna
TWA does not fly
out on Tues, Thurs, Sat
from Vienna
no flights on Wed,
Fri, Sun.

Plane 767
wonder how

5OCT94 10:57 FROM 62029160 3182543M TO 2023956958

VIA AT&T EASYLINK

PAGE 1 OF 2

✓ EASYLINK 3182543M001 5OCT94 10:57/10:57 EST
FROM: 62029160
AMERICAN EXPRESS TRAVEL
TO: 2023956958

SALES PERSON: 50
CUSTOMER NBR: 1695000020

ITINERARY
DUPLICATE QBMAYE

DATE: 18 NOV 94
PAGE: 01

TO: WHITE HOUSE TRAVEL
1600 PENNSYLVANIA AVE
WASH DC 20500

FOR: STIGLITZ/JOSEPH

28 NOV 94 - MONDAY

AIR TRANS WORLD AIRLINES FLT:7748 COACH
WASHINGTON NATL-NEW YORK JFK OPERATED BY TRANS WORLD EXP
LV WASHINGTON NATL 435P EQP: DASH 7 TPROP
AR NEW YORK JFK 550P NON-STOP
STIGLITZ/JOSEPH SEAT-4B TW-14967761
AIR TRANS WORLD AIRLINES FLT:762 BUSINESS
LV NEW YORK JFK 705P DINNER
EQP: BOEING 767

29 NOV 94 - TUESDAY

AR VIENNA 920A NON-STOP
STIGLITZ/JOSEPH SEAT-2B TW-14967761

01 DEC 94 - THURSDAY

AIR TRANS WORLD AIRLINES FLT:763 BUSINESS LUNCH
LV VIENNA 1110A EQP: BOEING 767
AR NEW YORK JFK 250P NON-STOP
STIGLITZ/JOSEPH SEAT-21 TW-14967761
AIR TRANS WORLD AIRLINES FLT:537 COACH
LV NEW YORK JFK 420P EQP: 727 STRETCH
AR WASHINGTON NATL 539P NON-STOP
STIGLITZ/JOSEPH SEAT-12A TW-14967761

AIR DELTA AIR LINES INC FLT:501 BUSINESS LUNCH
VIENNA-NEW YORK JFK OPERATED BY AUSTRIAN AIRLINES
LV VIENNA 1135A EQP: AIRBUS A310
AR NEW YORK JFK 330P NON-STOP
STIGLITZ/JOSEPH SEAT-3J
AIR DELTA AIR LINES INC FLT:4631 COACH
NEW YORK JFK-WASHINGTON NATL OPERATED BY BUSINESS EXPRESS
LV NEW YORK JFK 500P EQP: SAAB 340 TPROP
AR WASHINGTON NATL 625P NON-STOP
STIGLITZ/JOSEPH SEAT-12B

28 MAY 95 - SUNDAY

OTHER WASHINGTON

*7/11 must pay
without to use own
contract carrier and CEA
will pay commercial but
not cost.*

RT: \$2302.65

\$680.60

CONTINUED ON PAGE 2

18NOV94 15:12 FROM 62029160 8157889M TO 2023956958

VIA AT&T EASYLINK

PAGE 1 OF 3

EASYLINK 8157889M001 18NOV94 15:12/15:12 EST

FROM: 62029160

AMERICAN EXPRESS TRAVEL

TO: 2023956958

From: Lisa D. Branch (BRANCH_L)
To: KANE_S
Date: Thursday, November 3, 1994 10:53 am
Subject: Vienna trip - WGIII -Reply

I talked to Joe this morning re funding of his travel to Vienna. And he says he definitely wants you to pursue NASA funding his travel. Of course, it's better when another agency pays than CEA.

Presently his plans are to arrive Vienna Tues, 11/29, and return to U.S. on Thurs, 12/1.

Thanks for the suggestion and keep me posted.

From: Sally M. Kane (KANE_S)
To: Stiglitz_J
Date: Wednesday, November 2, 1994 3:25 pm
Subject: Vienna trip - WGIII

I have requested money from NASA for your trip to the lead authors meeting. The WG meets November 28-30th at IIASA and hotel rooms are being held at two hotels for participants. Reservations need to be made directly with the hotel. We should hear back shortly from NASA. WHAT DAYS ARE YOU PLANNING TO LEAVE AND RETURN??

I will be attending the EMF meeting in Vienna (dates directly following the lead author meeting) and had planned on staying on for the WGIII lead authors meeting. WOULD YOU LIKE ME TO STAY FOR THE WGIII MEETING???

To prepare for the meeting, I am having a notebook prepared for you. We should take extra pains to review the executive summary and policy makers summary and bring comments/edits to the meeting. The two sections always get the widest circulation and are of the greatest interest to the negotiating community. I will have comments for you on these sections 10 days prior to the meeting. I also plan to send comments on the draft report to Canada the week of the 25th as part of the review process.

I will schedule a meeting with you to discuss any further preparations.

CC: Branch_L



MEMBER

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

Via fax

November 10, 1994

Dear Jose:

Thank you for your suggestions on the previous draft of the Scope chapter. I hope the most recent version does justice to your views. In Vienna, Erik Haites will distribute to us comments received from outside reviewers who now have the document. If you have further suggestions, I would like the chance to incorporate them before the Vienna meeting. Please send me any further suggestions you may have on the current Scope chapter by Monday, November 21.

I hope you will be able to attend the meeting in Vienna, and I look forward to seeing you there.

Sincerely,


Joseph E. Stiglitz

Professor Jose Goldemberg
Universidade de Sao Paulo
Instituto de Eletrotecnica e Energia
Av. Prof. Almedia Prado, 925
CEP 05508-900, Brazil
SOUTH AMERICA



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

November 10, 1994

Dear Dr. Xie:

Thank you for your suggestions on the previous draft of the Scope chapter. I hope the most recent version does justice to your views. In Vienna, Erik Haites will distribute to us comments received from outside reviewers who now have the document. If you have further suggestions, I would like the chance to incorporate them before the Vienna meeting. Please send me any further suggestions you may have on the current Scope chapter by Monday, November 21.

I hope you will be able to attend the meeting in Vienna, and I look forward to seeing you there.

Sincerely,

Joseph E. Stiglitz

Dr. Shaoxiong Xie,
Senior Engineer
Ministry of Power Industry
137 Fuyou Street
Beijing 100031
PEOPLE'S REPUBLIC OF CHINA



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

November 10, 1994

Dear ~~Mrs.~~ ^{Ruby} Saha:

Thank you for your suggestions on the previous draft of the Scope chapter. I hope the most recent version does justice to your views. In Vienna, Erik Haites will distribute to us comments received from outside reviewers who now have the document. If you have further suggestions, I would like the chance to incorporate them before the Vienna meeting. Please send me any further suggestions you may have on the current Scope chapter by Monday, November 21.

I hope you will be able to attend the meeting in Vienna, and I look forward to seeing you there.

Sincerely,

Joseph E. Stiglitz

Mrs. Vijaya Lakshmi (Ruby) Saha
Ministry of Housing, Land, Town
and Country Planning
Edith Cavell Street
Port Louis, Mauritius



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

November 10, 1994

Dear Professor Amano:

Thank you for your suggestions on the previous draft of the Scope chapter. I hope the most recent version does justice to your views. In Vienna, Erik Haites will distribute to us comments received from outside reviewers who now have the document. If you have further suggestions, I would like the chance to incorporate them before the Vienna meeting. Please send me any further suggestions you may have on the current Scope chapter by Monday, November 21.

I hope you will be able to attend the meeting in Vienna, and I look forward to seeing you there.

Sincerely,

A handwritten signature in dark ink, appearing to be 'JES', written over a diagonal line.

Joseph E. Stiglitz

Professor Akihiro Amano
School of Business Administration
Kobe University
2 Rokko dai, Nada
Kobe 657
JAPAN

***** -JOURNAL- ***** DATE NOV-08-1990 ***** TIME 19:28 *****

NO.	COM	PAGES	FILE	DURATION	X/R	IDENTIFICATION	DATE	TIME	DIAGNOSTIC
29	OK	002/002	083	00:00'47	XMT	AFX NEWS	NOV-08	10:48	842496307820
30	OK	002/002	083	00:00'58	XMT	BNA	NOV-08	10:49	84044AAC2800
31	OK	002/002	083	00:01'05	XMT	BONDWEEK	NOV-08	10:50	800446A02800
32	OK	002/002	083	00:00'52	XMT	BLOOMBERG	NOV-08	10:56	840456307820
01	OK	002		00:01'21	RCV	EOP OASIS FAX	NOV-08	11:00	050246202800
02	OK	001		00:02'15	RCV	PLEASE DELIVER TO:	NOV-08	11:03	050246401800
03	OK	002/002	086	00:00'47	XMT T	92931085	NOV-08	11:13	802496307820
04	OK	002/002	087	00:00'40	XMT T	97752476	NOV-08	11:14	84045A3C7820
05	OK	002/002	088	00:00'37	XMT T	97836093	NOV-08	11:27	84249A3C7820
06	OK	002		00:02'01	RCV	USDOC-ESA	NOV-08	11:39	050246401800
07	OK	005		00:01'40	RCV	GROUP3	NOV-08	12:14	01025A3C7820
08	OK	001/001	091	00:00'35	XMT T	93931256	NOV-08	12:50	840446A02800
09	OK	005		00:04'28	RCV	703-684-6860	NOV-08	13:14	050246202800
10	OK	002/002	093	00:00'37	XMT	JANE HANNAWAY	NOV-08	14:24	84045A3C7820
11	OK	002		00:01'22	RCV	EOP OASIS FAX	NOV-08	14:34	050246202800
12	OK	001		00:01'13	RCV	9 202 6221294	NOV-08	15:47	050246A02800
13	OK	006		00:03'09	RCV	EOP OASIS FAX	NOV-08	16:18	050246202800
14	OK	002		00:01'21	RCV	EOP OASIS FAX	NOV-08	16:29	050246202800
15	OK	007		00:04'15	RCV	202 482 0325	NOV-08	16:59	05025A3C7820
16	420	000		00:00'36	RCV	-----	NOV-08	17:51	010200000000
17	OK	004		00:02'47	RCV	GROUP3	NOV-08	17:55	010256507820
18	OK	003		00:02'56	RCV	2026264166	NOV-08	18:01	0502583C7820
19	OK	006		00:03'08	RCV	2024562878	NOV-08	18:11	050246A02800
20	OK	012/012	102	00:05'56	XMT T	913128220116	NOV-08	18:16	840446207800
21	OK	007/007	103	00:03'27	XMT T	913128220116	NOV-08	18:25	840446207800
22	OK	003		00:01'55	RCV		NOV-08	18:31	050246202800
23	OK	003		00:01'31	RCV	GROUP3	NOV-08	18:42	01025A5C7820
24	OK	002/002	107	00:01'15	XMT T	90118613487334	NOV-08	19:14	840446200800
25	OK	002/002	106	00:01'00	XMT T	66704	NOV-08	19:15	840456307820
26	OK	002/002	108	00:01'35	XMT T	901155118185031	NOV-08	19:17	840442A00800
27	OK	002/002	109	00:01'16	XMT T	90112302124240	NOV-08	19:19	840446200800
28	OK	002/002	112	00:00'37	XMT T	901181788818100	NOV-08	19:21	84045A3C7820

-CEA

***** -202 395 6958 - ***** 202 395 6958- *****

NOV
11/10/94

Joe--

I suggest requesting that the other 3 lead authors send comments to you on the current draft of the Scope chapter by, say, Nov. 21. That will avoid a possible scene in Vienna. Below is a draft letter to Amano, Saha, and Xie. If OK, ask Lisa to prepare for your signature, then fax.

Dr. A. Amano
Ms. V. Saha
Mr. .. Xie

Joe Goldemberg

Dear colleagues:

Thank you for your suggestions on the previous draft of the Scope Chapter. I hope the most recent version does justice to your views. In Vienna, Eric Heides will distribute to us comments received from outside reviewers who now have the document. If you have further suggestions, I would like the chance to incorporate them before the Vienna meeting. Please send any further suggestions you may have on the current scope chapter by Monday November 21.

I hope you will be able to attend the meeting in Vienna, and look forward to seeing you there.

Sincerely,

Joseph E. Stiglitz
etc.

Ray

Post-It™ brand fax transmittal memo 7671		# of pages >
To	LISA BRANCH	From RAY SQUITIERI
Co.	CEA	Co. Treasury
Dept.	395-6958	Phone # 622-7340
Fax #		Fax #

H memo
9-011-81-78-881-8100

Hubby
011-230-212-4240

EXECUTIVE OFFICE OF THE PRESIDENT

COUNCIL OF ECONOMIC ADVISERS

WASHINGTON, D.C. 20500

PLEASE DELIVER IMMEDIATELY!

Date: November 10, 1994

Number of Pages (inc. cover) 2

TO	AGENCY	FAX#	OFFICE#
1. Dr. Shaoxiong Xie	Ministry of Power Industry	9-011-861-348-7334	
2.			
3. Jose Goldemberg	Universidade de Sao Paulo	9-011-55-11-818-5031	
4. Vijaya (Ruby) Saha	Ministry of Housing, Land, Town and Country Planning	9-011-230-212-4240	
5.			
6. Prof. Akihiro Amano	Kobe University, Japan	9-011-81-78-881-8100	
7.			
8.			
9.			
10.			

FROM: JOSEPH E. STIGLITZ/LISA BRANCH

Rm. 314, OEOB

Office #: 202-395-5036 Fax #: 202-395-6958

Remarks: Please return comments to the address mentioned below:

Council of Economic Advisers

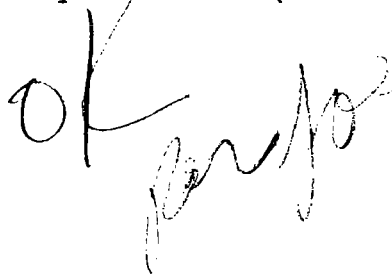
17th & Pennsylvania Avenue, NW, Rm. 314

Washington, DC 20500

From: Lisa D. Branch (BRANCH_L)
To: stiglitz_j
Date: Tuesday, November 1, 1994 5:27 pm
Subject: Phone message from Ray Squitieri, 622-2340

☐ [*] Telephoned	☐ [*] Please call
☐ [] Will call again	☐ [] Returned your call
☐ [] Wants to see you	☐ [] Came to see you
☐ [] Urgent	

Called to let you know that he's holding airline reservations to lv for Vienna on Wed, 11/23 (before Thanksgiving), will not be in the ofc on Fri, 11/25. Therefore, he will not be around to review any of the IPCC papers if any come in on Fri (very doubtful). Is his departure plan ok with you? Please respond ASAP. He must purchase his tickets by tomorrow (and they are non-refundable).

