
Appendix A. Analysis of current activity on regional impacts of climate change

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1 Introduction

During the preparation of the First Assessment Report, it became clear that there were considerable gaps in our understanding of the potential impacts of climate change, particularly in the developing countries. As a result of the interest stimulated by the IPCC process and the activities of the World Climate Impact Studies Program, many country studies were initiated to remedy the deficiencies. The Asia-Pacific Seminar on climate change held in Nagoya in Japan on 23-26 January 1991 brought together a number of new studies in countries in the region and provided an extremely useful supplementary data source. Before proceeding with any further studies under the auspices of the IPCC, it was decided to survey the IPCC participating countries to assess the level of current activity and, in particular, identify regions where work was needed and issues which had not been identified in the six Tasks set by the IPCC Plenary. Accordingly, in June 1991, the Chairman of Working Group II circulated a questionnaire to all IPCC participating nations seeking their responses. Thirty-eight countries and eleven international organisations responded.

2 Methodology of assessment of responses

The responses were distributed through the IPCC Secretariat to members of the Steering Group set up at the Working Group II meeting in Geneva. Three members of the Steering Group, namely Dr Zwerva, Dr Tegart and Dr Nazarov, carried out analyses of the available responses. These analyses were discussed at a meeting in Amsterdam on 28 October 1991. Somewhat different approaches were used by the three groups in the presentation of the data. However, the conclusions reached were essentially similar with regard to the areas needing attention.

Attempts were made to increase the sample size by seeking further responses at the IPCC Plenary in November 1991. A few more countries responded following that meeting.

3 Results of the survey

Thirty-eight countries and eleven international NGOs responded to the survey. There was a particularly low level of response from Asian, North and Central American and South Pacific island countries. While there was a good response from developed countries, there were notable exceptions, including the United States and Germany.

The countries which responded were allocated to the six regions used by WMO (see Table 1) while the international organisations that responded are listed in Table 2.

4 Issues arising from the responses

Areas of activity

The most extensive amount of work has been undertaken in OECD countries, where impacts research has been undertaken across all sectors listed in the questionnaire. In developing regions the amount of research activity varies widely. In the eleven African countries which responded, although there had often been extensive consultation, only two countries were undertaking any activity at all (these being Senegal and Cote D'Ivoire which are undertaking a wide range of work on impacts). This and the lack of overall response would indicate that little substantial work has been done in this region on impacts.

In contrast, research activity in some South American and Asian countries, notably Chile, China, Saudi Arabia, Vietnam and Venezuela cover quite a range of sectors. However, the other countries which responded had a smaller range of activity, and given the low level of response from these regions, it is not possible to extrapolate from such a small sample.

Several of the international NGOs which replied, particularly United Nations bodies, are carrying out impacts research in a range of sectors. It would appear that much of this work is being undertaken in developing countries.

Several countries have also undertaken work in a number of areas of activity outside the IPCC Working Group II sectors, including impacts on:

- social issues
- tourism
- UV-B radiation
- economic issues
- recreation
- population
- desertification.

Priority areas

Of the sectors listed in the questionnaire, sectors a, b, c, d and e were all identified as priority areas for future action. Areas a, c and d were the sectors most often

emphasised in the developing countries. A few island countries also identified cyclones and extreme climate events. Sectors outside the ones identified by the IPCC include:

- economic issues
- cyclones and other extreme events
- desertification
- recreation and tourism.

Areas for future attention by IPCC

All regions suggested sectoral areas, other than those listed in the questionnaire, which require further attention by the IPCC. In particular, African and Asian countries suggested more activity on desertification. The suggested areas are:

- desertification
- global security
- UV-B radiation
- cyclones and other extreme events
- the ionosphere
- recreation and tourism
- fishing
- aquatic ecosystems
- migration
- social and economic issues
- mountain regions
- biological adaptations.

Assistance required

Only developing countries identified a need for assistance, generally in the form of grants, expert advice, training and international seminars. Two developed countries indicated that grants could be utilised.