A handwritten signature in black ink, appearing to be 'of [unclear]'.



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

cc: SK
RS

September 27, 1994

Dr. Joseph Stiglitz
Council of Economic Advisors
White House
315 Old Executive Office Building
Washington, D.C. 20500
U.S.A.

Dear Dr. Stiglitz:

The Working Group III Bureau yesterday reviewed the schedule for completion of its Second Assessment Report. This includes meetings of the Lead Authors on November 28 to 30 at IIASA (Vienna) and on March 13 to 15 at a location yet to be determined. *28-*

During the discussion, I raised your suggestion that the meetings be structured as two days of 12 to 15 hours, rather than three days of 8 hours. The Bureau felt that the number of comments, especially from peer review, could be quite large. Therefore, they decided to schedule the Lead Authors meeting for three days in case three 12 hours days are needed.

The Bureau appreciates the contribution of the Lead Authors and wishes to use their valuable time as efficiently as possible. We will make every effort to run productive meetings and to keep them as short as possible.

Sincerely yours,

Erik F. Haites
Head, Technical Support Unit
IPCC, WG III

EFH:II

P938005.7/br.140



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

MEMORANDUM

TO: Dr. Joseph Stiglitz
FROM: Erik Haites *EH*
RE: Suggested Schedule for Future Lead Authors Meetings
DATE: September 20, 1994

Thank you for your suggestion that we schedule future Lead Authors Meetings as 1 or 2 days of 12 to 15 hours per day rather than 3 days of 8 hours per day.

I will present your suggestion to the Bureau on Monday September 26 and send you a reply about a week later when I return from Geneva.



MEMBER

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D C. 20500

September 20, 1994

Dear Erik:

I thought the meeting in Geneva went very well.

Because it takes a full day to return from Vienna, it would be impossible for me to be away to attend a 3-day meeting. It would be far preferable if we had 1 or 2 days of 15-hour meetings than the leisurely pace we had in Geneva.

Please let me know soon your thoughts on this suggestion.

Best wishes,

Joseph E. Stiglitz

Erik Haites
Intergovernmental Panel on Climate Change
145 King Street West, Suite 1002
Toronto, Ontario M5H 3X6
CANADA



**EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS**

Date: September 20, 1994

Please deliver to: Erik Haites

FAX number of addressee: (416) 369-0922

Telephone number of addressee: (416) 369-0900

From: Joseph Stiglitz/Lisa Branch

FAX number of sender: 202- 395-6958

Telephone number of sender: 202- 395-5036

Number of pages, including cover sheet: 2



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA

Tel: (416) 369-0900 Fax: (416) 369-0922

MEMORANDUM

*cc: [signature]
SK*

TO: Working Group III Bureau and Lead Authors

FROM: Erik Haites *[signature]*

RE: Future Schedule

DATE: September 26, 1994

The draft chapters for peer review are **DUE IN TORONTO ON MONDAY, OCTOBER 3.**

Please use the following format: (1) Single spacing and (2) Line numbering on the left, all lines numbered, numbering begins anew on each page.

Please send me a print copy as well as an electronic copy.

As a result of suggestions received during the meeting in Geneva we propose:

- A meeting of ALL WORKING GROUP III LEAD AUTHORS on November 28 through 30 to address the peer review comments. The objective will be to do as much of the editing as possible during the meeting, so it is important that you plan to attend. We will hold this meeting in Vienna (at IIASA) for the convenience of Lead Authors who plan to attend the EMF 14 workshop beginning the next day.
- A meeting of ALL WORKING GROUP III LEAD AUTHORS on March 13 through 15, 1995 to address the government review comments. Again the objective will be to do as much of the editing as possible during the meeting. The location of this meeting has not yet been decided.

The presentation of the draft report for Nobel Laureates planned for October has been cancelled.

P938005.7uncmo.454

Post-It™ Fax Note	7671E	Date	# of pages
To	Joseph Stiglitz	From	Erik Haites
Co./Dept.		Co.	
Phone #		Phone #	
Fax #	(202) 395 6958	Fax #	(416) 369 0922

For Siobhan

9/28/94

TO: JOE
FR: LINDA ELLMAN

Best choice (w/connections and airfare)

British Airways connection--Vienna, London, JFK

12/22 departs Vienna @ 1pm
AR JFK @ 9:30pm on same day

Return--JFK, London, Vienna
1/1/95 departing JFK @ 7pm
Arriving Vienna 1/2 @ 12N

\$667.62 RT

Next best option:

RT TWA (nonstop) Vienna to JFK
12/22 departing 11:20am fm Vienna
AR JFK @ 3pm

1/1/95 Return--JFK to Vienna (nonstop)
LV 7:05am, AR Vienna 1/2 @ 9:20am

\$747.62 RT

MESSAGE: Check w/consolidators, not able to come up with a schedule that works or price that's any better.

Call back ASAP. 415 327 7030.

From: Lisa D. Branch (BRANCH_L)
To: kane_s
Date: Tuesday, September 20, 1994 11:52 am
Subject: Next IPCC Mtg in Nov in Vienna

Joe asked me to tell you that if you plan to accompany him to this meeting, you should now get on the ball and try to find travel funding from the other agencies, such as NOAA.

Let me know the outcome. Thanks.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

145 King Street West, Suite 1002, Toronto, Ontario M5H 3X6 CANADA
Tel: (416) 369-0900 Fax: (416) 369-0922

FACSIMILE TRANSMITTAL

Date: November 23, 1994

To: Dr. Sally Kane/ Dr. Joseph Stiglitz
Fax: (202) 395-6853

From: Lori Lawson for Dr. Erik Haites

This transmission consists of 1 page(s) including this cover page.
If there is a problem with this transmission, please call (416) 369-0900.

COMMENTS/MESSAGE:

Dr. Kane,

The taxi will cost approximately \$20 - 30 U.S. from the airport to IIASA — you should tell the driver that you want to go to Laxenburg.

Please call if you need anything.....

**UNIVERSIDADE DE SÃO PAULO
INSTITUTO DE ELETROTÉCNICA E ENERGIA**

**Av. Prof. Almeida Prado, 925
Cidade Universitária
05508-900 - São Paulo - SP - BRAZIL
Tel: 818-5053 / 818-5054
Fax: (55-11) 818-5031**

DATE: 11/21/94

NUMBER OF PAGES: 03

FROM: Professor José Goldemberg

TO: Joseph E. Stiglitz

FAX: (001-202)395-6958

MESSAGE:

For your information.

UNIVERSIDADE DE SÃO PAULO
INSTITUTO DE ELETROTÉCNICA E ENERGIA

Av. Prof. Almeida Prado, 925 - Cidade Universitaria

05508-900 - São Paulo - SP - BRAZIL

Tel: (55-11) 818-5053 / 818-5054

Fax: (55-11) 818-5031 / 818-5058

e-mail: goldemberg@nhi.lead.org.br

DATE: 11/21/94

NUMBER OF PAGES: 01

FROM: Prof. José Goldemberg

TO: Jyoti Parikh

FAX: (00-91-22) 840-2752

MESSAGE:

Dear Jyoti,

I received your comments on the "Scope of the Assessment" and passed them on to my colleagues in WGIII. Unfortunately I cannot attend the Meeting at IIASA but I think my views are well known to them.

My reaction to your note is the following:

one must separate physical realities from interpretation and our own wishes and I think your comments mixes them up.

REALITIES	MY INTERPRETATION OR WISHES
CO ₂ emissions have increased <u>only</u> 25% since last century at a time when the consequences of such increase were not clearly realized.	I don't think it is useful to call it a "muschiet", etc. Lots of other bad things were done in the past and there is no point in seeking compensations. What we can do is to look ahead.
What lies ahead is that the emissions of the industrialized countries are just about levelled off.	My own work - and of many others - indicates that they could even be decreased through the use of renewables, energy conservation, etc. The FCCC incorporates that vision not as clearly as I wished but the decision to reach in the year 2000 levels of 1990 taken by industrialized countries is a progress. I hope the Conference of the Parties will approve negotiations on a Protocol to reduce emissions by the year 2010 for Annex I Countries.

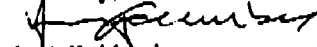
Emissions from LDC's will increase at least 3 or 4% per year due to population growth and development and in 50 years time will dominate completely the picture. Doubling of CO₂ concentrations in the atmosphere which climatologists fear will not be caused alone by the industrialized countries of today but mainly by the emissions of LDC's.

LDC's have heavy responsibilities now that the facts concerning climate change are better known. They will undoubtedly grow and develop but there is no reason for them to grow in an irrational way and at any cost. They have to incorporate early in the process of development modern technologies (i.e. "leapfrog" the old patterns of development) in order to supply to their people the services needed without severe environmental degradation (both local and global). Again here my own work - and many others - shows that it can be done.

What I conclude from all this is that.

1. It is in the self-interest of the developed countries to help them in such endeavour and they should contribute with money and technology.
2. LDC's should take part in the process by choosing the better technologies, etc trying to avoid the duplication of the ruinous path followed by the industrialized countries in the past*.
LDC's should not just ask for more ODA and "free-lunches" but participate actively in the process of avoiding climate change. This does not mean giving up development but choosing better routes to development

Sincerely,


José Goldenberg

P.S. - An example of what I think is not a good path is what China plans to do installing 100 coal power plants in the next 10 years to run obsolete refrigerators and other old fashioned end-use devices. Why don't they act on the demand side also?



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

November 23, 1994

Dear Ruby:

Thank you for your letter. I understand your broad concerns. We will try to have some draft language ready to discuss with you in Vienna.

I look forward to seeing you there. (I won't be arriving until Tuesday, November 29, but Ray will be coming Monday.)

With best wishes,

Joseph E. Stiglitz

Mrs. Vijaya Lakshmi (Ruby) Saha
Ministry of Housing, Land, Town
and Country Planning
Edith Cavell Street
Port Louis, Mauritius

PLEASE DELIVER IMMEDIATELY. THANK YOU!



**EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS**

Date: 11/23/94

Please deliver to: Mrs. Vijaya Lakshmi (Ruby) Saha
Ministry of Housing, Land, Town
and Country Planning
Port Louis, Mauritius

FAX number of addressee: 9-011-230-212-4240

Telephone number of addressee: _____

From: Joseph Stiglitz/Lisa Branch

FAX number of sender: 202- 395-6958

Telephone number of sender: 202- 395-5036

Number of pages, including cover sheet: 2



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

MEMBER

November 23, 1994

Dear Jyoti:

I understand the concerns you raised about Chapter 1. The approach we took paralleled the approach, I think, most economists would take in addressing the question of externalities and distributing the cost of financing public goods within a country.

I look forward to seeing you in Vienna next week, where I am sure we will discuss these questions further.

Sincerely,

Joseph E. Stiglitz

Jyoti Parikh
Universidade de Sao Paulo
Instituto de Eletrotecnica e Energia
Ave. Prof. Almeida Prado, 925 -
Cidade Universitaria
05508-900, Sao Paulo
BRAZIL

***** -JOURNAL- ***** DATE NOV-21-1990 ***** TIME 19:59 *****

DATE/TIME = NOV-21 19:52

JOURNAL NO. = 10

COMM.RESULT = OK

PAGES = 002/002

FILE NO. = 425

DURATION = 00:01'44

MODE = MEMORY XMT

STATION NAME =

TELEPHONE NO. = T 901155118185031

RECEIVED ID = 2107750

RESOLUTION = STANDARD

-CEA

***** -202 395 6958 - ***** - 202 395 6958- *****

PLEASE DELIVER IMMEDIATELY. THANK YOU.



**EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS**

Date: 11/23/94

Please deliver to: Jyoti Parikh
Universidade de Sao Paulo
Brazil

9-011-55-11-818-5031

FAX number of addressee: _____

Telephone number of addressee: _____

From: Joseph Stiglitz/Lisa Branch

FAX number of sender: 202- 395-6958

Telephone number of sender: 202- 395-5036

Number of pages, including cover sheet: 2

**UNIVERSIDADE DE SÃO PAULO
INSTITUTO DE ELETROTÉCNICA E ENERGIA**

Av. Prof. Almeida Prado, 925 - Cidade Universitária

05508-900 - São Paulo - SP - BRAZIL

Tel: (55-11) 818-5053 / 818-5054

Fax: (55-11) 818-5031 / 818-5056

e-mail: goldemberg@nhi.lead.org.br

DATE: 11/17/94

NUMBER OF PAGES: 01

FROM: Prof. José Goldemberg

TO: Joseph E. Stiglitz

FAX: (001-202) 395-6958

MESSAGE:

Dear Dr. Stiglitz,

Unfortunately I will not be able to attend the Vienna Meeting of WGIII later this month but understand you will be able to attend. Is that correct?

Yours,


José Goldemberg

TO: JOSE GOLDEMBERG

FROM: JOE STIGLITZ

DATE: November 17, 1994, 12:45pm

MESSAGE: Sorry to hear that you can't attend. I'll be there for 2 days, and Ray will be there for all three. Any issues that you would like me to raise? Joe

PRACTICAL INFORMATION

LOCAL CURRENCY

Austrian Schilling; 100 S = 8.20 US \$ = 7.35 Ecus (Jan. 94)

TOURIST INFORMATION

In **Vienna**: Österreich-Information, 1040 Wien, Margaretenstr. 1,
 ☎ (01) 5 87 20 00
 Niederösterreich-Information, 1010 Wien, Heidenschuß 2,
 ☎ (01) 5 33 31 14
 In **Salzburg**: Landesverkehrsamt, Sigmund-Haffner-Gasse 16,
 ☎ (0662) 80 42 23 27

AIRLINES

AUSTRIAN SWISSAIR: 1010 Wien, Kärtner Ring 18, ☎ (01) 505 57 57
AIR FRANCE: 1010 Wien, Kärtntner Str. 49, ☎ (01) 5 14 18 18
BRITISH AIRWAYS: 1010 Wien, Kärtntner Ring 10, ☎ (01) 505 76 91
DEUTSCHE LUFTHANSA: 1015 Wien, Kärtntner Str. 42, ☎ (01) 5 88 360
JAPAN AIRLINES: 1010 Wien, Stephansplatz 12, ☎ (01) 535 51 25

FOREIGN EXCHANGE

Hotels, restaurants and shops do not always accept foreign currencies and it is wise, therefore, to change money and cheques at the banks and exchange offices which are found in the larger stations, airports and at the frontier.

SHOPPING and BANK HOURS

Shops are open from 9am to 6pm, but often close for a lunch break. They are closed Saturday afternoon, Sunday and Bank Holidays (except the shops in railway stations). Branch offices of banks are open from Monday to Friday between 8am and 12 30pm (in Salzburg 12am) and from 1.30pm to 3pm (in Salzburg 2pm to 4.30pm), Thursday to 5.30pm (only in Vienna). In the index of street names those printed in red are where the principal shops are found.

BREAKDOWN SERVICE

ÖAMTC: See addresses in the text of Vienna and Salzburg
 ARBÖ: in Vienna: Mariahilfer Str. 180, ☎ (01) 891 21
 in Salzburg: Münchner Bundesstr. 9, ☎ (0662) 43 83 81
 In Austria the ÖAMTC (emergency number ☎ 120) and the ARBÖ
 (emergency number ☎ 123) make a special point of assisting foreign
 motorists. They have motor patrols covering main roads.

TIPPING

Service is generally included in hotel and restaurant bills. But in Austria, it is usual to give more than the expected tip in hotels, restaurants and cafés. Taxi-drivers, porters, barbers and theatre attendants also expect tips.

SPEED LIMITS

The speed limit in built up areas (indicated by place name signs at the beginning and end of such areas) is 50 km/h - 31 mph; on motorways 130 km/h - 80 mph and on all other roads 100 km/h - 62 mph.

SEAT BELTS

The wearing of seat belts in Austria is compulsory for drivers and all passengers.



Vienna

(WIEN) Austria 987 928 ... - pop. 1 500 000 - alt. 156 m - ☎ 01

HOFBURG*** FGY

Imperial Palace of the Habsburgs (Kaiserpalast der Habsburger) Swiss Court – Royal Chapel – Amalienhof – Stallburg – Leopold Wing – Ballhausplatz – Imperial Chancellery – Spanish Riding School – Neue Burg – Josefsplatz – Michaelerplatz – In der Burg – Capuchins Crypt – Church of the Augustinians Art Collections – Imperial Treasury*** – Imperial Apartments** – Austrian National Library (Great Hall** – Frescoes**) – Collection of Court Porcelain and Silver** – Collection of Arms and Armour** – Collection of Old Musical Instruments* – Albertina (Dürer Collection*) – Museum of Ephesian Sculpture (Reliefs of Ephesus**).

BUILDINGS AND MONUMENTS

St Stephen's Cathedral*** (Stephansdom) GY - Schönbrunn*** (Apartments***, Park***, Gloriette**, Coach Room**) AS - Upper and Lower Belvedere** (Oberes und Unteres Belvedere) (Terraced Gardens and Art Collections*) : and : Opera* (Staatsoper*) GY - Church of St Charles** (Karlskirche) : - Church of St Michael (Michaeler Kirche) GY - Church of the Minor Friars (Minoritenkirche) FY - Church of the Teutonic Order (Deutschordenskirche) (Altarpiece*, Treasure*) GY E - Church of the Jesuits (Jesuitenkirche) HY H - Church of Our Lady of the River Bank (Maria am Gestade) GX - Church of the Faithful Virgin (Maria Treuburg) AR - Mozart Memorial (Mozart-Gedenkstätte) G: F - Dreimäderlhaus : W - Pavillon Otto Wagner** GZ Q - Pavillon of the Secession* GZ S

STREETS, PLACES, PARKS

The Tour of the Ring* - The Old Town (Altstadt)* - Kärntner Straße : - Graben
(Plague Column) GY - Am Hof (Column to the Virgin) G - Herrengasse* : -
Maria-Theresien-Platz FY - Prater* (Giant Wheel, €*) W - Oberlaipark* : -
Donner Fountain (Donnerbrunnen)* GY Y - Heldenplatz : - Burggarten -
Volksgarten FY - Rathausplatz FY.

IMPORTANT MUSEUMS (Hofburg and Belvedere see above)

Museum of Fine Arts*** (Kunsthistorisches Museum) F : - Historical Museum
of the City of Vienna** (Historisches Museum der Stadt Wien) ... M6 - Austrian
Folklore Museum** (Österreichisches Museum für Volkskunde) ... M7 - Gallery
of Painting and Fine Arts* (Gemäldegalerie der Akademie der Bildenden Künste)
G2 M9 - Natural History Museum* (Naturhistorisches Museum) ... M1 - Birthplace
of Schubert (Schubert-Museum) BR M16 - Austrian Museum of Applied Arts*
(Österreichisches Museum für angewandte Kunst) H: M10 - Clock Museum
(Uhrenmuseum der Stadt Wien) GY M3.

EXCURSIONS

Danube Tower** (Donauturm) BR - Leopoldsberg €** AR - Kahlenberg €* AR
- Klosterneuburg Abbey (Stift Klosterneuburg) (Altarpiece by Nicolas of Verdun)*
AR - Grinzing* AR - Baden* AS - Vienna Woods* (Wienerwald) AS

Freudenau 65a, ☎ 2 18 95 64

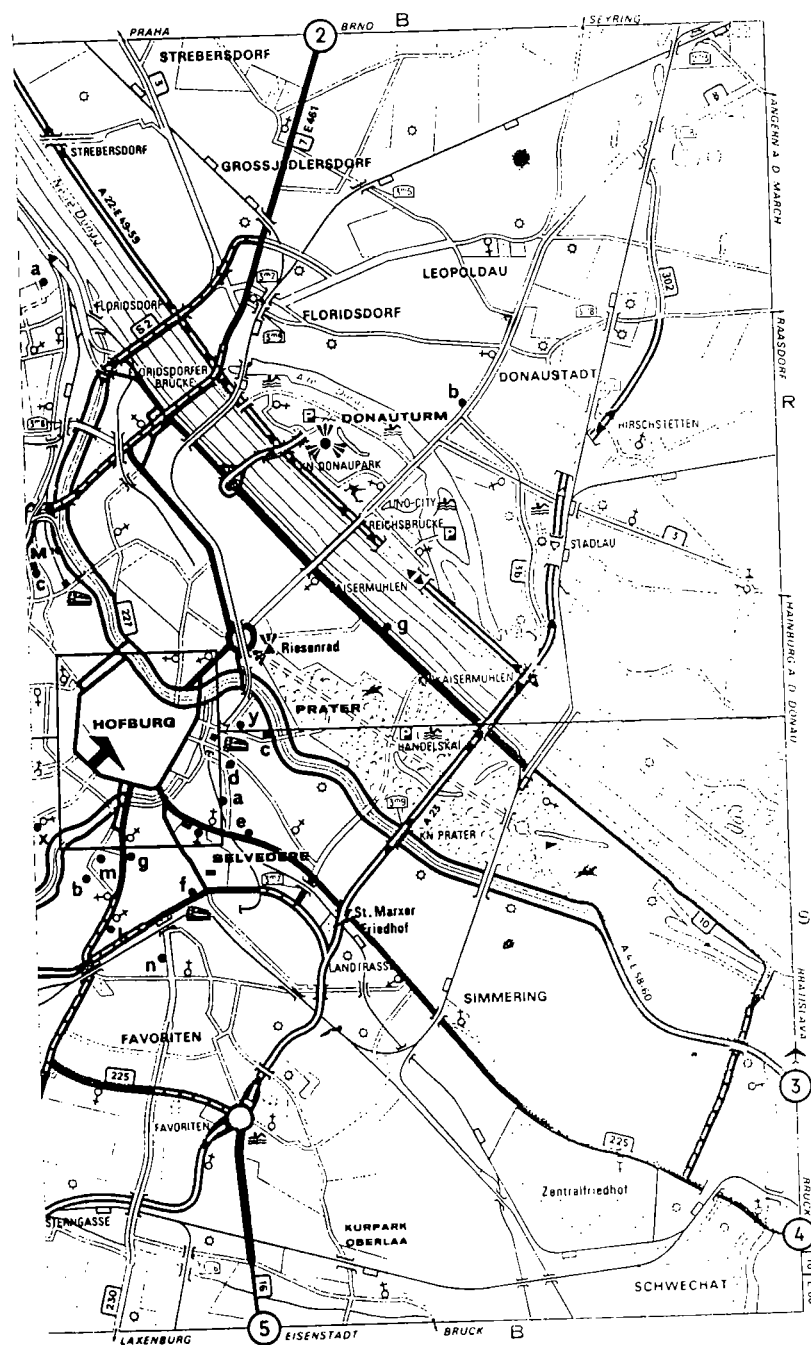
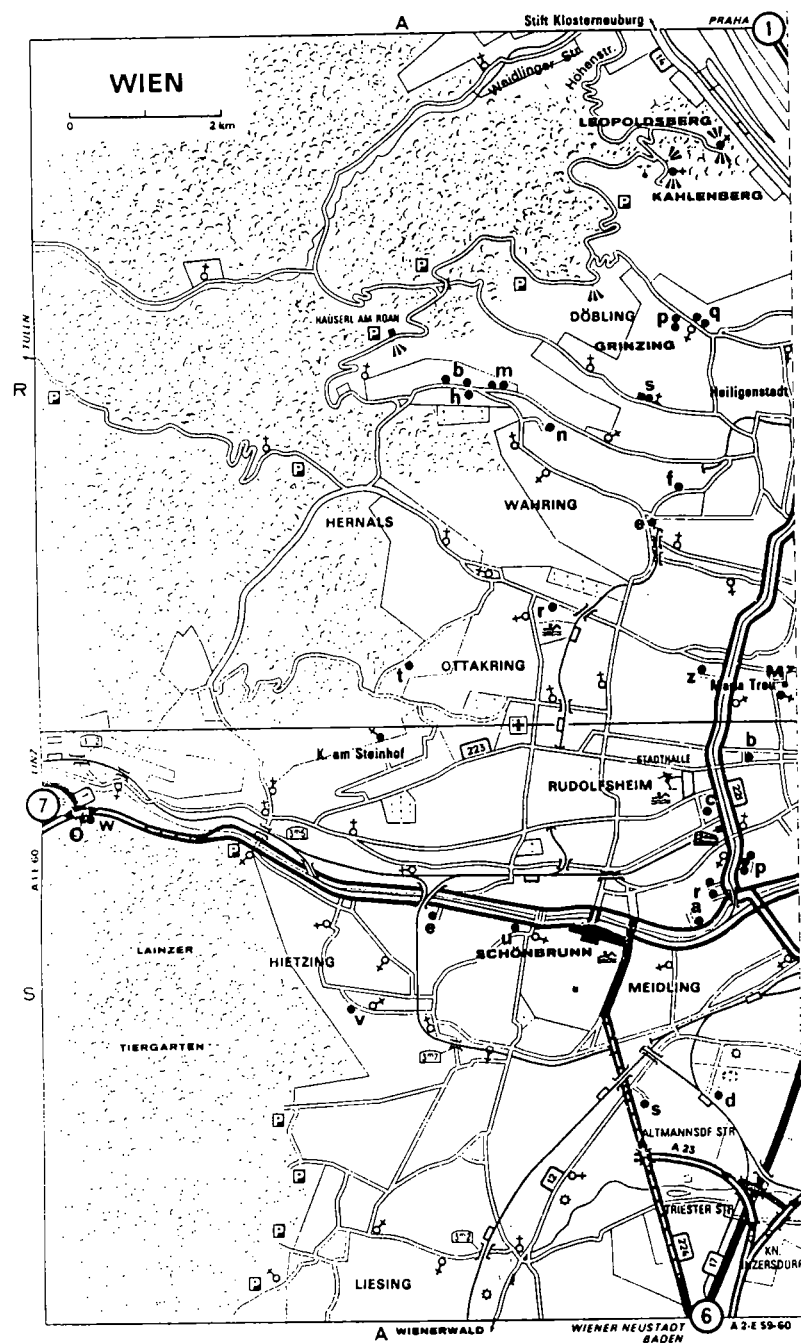
Wien-Schwechat by ③. 711 10 and 711 02 22 31. Air Terminal. at
Stadtpark (HY) 72 36 34