Table 1: Countries which responded (by WMO region)

<p>I Africa</p> <ul style="list-style-type: none"> Cote d'Ivoire Gambia Guinea Malawi Mauritius Rwanda Senegal Seychelles Tunisia Uganda Zimbabwe 	<p>II Asia</p> <ul style="list-style-type: none"> China Japan Pakistan Saudi Arabia Vietnam
<p>III South America</p> <ul style="list-style-type: none"> Argentina Bolivia* Chile* Paraguay* Uruguay* Venezuela* 	<p>IV North and Central America</p> <ul style="list-style-type: none"> Bahamas Canada Cuba
<p>*information on impact studies only</p>	
<p>V South-West Pacific</p> <ul style="list-style-type: none"> Australia New Zealand Papua New Guinea Philippines 	<p>VI Europe</p> <ul style="list-style-type: none"> Denmark Finland France Ireland The Netherlands Norway Poland Switzerland United Kingdom Russia

Table 2: *International organisations which responded*

FAO	Food and Agriculture Organisation
FOE	Friends of the Earth (UK)
GEMS	Global Environment Monitoring System (UNEP)
ICSU	International Council of Scientific Unions
IHP	International Hydrological Program (UNESCO)
IIASA	International Institute for Applied Sys- tems Analysis
ILO	International Labour office
IOC	Intergovernmental Oceanographic Commission
OECD	Organisation for Economic Co-operation and Development
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WCI	World Coal Institute

Activity areas and degree of consultation

Activity areas

- a) Agriculture and forestry
- b) Natural terrestrial ecosystems
- c) Hydrology and water resources
- d) Energy, industry, transportation, human settle-
ments, health and air quality
- e) World's oceans and coastal zones
- f) Cryosphere including the special problems of
permafrost

I Africa

<i>Country</i>	<i>Consultation</i>	<i>Activity areas</i>
Cote D'Ivoire	extensive	a, b, c, d
Gambia	extensive	none
Guinea	limited	none
Malawi	limited	none
Mauritius	extensive	available in future
Rwanda	extensive	none
Senegal	limited	a, b, c, d, e
Seychelles	none	none
Tunisia	not given	not given
Uganda	extensive	none
Zimbabwe	not given	none

II Asia

China	extensive	a, b, c, d, e, f
Japan	limited	a, b, c, d, e, f social & economic impacts
Indonesia	-	e
Pakistan	limited	no specific areas, general study only
Saudi Arabia	limited	c, d, e desertification
Vietnam	limited	a, b, c, d, e

III South America

Argentina	limited	a, b, c, d
Bolivia	-	none
Chile	-	a, b, b, d, e
Paraguay	-	unsure
Uruguay	-	unsure
Venezuela	extensive	a, b, c, d, e

IV North and Central America

Bahamas	not given	none
Canada	extensive	a, b, c, d, e, f socioeconomic impacts recreation, population
Cuba	limited	a, b, c, d (human settle), e

V South-West Pacific

Australia	extensive	a, b, c, d, e, f UV-B radiation
New Zealand	limited	a, b, c, e, f
Papua New Guinea		d, e
Philippines	limited	a, c

VI Europe

Denmark	limited	a, b, c, d, e tourism economy
Finland	extensive	a, b, c, d, e, f
France	extensive	a, b, c
Ireland	limited	a, b, c, d, e
The Netherlands	limited	a, b, c, d, e, f
Norway	extensive	a, b, c, d, e, f
Poland	extensive	a, b, c, e
Switzerland	extensive	a, b, c, d, e, f
United Kingdom	extensive	a, b, c, d, e, f
Russia	extensive	a, b, c, d, e

Highest priority areas

<i>Country</i>	<i>Priority areas</i>
I Africa	
Cote D'Ivoire	a, b, c
Gambia	a, b, c, d (human settlements & health); e (Coastal zones)
Guinea	a, b, c
Malawi	estimates of regional ecological and socioeconomic impacts and baseline conditions; case studies of the above; preparation of a synthesis report
Mauritius	c sea-level rise & impacts on coastal zone; agriculture, sugarcane; increased cyclone impact on coastal areas
Rwanda	a, c, d
Senegal	a, c, d
Seychelles	coastal erosion; impact on ocean environment within EEZ; extreme events, eg tropical cyclones and storm surges
Tunisia	a, c ecosystems affected by desertification
Uganda	a, c, d
Zimbabwe	a, c, d tourism & recreation
II Asia	
China	a, c, d
Japan	no priorities set
Pakistan	a, c, d
Saudi Arabia	c desertification; sea-level rise; increased frequency of extreme weather events
Vietnam	a, b, c, e
III South America	
Argentina	a, c, d
Venezuela	a, c energy, industry, transportation, air quality, precipitation patterns
<i>Country</i>	<i>Priority areas</i>
IV North and Central America	
Bahamas	none given
Canada	a, b, c, f
Cuba	a, c, e