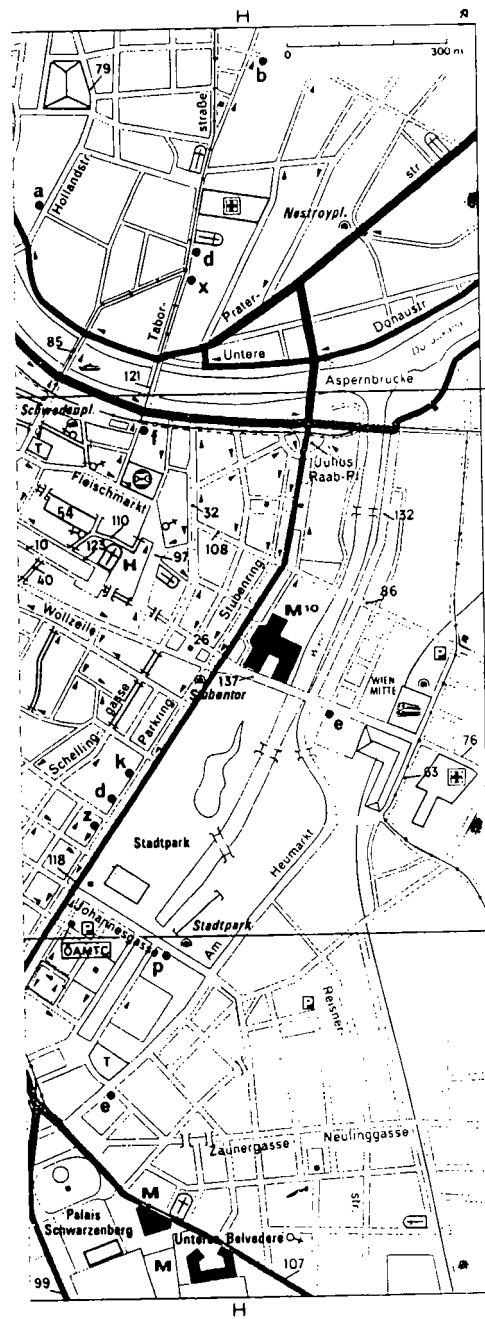
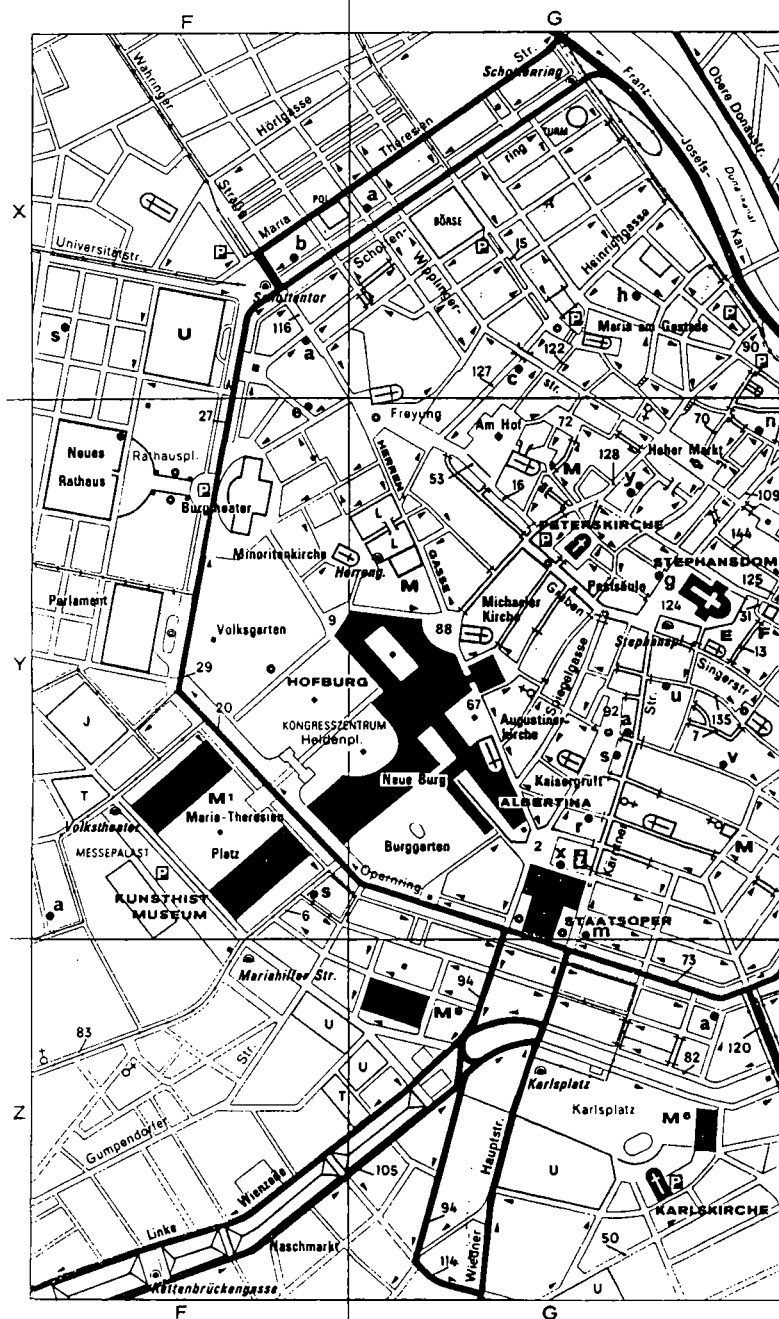
 58 00 29 89.

Exhibition Centre, Messeplatz 1. ☎ 521 20

Tourist-information. ☐ A-1010, Kartner Str. 38, ☎ 513 88 92 - OAMTC, ☐ A-1010 Schuberting 1, ☎ 71 19 90, Fax 7 13 18 07.

Budapest 208 (4) - München 435 (7) - Praha 292 (1) - Salzburg 292 (7) - Zagreb 362 (6)





WIEN

FY 0
GY
HY 76
FZ 83
GY 109
GY 124
GY 128
GY 134

Albertinaplatz GY 2
Ballgasse GY 7
Bailhausplatz FY 9
Backerstr. HY 10
Blutgasse GY 13
Borsegasse GX 15
Bogengasse GY 16
Burggasse FY 20
Dr. Karl Lueger-Platz HY 26
Dr. Karl Lueger-Ring FY 27
Dr. Renner-Ring FY 28
Domgasse GY 31
Dominikanerbastei HY 32
Essiggasse HY 40
Gutthausstr. GZ 40
Heidenschuß GY 53
Heiligenreutherstr. HY 54
Judenplatz GY 67
Judenplatz GY 70
Kärntner Ring GZ 73
Leopoldsgasse HX 78
Lohnungsstr. GZ 81
Marianngasse HX 85
Marianngasse HY 86
Michaelerplatz GY 88
Morzinplatz GX 90
Neuer Markt GY 92
Operngasse GZ 94
Postgasse HY 97
Prinz-Eugen-Str. HZ 99
Rathausplatz GZ 103
Rennweg HZ 107
Rosenbühlstr. HY 108
Schönbrunnstr. HY 110
Schloßmühlengasse GZ 114
Schottengasse FX 116
Schubertstr. HY 118
Schwarzenbergplatz GZ 120
Schwedenbrücke HX 121
Schwergasse GX 122
Sonnenberggasse HY 123
Stephansplatz GY 124
Stroßgasse GY 125
Tuchlauben GX 127
Tuchlauben HY 128
Währingergasse GY 134
Währingergasse GY 135

Write us.

If you have any comments on the contents of this guide, your praise as well as your criticisms will receive careful consideration and, with your assistance, we will be able to add to our stock of information and, where necessary, amend our judgments.

Thank you in advance!

Town Centre, city districts (Stadtbezirke) 1 - 9 :

- [illegible]

XXXX **Steirerack**, Rasumofskygasse 2 / Ecke Weißgerberlande, ☎ A-1030, ☎ 7 13 31 68, Fax 7135168 - **BS c**
closed Saturday, Sunday and Bank Holidays - **M** (remarkable wine list, visit of the wine-cellar possible) (booking essential) 390/(lunch) and a la carte 551/750
Spec. Kaninchen mit Artischocken in Honig-Thymian-Sauce, Rebhuhn mit Topinambur und Granatapfelsirup (season only). Warme Apfel-Mohntorte mit Preiselbeeren.

XXX **Drei Husaren**, Weinhurgasse 4, ☎ A-1010, ☎ 51 21 09 20, Fax 512109218 - **AE** **GY u**
closed mid July - mid August - **M** 435/(lunch) and a la carte 550/780
Spec. Gefüllter Bachsaibling mit Sauce Henriette (April - June). Das Beste vom Kalb mit getrüffeltm Kartoffelbraten (Sept. - Nov.). Lammsattel in der Thymiankruste.

XXX **Gottfried**, Untere Viaduktgasse 45/Marxergasse, ☎ A-1030, ☎ 7 13 82 56, Fax 713355130 - **AE** **BS y**
closed Saturday lunch and Bank Holidays, May - September closed Saturday and Sunday - **M** (booking essential) (remarkable wine list) 380/1000 and a la carte
Spec. Variationen von der Gänseleber, Steingarnelen mit Gemüseavioli in Oliven-Balsamvinaigrette, Geflammte Rehnusschen mit Pilzen, Linsen und Kartoffelbuchteln.

XXX **Grotta Azzurra** (Italian rest.), Babenberger Str. 5, ☎ A-1010, ☎ 5 86 10 44, Fax 586104415 - **AE** **FY s**
closed Sunday and mid July - mid August - **M** 270/(lunch) and a la carte 370/580.

XXX **Kupferdachl**, Schottengasse 7 (entrance Mölker Bastel), ☎ A-1010, ☎ 5 33 93 81, Fax 53393814 - **AE** **FX a**
closed Sunday and Bank Holidays - **M** (booking essential) a la carte 340/480.

XXX **Steirer Stub'n**, Wiedner Hauptstr. 111, ☎ A-1050, ☎ 55 43 49, Fax 550888 - **AE** **BS k**
closed Sunday and Bank Holidays - **M** (booking essential) a la carte 340/480.

XX **Schubertüberlin**, Schreyvogelgasse 4, ☎ A-1010, ☎ 5 33 71 87, Fax 5353546, **AE** **FX y**
closed Saturday, Sunday and 23 December - 6 January - **M** a la carte 358/565.

XX **Steinerne Eule**, Halbgasse 30, ☎ A-1070, ☎ 93 22 50, Fax 5233818, **AE** **AS b**
closed Sunday and Monday - **M** a la carte 360/550.

XX **Zum Kuckuck**, Himmelfortgasse 15, ☎ A-1010, ☎ 5 12 84 70, Fax 5233818 - **AE** **GY v**
closed Saturday and Sunday - **M** a la carte 350/570.

XX **Wiener Rathauskeller** (vaults with murals), Rathausplatz 1, ☎ A-1010, ☎ 4 21 21 90, Fax 42121927 - **FY**

XX **Salut**, Wildpretmarkt 3, ☎ A-1010, ☎ 5 33 13 22 - **AE** **GY y**
closed Sunday and Bank Holidays - **M** a la carte 370/520.

X **Leupold**, Schottengasse 7, ☎ A-1010, ☎ 5 33 93 81, Fax 5339381 - **AE** **FX a**
M a la carte 215/430

City districts (Stadtbezirke) 10 - 15.

Wien Renaissance Hotel, Ullmannstr. 71, ☎ A-1150, ☎ 8 50 40, Telex 112206, Fax 8504100, **AE** **AS a**
closed Sunday, Monday, 24 December - 6 January - **M** a la carte 370/730 - **Allegro M** 320 (buffet only) - 309 rm $\approx$ 2100/2600 - 3 suites

Bosse, Gutheil-Schoder-Gasse 9, ☎ A-1100, ☎ 66 10 60, Fax 66106-99 - **AE** **AS d**
closed Sunday, Monday, 24 December - 6 January - **M** a la carte 240/370 - 190 rm $\approx$ 1450/2100 - 8 suites.

Trend-Hotel Favorita, Laxenburger Str. 8-10, ☎ A-1100, ☎ 60 14 60, Fax 60146720, **AE** **BS n**
closed Sunday, Monday, 24 December - 6 January - **M** a la carte 265/440 - 161 rm $\approx$ 1290/1580 - 4 suites.

Gartenhotel Altmannsdorf, Hoffingergasse 26, ☎ A-1120, ☎ 8 04 75 27, Telex 135327, Fax 804752751, **AE** **AS s**
closed Sunday, Monday, 24 December - 6 January - **M** a la carte 255/415 - 41 rm $\approx$ 1050/1750.

Austrotel, Felberstr. 4, ☎ A-1150, ☎ 98 11 10, Telex 115181, Fax 98111930, **AE** **AS c**
closed Sunday, Monday, 24 December - 6 January - **M** a la carte 250/410 - 254 rm $\approx$ 1620/2900.

Reither without rest, Graumannsgasse 16, ☎ A-1150, ☎ 85 61 65/893 68 41, Telex 136430, Fax 855244/8936835, **AE** **AS r**
closed 22 to 27 December - 50 rm $\approx$ 1000/1500.

Arabella - Hotel Jagdschloß without rest, Jagdschloßgasse 79, ☎ A-1130, ☎ 8 04 35 08, Fax 8043500, **AE** **AS v**
closed 3 January - 28 February - 48 rm $\approx$ 820/1800.

XXX **Villa Hans Moser**, Auhofstr. 76, ☎ A-1130, ☎ 87 74 74 70, Fax 8776050, **AE** **AS e**
closed Sunday and Monday, 24 December - 6 January - **M** a la carte 490/740

XXX **Alt Wienerhof** (with rm, Herklotzgasse 6, ☎ A-1150, ☎ 8 92 60 00, Fax 89260008, « Winter garden, courtyard terrace » - **AE** **AS r**
closed Saturday lunch, Sunday, Bank Holidays and 5 to 24 January) a la carte 445/695 (remarkable wine list) - 23 rm $\approx$ 580/1950

XX **Hietzinger Bräu**, Auhofstr. 1, ☎ A-1130, ☎ 87 77 08 70, Fax 877708722 - **AS u**
closed 17 June - 14 August - **M** (mainly boiled beef dishes) a la carte 355/545.

City districts (Stadtbezirke) 16 - 19.

Modul, Peter-Jordan-Str. 78, ☎ A-1190, ☎ 47 66 00, Telex 116736, Fax 47660117 - **AE** **AR f**
closed Sunday, Monday, 24 December - 6 January - **M** a la carte 290/495 - 43 rm $\approx$ 1450/2300 - 8 suites

Clima Villenhotel, Nussberggasse 2c, ☎ A-1190, ☎ 37 15 16, Telex 115670, Fax 371392, « Rest. Bockkeller, vaulted cellar with Tyrolean farmhouse furniture », **AE** **BR a**
closed Sunday, Bank Holidays, early July - end August **M** (closed Sunday) a la carte 335/480 - 30 rm 1750/2500.

Landhaus Fuhrgassl-Huber without rest, Rathstr. 24, ☎ A-1190, ☎ 44 30 33, Fax 442714, « Country house atmosphere », **AE** **AR m**
closed 1 to 21 February - 22 rm $\approx$ 960/1470.

Schloß Wilhelminenberg, Savoyenstr. 2, ☎ A-1160, ☎ 45 85 03, Telex 132008, Fax 454876, « Terrace with « Vienna, Park » - **AE** **AR t**
M a la carte 230/390 - 90 rm $\approx$ 950/1400

Maté (with guest-house), Ottakringer Str. 34, ☎ A-1170, ☎ 4 04 55, Telex 115485, Fax 40455888, **AE** **AR z**
M a la carte 250/490 - 125 rm $\approx$ 1420/2350.

Gartenhotel Glanzing without rest, Glanzinggasse 23, ☎ A-1190, ☎ 47 04 27 20, Fax 470427214, **AE** **AR n**
20 rm $\approx$ 1480/2120.

Jäger without rest, Hernalser Hauptstr. 187, ☎ A-1170, ☎ 4 66 62 00/46 66 62 00, Fax 4666208/48666208 - **AE** **AR r**
18 rm $\approx$ 950/1400.

Celtes without rest, Celtesgasse 1a, ☎ A-1190, ☎ 44 41 51, Fax 444152116 - **AE** **AR b**
16 rm $\approx$ 850/1400

Schild without rest, Neustift am Walde 97, ☎ A-1190, ☎ 4 42 19 10, Fax 44219153, **AE** **h**
33 rm $\approx$ 940/1420.

XX **Eckel**, Sieveringer Str. 46, ☎ A-1190, ☎ 32 32 18, Fax 326660, **AE** **AR s**
closed Sunday, Monday, 14 to 29 August and 24 December - 23 January - **M** a la carte 310/570.

XX **Sailer**, Gersthofer Str. 14, ☎ A-1180, ☎ 4 79 21 21, Fax 47921214, **AE** **AR e**
closed Sunday dinner and Bank Holidays - **M** a la carte 280/470

City district (Stadtbezirk) 22.

Trend Hotel Donauzentrum, Wagramer Str. 83, ☎ A-1220, ☎ 2 35 54 50, Telex 113785, Fax 235545183, **AE** **BR b**
M a la carte 210/380 - 137 rm $\approx$ 1240/2200.

Heurigen and Buschen-Schänken (wine gardens) - (mostly self-service, hot and cold dishes from buffet, prices according to weight of chosen meals, therefore not shown below. Buschen-Schänken sell their own wines only)

X **Oppolzer**, Himmelstr. 22, ☎ A-1190, ☎ 32 24 16, Fax 3224160, « Garden » - **AR p**
closed Sunday and 23 December - 7 January - **M** (dinner only).

X **Altes Preßhaus**, Cobenzlgasse 15, ☎ A-1190, ☎ 32 23 93, Telex 132211, Fax 32234285, « Old vaulted wine cellar » - **AE** **AR p**
M (dinner only) 260/400 (buffet).

X **Wolff**, Rathstr. 44, ☎ A-1190, ☎ 44 23 35, Fax 441403, « Terraced garden » - **AR m**
M (buffet).

X **Fuhrgassl Huber**, Neustift am Walde 68, ☎ A-1190, ☎ 41 14 05, Fax 442730, (wine-garden with Viennese Schrammelmusik), « Courtyard-terrace » - **AE** **AR b**
- **M** (buffet)

X **Grinzing Hauermandl**, Cobenzlgasse 20, ☎ A-1190, ☎ 3 22 04 44, Fax 32571322, **AE** **AR q**
closed Sunday - **M** (dinner only) a la carte 260/390

X **Grinzing Weinbottich**, Cobenzlgasse 28, ☎ A-1190, ☎ 32 42 37, Fax 32571322, « Shady garden » - **AE** **AR q**
closed Monday - **M** (dinner only) a la carte 255/350.

at Auhof motorway station W : 8 km

Novotel Wien-West, Wientalstraße, ☎ A-1140, ☎ 101 9 72 54 20, Telex 135984, Fax 974140, (heated), **AE** **AR w**
M a la carte 190/370 - 115 rm $\approx$ 1155/2110.

at Perchtoldsdorf A-2380 by B12 and Breitenfurter Str.

XXX **Jahreszeiten**, Hochstr. 17, ☎ 101 8 65 31 29 - **AE** **AE** **AE**
closed Saturday lunch, Sunday dinner and Monday, 14 to 21 February - 30 March - **M** 330/(lunch) and a la carte 470/580

Spec. Sulzchen vom Rinderfilet mit Gänseleber, Filet vom Steinbutt mit Mörtchenudeln, Rinderückenfilet in Rotweinsauce

VIENNA

at *Vosendorf* A-2334 S : 11 km by ⑥ or A 2 AS :

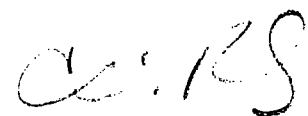
 **Novotel Wien-Süd**, Nordring 4 (Shopping City Süd), ☎ (01) 6 92 60 10, Telex 134793.
Fax 694859, ☎ (heated) -   rm  rest     -  250.   
M a la carte 220/370 - 102 rm  1125/1550.

at *Groß-Enzersdorf* A-2301 E : 16 km, by B 3 BR :

 **Am Sachsengang**, Schloßhofer Str. 60 (B 3), ☎ (02249) 2 90 10, Fax 2905, « Terrace »
Massage,   -  rm   -  200.   
closed 22 to 26 December - M a la carte 375/550 - 102 rm  980/1700.

When travelling through Europe

use the MICHELIN red-cover map series, nos   ..



**UNIVERSIDADE DE SÃO PAULO
INSTITUTO DE ELETROTÉCNICA E ENERGIA**

**Av. Prof. Almeida Prado, 925
Cidade Universitária
05508-900 - São Paulo - SP - BRAZIL
Tel: 010-5053 / 010-5054
Fax: (55-11) 010-5031**

DATE: 11/18/94

NUMBER OF PAGES: 05

FROM: Professor José Goldemberg

TO: Joseph E. Stiglitz

FAX: (001-202)395-6958

MESSAGE:

NOV 18 '94 17:47

TO:

P01

Indira Gandhi Institute of Development Research

Gen. Vaidya Marg, Goregaon (E),
Bombay-400 065, (INDIA.)
Tel: 0400618 (EBA333)
Telex: 940774 RPS-PAIP770
Fax: 0400618/040606
Telex: 94-PAIP 1111
GOREGAON DEURES Bombay: 400 065.

DR. (MRS.) JYOTI K. PARIKH
Senior Professor

Ref: IPCC/JKP/84/-MM

November 18, 1984

Fax: 00 55 11 210 7750

Professor J. Goldenberg

Universidade de São Paulo
Instituto de Eletrotécnica e Energia
Av. Prof. Almeida Prado, 825
Cidade Universitária 05508-900 São Paulo-SP
Brasil

Dear Jose,

I am sending you my comments on chapter 1, which appears to be written by the US Govt. The line taken by them is that developing countries emissions are rising and they have to be controlled. Their idea of "equity" is that everybody should equitably share the costs of containing emissions. They also want to promote "wait and see" approach and prolong their free ride passing on adaptation burden and taking a larger share of the environmental space. Since you are the convening lead author, you need to do something about this. After championing cause of the developing countries for so long, I am sure, you would not want to let them down. I request you to get into action since Nov. 25 is the last date. Please look at chapter 2 and if possible, write a letter supporting what I have said (first 25 pages and a last few pages are mine). Apart from chapter 1 and policy makers summary, the rest of the chapters are reasonably professional and a political.

I hope to see you in Vienna,

With warm regards,

Yours sincerely,

Jyoti Parikh

Encl: Comments on chapter 1.

CHAPTER 1 : INTRODUCTION : SCOPE OF THE ASSESSMENT

This chapter follows political agenda instead of objective analysis. (It is the only one such chapter and the policy makers summary). It stresses the potential increase in the GHG emissions in the developing countries in the future decades as the major threat to the global climate change problem (when the facts are opposite as they stand today!). The present emissions of Annex 1 countries are large and their future emissions are also going to be larger for nearly 3 to 4 decades. By concentrating on what may happen five decades from now, the basic issues of immediate importance are being evaded. There will be ample opportunities in future to discuss these issues once Annex 1 countries reduce their emissions. Our successors can take up these issues 20 years from now. The climate change problem is precipitated and brought upto threshold levels due to unsustainable consumption of the Annex I countries. This is not the only problem. Even in the next 50 years and beyond, their contributions to the atmospheric GHG concentrations are going to dominate, even if they reduce their emissions drastically and even if South's emissions grow. To quote Elisabeth Dowdeswell, ED of UNEP, "It has been said, correctly, that the rapid industrialization of the 19th century precipitated the climate crisis. This is further interpreted as the industrialized countries enjoying a century-long free ride on the road to development and now, as new developing country passengers wish to join the train, they are being asked to pay the fare. It is futile for the rich North to protest that the consequences of fossil fuel exploitation was not known at the time of their development. Ignorance of law, whether judicial or law of nature, is not an excuse for its contravention. A mischief has been done and the penalty or compensation must be paid." Address delivered at Royal Geographical Society, UK, May, 1994.

The following are some of the arguments in the text which need to be revised. Along with the objectionable argument (specified by the page and line numbers), the explanations are also provided.

1. Developing country emissions: It has been pointed out that, though developed countries contribute more than two of total world GHG emissions today, developing country emissions are growing much faster and there is urgent need for controlling them.

Page 8 : line : 22-25

We would like this to be changed as follows:

Annex I countries contribute more than two thirds of total world GHG emissions today. There is need to control their emissions to allow developing countries to grow to achieve adequate living standards.

Comment: There is nothing surprising in the faster growth rate of emissions in developing countries. After all, during the stage

when the present Annex 1 countries were developing their emissions also grew at faster rates. Controlling world emissions is quite important, but one can't expect it to happen at the cost of developmental needs of the developing countries. The Annex 1 countries, which are emitting more than two thirds of world emissions at present, should exercise control over their emissions first (and thus give the environmental space for the development of the less developed countries), and also help developing countries in improving their energy efficiencies etc.

2. Public Good Arguments: The arguments describing the public good nature of atmospheric concentrations and mitigative action appear completely biased.

a) Page 10 : line : 29-30

Comment: Atmospheric concentrations of GHGs are the result of mainly Annex 1 countries, but countries bear differential responsibilities in aggravating the climate change problem to the present dimension. It is very much essential to add this clause to bring out the current policy response.

b) Page 11 : line : 2-3

Comment: Similar to 'mitigation', one should view 'global environmental space' also as an 'international public good'. It is important to note that Annex 1 countries, had 'free ride' so far. Hence, while arguing that the developing countries are going to free ride in the mitigative actions taken by developed countries, one should keep in mind the free ride of many decades, which has caused the problem. Moreover, it is sought to extend this period of free-ride by promoting "postponement" approach rather than acting now.

3. GHG Concentrations:

Page 12 : line : 26-28

Comment: It is pointed out that there has been a 25% increase in GHG concentrations since the pre-industrial revolution levels, and that for double carbon dioxide benchmark concentration level, most of the increase in the concentration is going to take place over the next 75 years. During this period, since the developing countries would be going through rapid development, it is implied that these countries would be the prime culprits. This is not quite true, given the time lags in the response of concentrations. Though there is only 25% increase in GHG concentrations so far, it is not to be interpreted that the emissions by the Annex 1 countries - since industrial revolution, have 'completed' their 'contribution' to the GHG concentration increase (which the above argument tries to imply). In fact, the present patterns of Annex 1 countries contain enough "momentum" not to halt till the end of century. Non-Annex 1 will also add to this as their emissions will increase due to much needed development.

4. Sustainable Development:

a) Page 28 : line : 9-10

Comment: The definition and interpretation of sustainable development should be supplemented by the implicit 'assumption' that the natural and physical capital are perfectly substitutable.

This implicit assumption is not very satisfactory from 'eco-centric' point of view.

b) Page 28 : line : 1-7

Comment: Unsustainability in growth arises not just from policies such as large energy subsidies, but also from 'unsustainable style of living'.

c) Page 29 : section 1.8.3 : line : 9-30

Comment: True that LDCs, often lack the financial and technical resources to respond to the threats of climate change. But, using such argument - namely, that LDCs are at higher risk due to climate change than developed countries, to 'force' LDCs to join the mitigative action makes not much sense. Particularly when the arguments 'ignore' the 'causes' behind the climate change problem.

5. The equity issues and North-South angle of the equity arguments were not presented in a satisfactory manner. The FCCC guidelines on the issues such as distributing the costs of coping with climate change; distributing future emission rights; distributing the costs of abatement etc., should have been highlighted. FCCC indicated that developed countries bear responsibility for helping developing countries cope with the impacts of climate change and the costs of abatement measures. It also indicates that the relative share of the GHG emissions of developing countries should increase.

Also, the results of impact assessment studies (viz., Parry & Rosenzweig etc.) have been presented without the necessary caveat. The results of these studies are quite "optimistic" only if the major assumption about carbon dioxide fertilization effects holds good. These effects can be expected to play a key role only if the plant growth is limited by insufficient carbon dioxide. But in practice, plant growth is limited more by nutrient deficiencies and lack of irrigation facilities, than by lack of carbon dioxide. Such optimistic interpretation of results lead to underestimation of damages due to climate change. They should not be used to support 'wait and see' approach of Annex 1 countries towards climate change problem.

SCHOOL OF BUSINESS ADMINISTRATION

KOBE UNIVERSITY

ROKKODAI-CHO, NADA, KOBE
HYOGO 657 JAPAN
TEL(078)881-1212 FAX(078)831-8100

cc:RS

November 21, 1994

Professor Joseph E. Stiglitz
Council of Economic Advisers
LISA Branch
Rm. 314, OEOB
Washington, D.C. 20500
U.S.A.

Dear Professor Stiglitz:

Thank you very much for your facsimile of November 10. I appologize for a slow response due to my involvement in the drafting committee for the Basic Environmental Plan in Tokyo.

I am very pleased with the most recent version of the scope chapter. The only thing I have in mind is about Chapter 2, the revised version of which was sent to me some time after I had received revised manuscripts for other chapters. I think this chapter has been drastically revised and improved. Moreover, it contains some important views concerning collective decision making from a global perspective. Since I have not been able to see further revisions you might have made after receiving comments and revisions of similar nature, I believe this has been handled already. Anyway, I think it extremely important for a wider support of the report that major conclusions in Sections 2.2 and 2.3 of Chapter 2 are reflected in the scope chapter.

I look forward to seeing you again in Vienna.

Best regards.

Sincerely yours,

Akihiro Amano

Akihiro Amano

FAX COVER SHEET

DATE: November 21, 1994
TO: Professor Joseph E. Stiglitz
Council of Economic Advisers
LISA Branch
Rm. 314, OEOB
Washington, D.C. 20500
U.S.A.
Phone (202) 395-5036
Telefax (202) 395-6958

FROM: Prof. Akihiro Amano
School of Business Administration
Kobe University
Rokko, Kobe 657, JAPAN
Phone 078-881-1212 ext. 3451
Telefax 078-881-8100

NUMBER OF PAGES: 2 (including cover page)

cc. RS

**UNIVERSIDADE DE SÃO PAULO
INSTITUTO DE ELETROTÉCNICA E ENERGIA**

**Av. Prof. Almeida Prado, 925
Cidade Universitária
05508-900 - São Paulo - SP - BRAZIL
Tel: 818-5053 / 818-5054
Fax: (55-11) 818-5031**

DATE: 11/21/94

NUMBER OF PAGES: 03

FROM: Professor José Goldemberg

TO: Joseph E. Stiglitz

FAX: (001-202)395-6958

MESSAGE:

For your information.

UNIVERSIDADE DE SÃO PAULO
INSTITUTO DE ELETROTÉCNICA E ENERGIA

Av. Prof. Almeida Prado, 925 - Cidade Universitária

05508-900 - São Paulo - SP - BRAZIL

Tel: (55-11) 818-5053 / 818-5054

Fax: (55-11) 818-5031 / 818-5058

e-mail: goldemberg@nhi.lead.org.br

DATE: 11/21/94

NUMBER OF PAGES: 01

FROM: Prof. José Goldemberg

TO: Jyoti Parikh

FAX: (00-91-22) 840-2752

MESSAGE:

Dear Jyoti,

I received your comments on the "Scope of the Assessment" and passed them on to my colleagues in WGHI. Unfortunately I cannot attend the Meeting at UASA but I think my views are well known to them.

My reaction to your note is the following:

one must separate physical realities from interpretation and our own wishes and I think your comments mixes them up.

REALITIES	MY INTERPRETATION OR WISHES
CO ₂ emissions have increased <u>only</u> 25% since last century at a time when the consequences of such increase were not clearly realized.	I don't think it is useful to call it a "mischief", etc. Lots of other bad things were done in the past and there is no point in seeking compensations. What we can do is to look ahead.
What lies ahead is that the emissions of the industrialized countries are just about levelled off.	My own work - and of many others - indicates that they could even be decreased through the use of renewables, energy conservation, etc. The FCCC incorporates that vision not as clearly as I wished but the decision to reach in the year 2000 levels of 1990 taken by industrialized countries is a progress. I hope the Conference of the Parties will approve negotiations on a Protocol to reduce emissions by the year 2010 for Annex I Countries.

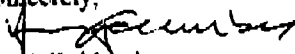
Emissions from LDC's will increase at least 3 or 4% per year due to population growth and development and in 50 years time will dominate completely the picture. Doubling of CO₂ concentrations in the atmosphere which climatologists fear will not be caused alone by the industrialized countries of today but mainly by the emissions of LDC's.

LDC's have heavy responsibilities now that the facts concerning climate change are better known. They will undoubtedly grow and develop but there is no reason for them to grow in an irrational way and at any cost. They have to incorporate early in the process of development modern technologies (i.e. "leapfrog" the old patterns of development) in order to supply to their people the services needed without severe environmental degradation (both local and global). Again here my own work - and many others - shows that it can be done.

What I conclude from all this is that.

1. It is in the self-interest of the developed countries to help them in such endeavour and they should contribute with money and technology;
2. LDC's should take part in the process by choosing the better technologies, etc trying to avoid the duplication of the ruinous path followed by the industrialized countries in the past*.
LDC's should not just ask for more ODA and "free-lunches" but participate actively in the process of avoiding climate change. This does not mean giving up development but choosing better routes to development.

Sincerely,


José Goldemberg

P.S. - An example of what I think is not a good path is what China plans to do installing 100 coal power plants in the next 10 years to run obsolete refrigerators and other old fashioned end-use devices. Why don't they act on the demand side also?

**UNIVERSIDADE DE SÃO PAULO
INSTITUTO DE ELETROTÉCNICA E ENERGIA**

**Av. Prof. Almeida Prado, 925
Cidade Universitária
05508-900 - São Paulo - SP - BRAZIL
Tel: 010-5053 / 010-5054
Fax: (55-11) 010-5031**

DATE: 11/10/94

NUMBER OF PAGES: 05

FROM: Professor José Goldemberg

TO: Joseph E. Stiglitz

FAX: (001-202)395-6958

MESSAGE:

NOV 18 '94 17:47

TO:

P01

Indira Gandhi Institute of Development Research



Gen. Vaidya Marg, Goregaon (E),
Bombay-400 065. (INDIA.)
Tel. 8400918 (EPA83X).
VINEET: 8400774 RCL: 8400777
Fax: 8400112/8400604
Telex 91-PRADA IN 114
Grama DEVRES Bombay 400 065.

DR. (MRS.) JYOTI K. PARIKH
Senior Professor

Ref: IPCC/JKP/94/-MM

November 18, 1994

Fax: 00 55 11 210 7750

Professor JYOTI Goldenberg

Universidade de São Paulo
Instituto de Eletrotécnica e Energia
Av. Prof. Almeida Prado, 825
Cidade Universitária 05508-900 São Paulo-SP
Brazil

Dear Jose,

I am sending you my comments on chapter 1, which appears to be written by the US Govt. The line taken by them is that developing countries emissions are rising and they have to be controlled. Their idea of "equity" is that everybody should equitably share the costs of containing emissions. They also want to promote "wait and see" approach and prolong their free ride passing on adaptation burden and taking a larger share of the environmental space. Since you are the convening lead author, you need to do something about this. After championing cause of the developing countries for so long, I am sure, you would not want to let them down. I request you to get into action since Nov. 25 is the last date. Please look at chapter 2 and if possible, write a letter supporting what I have said (first 25 pages and a last few pages like mine). Apart from chapter 1 and policy makers summary, the rest of the chapters are reasonably professional and a political.

I hope to see you in Vienna,

With warm regards,

Yours sincerely,

Jyoti Parikh

Encl: Comments on chapter 1.

CHAPTER 1 : INTRODUCTION : SCOPE OF THE ASSESSMENT

This chapter follows political agenda instead of objective analysis. (It is the only one such chapter and the policy makers summary). It stresses the potential increase in the GHG emissions in the developing countries in the future decades as the major threat to the global climate change problem (when the facts are opposite as they stand today!). The present emissions of Annex 1 countries are large and their future emissions are also going to be larger for nearly 3 to 4 decades. By concentrating on what may happen five decades from now, the basic issues of immediate importance are being evaded. There will be ample opportunities in future to discuss these issues once Annex 1 countries reduce their emissions. Our successors can take up these issues 20 years from now. The climate change problem is precipitated and brought upto threshold levels due to unsustainable consumption of the Annex I countries. This is not the only problem. Even in the next 50 years and beyond, their contributions to the atmospheric GHG concentrations are going to dominate, even if they reduce their emissions drastically and even if South's emissions grow. To quote Elizabeth Dowdeswell, ED of UNEP, "It has been said, correctly, that the rapid industrialization of the 19th century precipitated the climate crisis. This is further interpreted as the industrialized countries enjoying a century-long free ride on the road to development and now, as new developing country passengers wish to join the train, they are being asked to pay the fare. It is futile for the rich North to protest that the consequences of fossil fuel exploitation was not known at the time of their development. Ignorance of law, whether judicial or law of nature, is not an excuse for its contravention. A mischief has been done and the penalty or compensation must be paid." Address delivered at Royal Geographical Society, UK, May, 1994.

The following are some of the arguments in the text which need to be revised. Along with the objectionable argument (specified by the page and line numbers), the explanations are also provided.

1. Developing country emissions: It has been pointed out that, though developed countries contribute more than two of total world GHG emissions today, developing country emissions are growing much faster and there is urgent need for controlling them.

Page 8 : line : 22-25

We would like this to be changed as follows:

Annex I countries contribute more than two thirds of total world GHG emissions today. There is need to control their emissions to allow developing countries to grow to achieve adequate living standards.

Comment: There is nothing surprising in the faster growth rate of emissions in developing countries. After all, during the stage

when the present Annex 1 countries were developing their emissions also grew at faster rates. Controlling world emissions is quite important, but one can't expect it to happen at the cost of developmental needs of the developing countries. The Annex 1 countries, which are emitting more than two thirds of world emissions at present, should exercise control over their emissions first (and thus give the environmental space for the development of the less developed countries), and also help developing countries in improving their energy efficiencies etc.

2. Public Good Arguments: The arguments describing the public good nature of atmospheric concentrations and mitigative action appear completely biased.

a) Page 10 : line : 28-30

Comment: Atmospheric concentrations of GHGs are the result of mainly Annex 1 countries, but countries bear differential responsibilities in aggravating the climate change problem to the present dimension. It is very much essential to add this clause to bring out the current policy response.

b) Page 11 : line : 2-3

Comment: Similar to 'mitigation', one should view 'global environmental space' also as an 'international public good'. It is important to note that Annex 1 countries, had 'free ride' so far. Hence, while arguing that the developing countries are going to free ride in the mitigative actions taken by developed countries, one should keep in mind the free ride of many decades, which has caused the problem. Moreover, it is sought to extend this period of free-ride by promoting "postponement" approach rather than acting now.

3. GHG Concentrations:

Page 12 : line : 28-29

Comment: It is pointed out that there has been a 25% increase in GHG concentrations since the pre-industrial revolution levels, and that for double carbon dioxide benchmark concentration level, most of the increase in the concentration is going to take place over the next 75 years. During this period, since the developing countries would be going through rapid development, it is implied that these countries would be the prime culprits. This is not quite true, given the time lags in the response of concentrations. Though there is only 25% increase in GHG concentrations so far, it is not to be interpreted that the emissions by the Annex 1 countries - since industrial revolution, have 'completed' their 'contribution' to the GHG concentration increase (which the above argument tries to imply). In fact, the present patterns of Annex 1 countries contain enough "momentum" not to halt till the end of century. Non-Annex 1 will also add to this as their emissions will increase due to much needed development.

4. Sustainable Development:

a) Page 28 : line : 9-10

Comment: The definition and interpretation of sustainable development should be supplemented by the implicit 'assumption' that the natural and physical capital are perfectly substitutable.

This implicit assumption is not very satisfactory from 'eco-centric' point of view.

b) Page 29 : line : 1-7

Comment: Unsustainability in growth arises not just from policies such as large energy subsidies, but also from 'unsustainable style of living'.

c) Page 29 : section 1.8.3 : line : 9-30

Comment: True that LDCs, often lack the financial and technical resources to respond to the threats of climate change. But, using such argument - namely, that LDCs are at higher risk due to climate change than developed countries, to 'force' LDCs to join the mitigative action makes not much sense. Particularly when the arguments 'ignore' the 'causes' behind the climate change problem.

5. The equity issues and North-South angle of the equity arguments were not presented in a satisfactory manner. The FCCC guidelines on the issues such as distributing the costs of coping with climate change; distributing future emission rights; distributing the costs of abatement etc., should have been highlighted. FCCC indicated that developed countries bear responsibility for helping developing countries cope with the impacts of climate change and the costs of abatement measures. It also indicates that the relative share of the GHG emissions of developing countries should increase.

Also, the results of impact assessment studies (viz., Parry & Rosenzweig etc.) have been presented without the necessary caveat. The results of these studies are quite "optimistic" only if the major assumption about carbon dioxide fertilization effects holds good. These effects can be expected to play a key role only if the plant growth is limited by insufficient carbon dioxide. But in practice, plant growth is limited more by nutrient deficiencies and lack of irrigation facilities, than by lack of carbon dioxide. Such optimistic interpretation of results lead to underestimation of damages due to climate change. They should not be used to support 'wait and see' approach of Annex 1 countries towards climate change problem.



Telefax Message

International Institute for
Applied Systems Analysis
A-2361 Laxenburg, Austria

Tel: +43 2236 807
Fax: +43 2236 71313
E-mail: info@ilasa.ac.at

*Environmentally Compatible
Energy Strategies (ECS) Project*

To:

Joe Stiglitz

Fax Nr:

1-202-295-6958

Tel Nr:

From:

Dr. Ray Squitieri

Cost Center:

4100

Pages:

(including this one) 18

Date:

Nov 28

Subject:

(ECS)
Pa. Mogens

Chapter 1: SCOPE OF THE ASSESSMENT

1.0 General Comments

1.1 Introduction	1 - 2
1.2 Features of Climate Change	3 - 4
1.3 Contribution of Economics	5-15
1.4 Equity	16-18
1.5 Economics of Policy Actions	19-27
1.6 Sustainable Development	28-30
1.7 Endnotes	31-47
1.8 References	48-54

WGIII Peer Review

November/26/1994

Page:

1

Reference			Comments	Reviewer	ID	Response
Section	Page	Line		(Country #)		
01 Scope of Assessment						
0	0	0	1. This Chapter is well written and well organized. 2. It would be useful to include in the discussion of policy the transactions costs of particular actions. 3. The population issue and its relevance for the demand for environmental services should be given even greater emphasis. Also it should be linked to rising world income as the threat is the product of the two.	USA	12	i
0	0	0	Cannot imagine a case where there are negative costs, except in cases where distortions are removed(eg, government fuel subsidies); but those distortions are not implied. What is implied are engineering solutions but there are costs that economists have failed to identify.	UK	18	g
0	0	0	Re: nuclear energy. Seems appropriate to mention (i) decommissioning nuclear plant not established technology, (ii) external costs hidden regarding nuclear power related damage,(iii) efforts being made to develop intrinsically safe nuclear reactors,	MEX	34	i
0	0	0	There are occasional references to "economics and social sciences" but this particular chapter focuses, almost exclusively, upon the former.	UK	40	i
0	0	0	Starting in the Summary for Policy Makers and also in the Scope of the Assessment no mention is made of social actions or research directed to modifying excessive consumption of energy and materials by industrialized nations ; thus one is ignoring the statement in UN guide to Agenda 21 that calls for "a practical strategy to bring about a fundamental transition from the wasteful consumption patterns of the past to new consumption patterns based on efficiency and a concern for the future".	MEX	34	i
0	0	0	The Chapter as written is sloppy and misses vision and has no line to it; needs to be completely re-written. It is teeming with weakly related concepts, empty statements, confusing statements while important notions are missed.	NED	46	i
0	0	0	The majority of the report is embedded in economic language, reflecting the preponderance on the panels, particularly welfare economists. While this presents an interesting and important angle to the discussion, a broader view of the world is	DEN	42	i

28-NOV-1994 12:11 FROM IIASA 43 2236 71313 TO 0-0012023956958 P.03

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			required. Since the time horizon of the study is 2100, the restrictions imposed by current economic theorizing are largely irrelevant and scientists with more suitable background may have been more appropriate. More specifically, the lack of generally valid theories able to describe economic behaviour both in the short and certainly in the long term are particularly troublesome in relation to the questions being addressed in this report. Examples will be given. In addition to the general impact of the lack of suitable theories, there is a strange "positive spirit" over many of the deliberations, e.g. expressed in Chapter 6. This may be due to the fact that the work is performed under the auspices of the UN. However, in the real world, the achievement of providing a high living standard for the planet is highly unlikely and is in contradiction to the behaviour of those countries following conventional market economic rules. Even if the development should move in the direction of global economic equity, despite population pressure differences, then it is difficult to discern tendencies toward change of the present political climate, characterized by a situation, where a majority of the world population does not enjoy democratic rule. What are the mechanisms that will change this picture into one cherished democracy not only within each country, but manifesting itself in terms of global solidarity? A more realistic situation is one in which countries refuse to do their share of GHG abatement and raises questions as to whether the "good guys" are prepared to go to war to force the GHG policies into effect. The question is of course absurd giving the varying military strengths of countries. The portfolio of possible actions should include the establishment of fair pricing in the energy sector. This means valuing as many externalities as possible, despite the difficulties and uncertainties involved. This may well be the single most important action capable of making real progress in reaching emission goals.				
0	0	0	This chapter stresses the potential increase in the GHG emissions in the GHG emissions in the developing countries in the future decades as the major threat to the global climate change problem (when the facts are opposite as they stand today). The present emissions of Annex 1 countries are large and their future emissions are going to be larger for nearly 3 to 4 decades. By concentrating on what may happen 5 decades from now, the basic issues of immediate importance are being evaded. There will be ample opportunity in the future to discuss these issues once Annex 1 countries reduce their emissions. Our successors can take up these issues 20 years hence. To quote Elizabeth Dowdeswell, ED of UNEP, "It has been said, correctly, that the rapid	IND	45	1	

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			industrialization of the 19th century precipitated the climate crisis. This is further interpreted as the industrialized countries enjoying a century-long free ride on the road to development and now as new developing countriesthey are being asked to pay the fare. If is?? A mischief has been done and a penalty must be paid". RGS, UK May 1994..				
1	1	13-17	Not only does climate change have implications for human activities, but human activities have implications for climate change. As presented now, the the relationship is suggested to be "one-way".	UK	40	1	
1	1	14-50	Line 14 - Change "will be" with "might potentially". We cannot be certain that reductions WILL be required given the uncertainties. Line 23 - Replace "is likely to" with "could potentially". Lines 49-50 - This sentence should be deleted as it goes well beyond the stated task of the WG - to analyse issues as broadly as possible.	USA	68	1	
1	1	35	The commitment of resources to mitigate climate change rests on THREE arguments--the two given plus:3 At some point, the costs of climate change to humanity and the ecosystem may exceed the costs of undertaking the steps necessary to avoid certain degrees of climate change. With this addition, line 47 still holds.	API	76	a	
2	3	7	"Although most attention to date has focused on negative impacts": this statement can be interpreted to mean that up to now the debate has been biased toward the negative aspects. Proposed change: "Although it is likely that most impacts will be negative..."	ITA	48	1	
2	3	15-19	Economics can only contribute to the debate within the context of sound science. Therefore it is important to factually state the nature of the large uncertainties that exist in science. These lines do and should stay in the report.	API	76	a	
2	3	32	Add to footnote 10: After 1st sentence add - "Manabe and Stouffer (Nature, 15, vii, 1993 p215) report studies of a linked ocean-atmosphere circulation model which shows the North Atlantic Current ceasing to flow at four times CO2. The uncertainties attending on such modeling cannot leave us confident that the effect would not arise with the 2 times CO2 forecast before 2100 on business as usual assumptions" and at end "One homeostatic response of the Gaia could be to eliminate the species that is causing the trouble, possibly be developing drug-resistant varieties of sexually	NWZ	37	1	

WGIII Peer Review

November/26/1994

Page:

4

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			transmitted diseases." This irony should be interpreted as an opinion that the Gata "hypothesis should find no place in professional scientific discussion).				
2	3- 4	0	Lines 6-7 - Examples of these positive impacts should be noted in order to provide proper balance to the discussion. Line 37 - Replace "likely to" with "could" P4 lines 31-32 - This sentence is inconsistent with the first sentence of the paragraph and should be deleted.	USA	68	1	
2	4	30	Delete two sentences beginning "It seems unlikely": substitute "Climate has changed in the past and ecosystems have adapted , sometimes by dying. A period of relative climate stability - as since the last glaciation - results in an adapted ecosystem which suffers from change in either direction, especially rapid change. The adaptability of intelligent species is likely greater than that of natural ecosystems, but is diminished by increasing social interdependence (complexity) and by population levels that preclude the substantial migrations of pre-history, e.g. out of and into Northwest Europe.	NZW	37	1	
3	5	0	Re. Box. This is a poorly defined box. Risk is not defined. Risk is when the probabilities of a variety of possible events are known. Uncertainty is when the probabilities are not known, and/or some or all potential outcomes are unknown.	API	76	2	
3	5	15	In Box: add to definition of uncertainty. "Uncertainty can stretch from pure ignorance of the range of possible outcomes, through a taxonomy that eschews quantification, via subjective judgements of relative likelihoods (possibly using a Delphi type poll of experts), to statistical probabilities based on relevant experience (of which, as regards elevated levels of GHGs there is none)." add to definition of Expected return - "Its calculation required estimates of the probabilities of possible outcomes, or at least well founded expert judgements".	NWZ	37	1	
3	5-15	0	This whole section is a grab bag as if some words from the environmental economic slang are selected and some remotely connected concepts arranged under it. Why are "emission reduction strategies" under "dynamics" and not "sequential decision analysis"? Why is the Kaya-identity not an economic identity and why is a very basic concept such as CBA missing? Are these really the main contribution of economics? Re. section 1.3.1 the following phrase is used which is at odds with the policy makers summary version(which is correct); "Risk. The uncertainties associated with climate	NED	46	1	

WGIII Peer Review

November/26/1994

Page:

5

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			change are large." There needs to be interaction between chapter authors or at least reading the other chapters of the report.				
			Another quote that is considered correct but empty; "Uncertainty arises when a decision can lead to more than one outcome". It is certainly not scoping the concept of uncertainty when climate change is in mind.				
3	6	29-32	This suggests that policy makers should go beyond no-regrets. This is not consistent with Ch 5 P11 Fig 4.1 which shows that, for the UK, 50% of the potential CO2 abatement could be achieved at no net cost. However, intervention may be required to promote these investments.	NED	71	1	
3	6	34-38	This paragraph should be deleted on several grounds. First, whether going beyond "no regrets" is prudent is a policy judgement - outside the scope of this document. Second, the Bush administration funded research into no- and low-carbon technologies and research to expand knowledge of the climate system. These actions did incur positive costs.	USA	68	1	
3	6	44	Active responses as part of insurance strategy: Good point.	ITA	48	1	
3	7	3	After "new" insert "energy"	NWZ	37	1	
3	7	4-5	These lines must stay in the report as a very important finding.	API	76	a	
3	7	23	This appears to be the case for earthquake insurance in California.	USA	12	1	
3	7	31-39	In order for the paragraph to be complete, there also should be reference to the problem of inertia that offers a different perspective - see Chapter 8 P17	ITA	48	1	
3	7-8	49-1	Correct sentence to read "Timing of reductions in greenhouse gas emissions should reflect differences in costs, discounting(to evaluate those costs),risks, and uncertainty."	API	76	a	
3	8	12-16	I believe the discussion of the first and second terms is reversed. Fuel switching would affect the first term, CO2, per unit energy, while end-use efficiency improvement would affect the second term, energy per unit output.	USA	68	1	
3	8	22-25	Change to: "Annex 1 countries contribute more than two thirds of total world GHG emissions today. There is a need to control their emissions to allow developing countries to grow to achieve adequate living standards.	IND	45	1	

P.07

0-0012023956958

TO

FROM IIRSA 43 2236 71313

28-NOV-1994 12:13

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			Comment: Annex 1 countries should exercise control over their emissions first and then help developing countries improve their energy efficiencies also.	*			
3	8	29-30	Before "...of magnitude" substitute "Some order" and before ; (b) insert "while others suggest that a coordinated breaking down of barriers to information and the purposive Research and Development and Demonstration of sustainable energy systems and would lead to a beneficial shift into an alternative path of energy sectoral development. Essentially that latter claim suggests that a long term bifurcation presents itself in the energy sector and that (beyond using up lower cost oil and gas reserves) we have insufficient knowledge to be sure that a fossil fuel (coal) based business as usual future is likely to be lower cost than its alternatives, regardless of any weight placed on the GHG externally (edmonds et al, Johansson et al etc....). The need for public good R&D&D arises because of informational market failure, in particular the unwillingness of energy firm management s to devote the scarce resources of time and attention to anything beyond fossil fuel business as usual (see also section 1.5.3. comments)	NWZ	37	1	
3	8	40	The fish example is a poor one. Today, the maximum sustainable yield (MSY) as determined by partial equilibrium stock recruitment models has been rejected.	USA	12	1	
3	9	8	The supply of coal etc. is a function of price - not a physical quantity.	USA	12	1	
3	9	9	This sentence is not consistent with the sentence on line 22 and should be deleted. Hopefully we are not sure that all fossil fuel resources will be consumed.	FRA	70	1	
3	9	11-16	This refers to three phases of economic development. I am not aware that this is a normal development sequence (at least historically) and the Fig 2 referenced was not provided.	NED	71	1	
3	9	12-16	It is not only coal that matters but also gas,oil and other fossil resources.	FRA	70	1	
3	9	29	All low emissions scenarios display a key role for bio-fuel, which (apart from fuel-wood) is currently in widespread use in several countries, notably Brazil. Thus the backstop technology is already with us, with leading edge technological power generation applications available by the end of this decade. The issue is not one of the timeliness of its arrival but of developing an appropriate framework for weaning the commercial energy sector off its infant diet of fossil fuel, and of transferring the relevant technology on terms sufficiently attractive to developing countries to ensure that they do indeed choose to leap over the fossil fuel stage of development. Hence	NWZ	37	1	

WGIII Peer Review

November/26/1994

Page:

7

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			delete the final two sentences of this paragraph and substitute "depending on the speed of take-up of a Low Emissions Supply System (see WG2a chapter on Energy Supply Mitigation Options) the insurance provided by oil and gas reserves will be more or less expensive, with the inter-temporal pattern of taxation (see 1.5.5.5 below) serving to eke out low cost supplies encouraging exploitation of higher cost reserves. The pattern of alternative technology take-up can be expected to vary between regions, with greater reliance on nuclear energy and on end-use efficiency at higher latitudes - also in more densely populated areas - and with biofuel dominant in the more sparsely populated developing regions, leading to biofuel product exports e.g. methanol and the broad levelization of energy prices subject to transport cost differentials". Maybe employ the opening sentences of this comment as endnote 22a.				
3	9	47-48	It may be of no help to quote possible misunderstanding of what "sequential decision making" means; suggest the sentence be deleted.	FRA	70	1	
3	9	49	The statement beginning "The next several..." must stay in the report.	API	76	2	
3	9-11	0	Figures are not to hand, but from the text, I guess it is appropriate to substitute for "economy", Modern economy" (i.e. neglecting history's coal-based industrial revolution).	NWZ	37	1	
3	10	13	The reader may not know what are "the standard assumptions" of optimal decision making under uncertainty.	FRA	70	1	
3	10	18-21	The most important irreversibilities in the case of climate change seems to be missing here. They arise from today's choice of long living capital expenditures: housing, transport infrastructure, urban planning. Early mitigation expenditures may preserve options of avoiding later mitigation expenditures at higher costs, as well as avoiding later adaptation costs.	FRA	70	1	
3	10	29-30	Atmospheric concentrations of GHG are mainly the result of Annex I countries, but countries bear different responsibilities in aggravating the climate change problem to the present dimension. This clause should be added to bring out the current policy response.	IND	45	1	
3	11	2-3	Similar to "mitigation", one should "global environmental space" also as an international public good.	IND	45	1	
3	11-1	0	Re: box on this page; delete "the economy" in the definition of externality.	CAN	23	1	

Reference			Comments	Reviewer (Country #)		ID	Response
Section	Page	Line					
3	12	1	The words "weight of the tax" should be replaced by "burden of effort" with which it should not be confused. The level of carbon tax will determine the marginal(microeconomic) cost of emission avoided, but not the average macroeconomic cost of the tax which will include energy savings, revenue recycling and so on.	FRA	70	1	
3	12	8-13	It would be useful to include in the discussion of policy the transaction costs of particular actions.	USA	12	1	
3	12	15-24	Industrial countries knew threat of global warming from the mid 1970s and could have acted. Therefore, the polluter pays principle should be applicable from that time.	GER	50	1	
3	12	26-29	Though there is only 25% increase in GHG concentrations so far, it is not to be interpreted that the Annex 1 countries have completed their contribution to the GHG increase. Non Annex 1 countries will also add to it due to much needed development.	IND	45	1	
3	12	33	Re: box on this page; delete "the economy" in the definition of externality.	CAN	23	1	
3	12	36	High population density also has positive network-related externalities. A small population spread over a huge country profits less from the partition of labour and has higher relative costs of transport.	GER	50	1	
3	12	46-48	Politically it is easier the other way round: grandfathering emission rights and changing the allocation gradually towards a per capita basis. To prevent moral hazards, the per capita basis can be a year in the past.	GER	50	1	
3	13	27-31	Knowledge and technology can also be transferred via JI.	GER	50	1	
3	13	29	after "But" delete "need" and insert "there does need to " for correct grammar.	NWZ	37	1	
3	13	36	The "issues of efficiency and equity should be separated" deserves to be mentioned in the summary and recognized more consistently in the text. How much CO ₂ emissions should be reduced in what country is a matter of efficiency; who pays is a question of equity. The issue is posed as follows: Issues of how future emissions (or abatement efforts) should be allocated and who	IEA	66	1	

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			pays for abatement, form some of the most contentious equity issues in climate policy... The two questions are closely intertwined; in the absence of seperate international transfers associated with abatement, the initial distribution of emission constraints will largely determine the distribution of costs. (ch 3, v.1, lines 1-5) Since the usual assumption is that the nation that does the abatement pays for it, it must be made clear that that is not necessarily the case. For an efficient allocation of emission abatement, modeling can produce comparable marginal cost curves among countries as illustrated in Chapter 7, Figure 3, page 26 taken from Kram (1994b) If one accepts that the most efficient allocation of emission reductions would be at the point of equal marginal costs, this provides another argument why options should be implemented jointly, irrespective of the issue of how the financial burden is shared among the countries (Ch 7 p. 26. 13-18) Similarly, Smith et al imply that the payments they consider would go to an international fund would then be used to finance abatement at the lowest marginal cost, wherever that might b, to the degree determined by total abatement specified (ch 3 v 5, last paragraph). The authors of Chapter 3 describe this as a "highly simplified picture of the abatement problem, in which the only interrelationship between countries is the impact of greenhouse gas emissions and deliberate financial transfer associated with paying for abatement..." (Ch 3, v6, first para.) A succesful precedent exists, however, in the use of estimated national abatement cost curves in the IIASA RAINS models for financial exchanges in Europe to reduce acid rain emissions,at least cost. The distinction between efficiency as the criterion for allocating emissons and equity				

WGIII Peer Review

November/26/1994

Page: 10

Reference			Comments	Reviewer (Country #)		ID	Response
Section	Page	Line					
			as the criterion for allocating costs is not drawn in Chapter 3 Equity and Social Considerations. For example, it is stated that the equity issues in responding to climate change comprise "distribution of future emissions" as well as costs. The authors go on to speak of "... a fair distribution of future emissions (which) may depend somewhat upon how much other countries help others with the costs of coping" (Ch. 3, III.7, Paragraphs 2 & 3)				
3	15	4-22	Relocation argument rather weak. Huge differences in energy prices between different industrial countries lead to massive relocation of environmentally industries. See P. Sorsa: Competitiveness and environmental standards. Some exploratory results, World Bank Policy Research Working Paper 1249, Washington, February 1994.	GER	50	1	
3	15	6-22	While the issue of leakage is a matter of great frustration, this discussion and conclusion is accurate and needs to remain in report.	API	76	a	
5	19	4	The sentence should be edited to read "Striking the appropriate balance and sequence of policies requires taking into account the costs, benefits and risks associated with each strategy."	API	76	a	
5	19	7	delete "plus" insert " or an extra dollar of"; there are three marginal costs, all of which should be equal for efficiency.	NWZ	37	1	
5	19	12	The sentence should be edited to read "What policy actions would improve economic efficiency(including the social costs of implementing the policy) and reduce net greenhouse gas emissions."	API	76	a	
5	19	31-33	delete sentence beginning "Some properties" and insert new sentence "The questions turn upon a large number of issues - some of which are inseparable from the value system used by the decision-taker - as to the feasibility and attractiveness of alternative directions of technological progress in the energy sector and the extent to which the choice is open to policy intervention." (This relates to the suggested redrafts for p8 lines 29-30 and p24 lines 9-11.)	NWZ	37	1	
5	19	45	subhead 1.5.2.1. to read "Removing Energy and Land Use Subsidies" with additional sentence at p 20 line 6: "Subsidies of \$??b, annually, paid to farmers in the US and Europe to keep farmland idle, act as a disincentive to bio-fuel production" and add new endnote "49a The question of sustainable land use is closely linked with energy sustainability. Critics of high energy input farming point to diminishing and eventually negative yields to additional organic fertilizer inputs, as the natural humus content	NWZ	37	1	

WGIII Peer Review

November/26/1994

Page: 11

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			becomes exhausted (Hall, C.A., various writings) Long-term sustainability may be achieved by several decade rotation, with a few cycles of short rotation woody biomass production employed to restore humus content, and raise deeper level nutrients, alternating with food production that is more soil conservative than current practices. This raised the question of option value of failing to use land to sequestered carbon in the next few decades, before rising population and falling agricultural productivity cause the opportunity cost of land to increase"				
5	20	19	Delete "the" and "most" (in this reviewers opinion, the most important action that governments can take is the purposive program of R&D&D mentioned in relation to p8 lines 29-30.	NWZ	37	1	
5	20	34	The content of footnote 51 seems to be very important and should be put in main text here.	FRA	70	1	
5	20	35	add new paragraph: "Local Government Land Use Planning. Detailed land use allocations decisions are currently made without regard to sustainable energy criteria, yet a site location decision has very long term impacts (especially with the NIMBY syndrome causing successive generations of plants to be located at the same place). Natural gas can be transported cheaply whereas bio-fuel in its raw state cannot. Thus, current locational decisions for gas fired power stations need to take account of prospective supplies of biofuel produced on surplus farm land.	NWZ	37	1	
5	21	46-48	A host of examples indicates that they are indeed leaving money on the table because of short-sightedness, lack of information and business-as-usual thinking. Graz in Austria has therefore installed a public consultancy which found huge range of no-regret options in small and medium sized enterprises. See K. Niederl, H. Schnitzer. Okoprofit Graz. Nachhaltiges, innovatives Wirtschaften, Graz, 1994.	GER	50	1	
5	22	18	Providing and disseminating information may also be one purpose for state agencies.	FRA	70	1	
5	22	34	Add new sentence: Essentially, technological bifurcations, whether in the transport or energy sectors, represent possibilities of dynamic global optima that cannot be approached through the precess of successive local optimisations that, with appropriate convexity assumptions, yield the competitive market's Pareto optimum".	NWZ	37	1	
5	22	44	what is a " government market rate of interest" (what is a government market)?	NWZ	37	1	
5	24	11	Add to footnote 71; "For instance the impact of bio-fuel at \$2GJ would be the greater if	NWZ	37	1	

P.13
0-0012023956958

TO

FROM IIRSA 43 2236 71313

12:16
207NOV-1994

Reference			Comments	Reviewer (Country #)		ID	Response
Section	Page	Line					
			if were the first rather than the fourth advanced technology to be introduced. However, subject to consistent modeling, the combined effects of the advanced technologies should be the same whatever the ordering"				
5	24	43	"aggressive" follows the terminology employed by Cline but seems anti-pathetic to this peaceable reviewer: how about "ambitious"?	NWZ	37	1	
5	25	24-32	A fourth item must be added to this para. "Fourth, politically, if carbon tax revenues are used to fund government spending, no double dividend would occur."	API	76	a	
5	25	42	Add new paragraph; "Nevertheless, it must be recognised that, despite the differences, the models have a lot in common and were compared by the OECD and EMF on the basis of results that ante-date the work reported in endnote 71. As reported at the influential 1990 Rome Conference, and setting the tone for the IPCC's 1992 Assessment, the model suffers from four defects: A. The revenues from carbon taxation were treated as a withdrawal from aggregate expenditure, like the early OPEC supply shock; B. Technology projections were econometrically based upon irrelevant experience, rather than engineering and agronomic knowledge; C. A stock problem was, for modeling convenience, treated as an emissions flow reduction problem, with the possibility of low-cost absorption into carbon sinks ignored; D. Developing regions of the world were modeled in the same full-employment equilibrium basis as developing regions. These defects led to a gross over-estimate of the costs of responding effectively to the IPCC's proposal to stabilise the level of GHG in the atmosphere - to such a point that, in the pro-Rio negotiations, politicians were deferred from reaching substantial commitments in the FCCC. In the model comparison exercises only A has been remedied so far, though we now have an important advance in relation to B from the ERM model, as reported in endnote 71. When the models are further developed to take account of low-cost absorption (and medium-term sequestration in standing timber, on land later to be used for bio-fuel production), together with beneficial global multiplier effects arising from rural employment in bio-fuel production and possibly of a double dividend (defined not simply as the effect of tax-recycling, but as the return on	NWZ	37	1	

Reference			Comments	Reviewer			Response
Section	Page	Line		(Country #)	ID		
			technologically well conceived response strategy) seems rather strong, with the measured near-term GDP reductions variously calculated by the models (if any, after appropriate model re-specifications) to be regarded as an investment rather than a cost."				
5	25	43-46	This paragraph is misplaced: the debate on GDP losses has nothing to do (in itself) with the double dividend: (See Chapter 10 Section 10.3.2 for the right survey.)	BELG	39	g	
5	26	1	Carbon and not the energy tax is second best. The literature is very controversial.	GER	43	i	
5	26	20	A tradable permits market with banking system may have the disadvantage of increasing final energy price volatility, and therefore discouraging energy saving investments. This remark should be added here.	FRA	70	i	
5	26	22-29	This section makes clear what a tax would add to a tradable permit system, but what a tradable permit system would add to a tax is not clear.	FRA	71	i	
5	27	5-40	The idea of "mixed bags" should be evoked: combining different kinds of instruments to get a synergy (See Leustra, IEA/OECD Conference, Paris 93)	BELG	39	g	
5	27	27-28	Replace sentence beginning "Thus, for example" with "For example, lower powered cars may be more tiring to drive and lead to increased journey times and accidents. (fuel costs have little impact on miles driven, which represent a time penalty far more important than the fuel-related pecuniary impact - most people drive to get from A to B).	NWZ	37	i	
5	27	27	More miles per gallon may raise the number of miles driven as the marginal cost decreases, but will not raise one's global budget for travel. Then, CAFE standards may not increase GHG emissions; they reduce them less than it seems when not taking into account the cost reduction.	FRA	70	i	
5	27	27-29	The statement that CAFE standards may actually increase emissions is speculative and without analytical basis. It would be accurate to say, however, that Emission reductions under CAFE standards may be less than a simple calculation of increased miles per gallon would indicate, but on the whole would reduce emissions."	API	76	a	
5	27	41	New heading and 2 new paragraphs: 1.5.7. Tradeable Absorption Obligations	NWZ	37	i	

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
			The TAO is a novel economic instrument, responsive to the special features of the GHG problem (Read 1994). It is designed to enlist energy sector management in the task of transforming the industry towards the reliance on sustainable energy technology, with bio-fuel as the core technology, together with the transfer of such technologies to developing countries. Under the TAO, energy firms are obligated to absorb a portion of the carbon that is emitted when their product is used. This obligation can be discharged by paying for some third party's emissions to be reduced ("net absorption" - say bio-fuel plantations in Nigeria, or on lay-by agricultural land in the mid-west USA. With the rising percentage obligation, biomass supplies come to exceed conventional demands and, having zero opportunity cost, come to be used as bio-fuel, with firms thereby avoiding the costs of extracting fossil fuels. Research is needed regarding the efficiency properties of the TAO (which, being tradeable - i.e. sub-contractable - avoids the inefficiencies of regulation). However, it appears to have the properties of a system of Voluntary Agreements (in that no tax flows from energy firms to government) but without the free-rider difficulty that arises with VAs. It also appears that the degree of energy industry adjustment would be greater, with adjustments outside the energy less, than for a carbon tax or emissions permit scheme that achieves the same GHG result. By focusing on influencing the behaviour of energy firms, some of the political problems that arise with instruments that involve government to government agreements are avoided - indeed the TAO can be regarded as a framework for commercialising Joint Implementation, with governments and NGOs involved in monitoring the activities of firms under the aegis of the Conference of the Parties, ensuring that environmental and socio-economic safeguards - "the rules of the game" - are observed by firms in the process of discharging their TAOs, and, in the event of default, subject to legal enforcement in the developed country where the TAO was originally imposed.				
6	28	0	It does not seem reasonable, in an IPCC report, to mention one of the most important Rawlsian assumptions in one single sentence, nor to address the issue of "sustainable development" as if the full substitutability of environmental goods by artificial assets were obvious. Cap. 3 provides a better starting point for this debate. Suggest this section 1.6 be deleted.	FRA	70	1	
6	28	9-10	The definition and interpretation of sustainable development should be supplemented by the implicit assumption that the natural and physical capital are perfectly substitutable. This implicit assumption is not very satisfactory from an "ecocentric" point of view.	IND	45	1	

Reference			Comments	Reviewer		ID	Response
Section	Page	Line		(Country #)			
6	28	13-17	The message in this paragraph is not clearly presented.	NED	71	1	
6	28	19-26	Extrapolation of growth rates over long periods is dangerous because of the inherent instability of fundamental assumptions. In these cases one should use a probability analysis.	GER	50	1	
6	28	26	add " The justification has to lie in a precautionary approach in face of uncertainty bordering on ignorance of the potential of the climate system to deliver an adverse surprise (e.g. a stopping of the Gulf Stream) or, alternatively to deliver a disproportionate increase in the frequency of extreme events to the extent that , say, Florida is assaulted by a new hurricane - or coastal Bangladesh inundated - sooner than it can recover from the last event. With unknown probabilities, and expected loss values hence incalculable, sustainability requires more conservative methodology than conventional cost benefit analysis in order to reflect this generation's responsibilities to its successors".	NWZ	37	1	
6	29	1-30	Lines 1-7 Unsustainability in growth not just from policies such as large energy subsidies but also from an unsustainable state of living. Lines 9-30 True (???) often lack the resources to respond to the threat of climate change. But this does not force the South to join the mitigative action. Rather, Annex 1 countries need to accelerate their efforts to contain the damage to the South. The equity issues and ????? or the equity arguments were not presented in a satisfactory manner. The FCCC guidelines on issues such as distributing costs of coping with climate change, distributing future emission rights and the costs of abatement should have been highlighted. Also the results of impact assessment studies have been presented without the necessary caveat. The results of these studies are quite "optimistic" only if the major assumptions about carbon dioxide fertilization effects holds good. These effects can be expected to play a key role only if the plant growth is limited by insufficient CO2. In practice, plant growth is limited more by nutrient deficiencies and lack of irrigation facilities. Such optimistic interpretation of results leads to underestimation of damages due to climate change. They should not be used to support "wait and see" approach of Annex 1 countries towards the climate change problem.	IND	45	1	
6	29	2	for "sustainable" read "unsustainable"???	NWZ	37	1	

Reference			Comments	Reviewer (Country #)		ID	Response
Section	Page	Line					
6	29	18	It is not at all clear whether the relation is substitutional or limitational. How could one replace an extinguished bird or butterfly with capital.	GER	43	1	
6	30	3	add: "However, given dynamic constraints to land use, and prospective demands for feeding upwards of 12 billion mouths later next century, afforestation (i.e. long-cycle biomass production) can play an important part in sequestering a target tonnage of carbon by a target date, with the timber product displacing the conventional exploitation of natural forests (yielding bio-diversity benefits) and residues providing bio-fuel raw material when harvested, at a time when the market for bio-fuel had become sufficiently expanded to absorb the quantities involved, and, as with any other bio-fuel production, thus achieving indirect sequestration in terms of fossil fuel left underground".	NWZ	37	1	
6	30	7-23	The entire section contains strong policy conclusions which are beyond the authority of IPCC. Additionally it is quite biased. It very clearly identifies the past role of developed countries in generating emissions, but completely avoids the words "developing nations" in the brief reference to future emissions. Needs to be more balanced.	API	76	a	
6	30	15-24	JI can be a useful instrument to facilitate "leapfrogging".	GER	50	1	
6	30	20	Developing countries cannot follow a similar path. Even if efficiency increases this will not be sufficient to keep absolute numbers from rising dramatically. Should therefore point out explicitly that developing countries need alternative development patterns with a change in course required by the North.	GER	43	1	
7	35	0	The idea behind footnote 33 is not clear.	FRA	70	1	
7	42	27-46	In political practice, continuous revisions of tax rates or permit levels are very improbable.	GER	50	1	