V South-West Pacific

Australia	a, c natural ecosystems (including marine); energy and industry
New Zealand	coastal, agricultural, indigenous ecosystems
Papua New Guinea	e impact of extreme events such as cyclones
Philippines	a, d energy, industry, human settlements

VI Europe

Denmark	a, b, c, d, e tourism economy
Finland	boreal forest/ forestry/ peatlands hydrology/ freshwater ecosystems/ water resources Baltic Sea
France	Forests, soils and grasslands
Ireland	a, b, c, d, e
The Netherlands	coastal zone management socioeconomic consequences & long-term sustainable development ecosystems
Norway	How fast ecosystems can change before irreversible damage; Gulf Stream; effect of climate change on other environmental monitoring programs; economic consequences of climate change;
Poland	a, b, c
Switzerland	energy supply; mountain areas; agriculture;
United Kingdom	critical sensitivities (soil, water, flora, fauna); hydrology; coastal and estuarine zones
Russia	agriculture and forestry; hydrology and water resources; energy, industry and transportation; cryosphere

Areas for future IPCC attention

I Africa

Rwanda	desertification
Senegal	drought and desertification
Seychelles	fisheries; tourism
Tunisia	desertification

II Asia

China	desertification; extreme events
Saudi Arabia	desertification

III South America

Argentina	interrelations between upper and middle atmosphere (ionosphere)
Venezuela	aquatic ecosystems

IV North and Central America

Canada	global security
Cuba	tourism

V South-West Pacific

Australia	fisheries — marine and inland; recreation and tourism; migration; aquaculture; social structure; economy; integrated socioeconomic issues
New Zealand	pastures
Papua New Guinea	impact of extreme events such as cyclones

VI Europe

The Netherlands	impact of UV-B radiation on health; crops and ecosystems; socioeconomic impacts
Norway	Economic consequences
Switzerland	Mountain regions; human perception of climate change problems; risk analysis
United Kingdom	Biological adaptations

Assistance required

I Africa

Cote d'Ivoire	subsidise research and training at specialised centres; assist with information and publicity
Gambia	national seminar series; consultancy mission to identify needs; grants, expertise and training;
Guinea	technical and financial assistance in cooperation of an industrialised country external training; provision of experts

Malawi	provision of experts; training schemes at overseas centres
Mauritius	grants, expert advice, seminars
Rwanda	provision of grants and experts training at overseas centres
Senegal	equipment for surveillance systems international association of national experts; provision of experts for short periods in case of emergency;
Seychelles	IPCC information exchange seminars; vulnerability to SLR case study for the Seychelles; grants or equipment for data acquisition
Tunisia	grants; training within the country or at centres overseas
Uganda	grants, expert advice, training
Zimbabwe	none

II Asia

China	none
Pakistan	grants
Saudi Arabia	training, provision of experts
Vietnam	none

III South America

Argentina	assistance will be required but not specified - IV WGII session will analyse this matter
Venezuela	grants

IV North and Central America

Bahamas	provision of equipment from EEC
Cuba	provision of computers and software and training; provision of methodology for impact assessment

V South-West Pacific

Australia	although no assistance specifically required there is further research that could be undertaken if additional funds were available
Papua New Guinea	provision of experts
Philippines	training, participation in international fora

VI Europe

France	possibly grants
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All other participating countries gave a nil response.

Responses from international non-government organisations

<i>Organisation</i>	<i>Activity areas</i>	<i>Priority areas</i>
Int'l Institute for Applied Systems Analysis	a, b, c, d	
International Labour Office	d — employment	
Friends of the Earth (UK)		a — water resources b — biological diversity e — sea-level rise
World Coal Institute		- investigating historical data - quantifying impacts at pressure points
Global Environment Monitoring System (UNEP)	methodology for climate impact assessment, especially re a and d	
OECD	socioeconomic impacts	- physical and economic impacts over a longer time horizon - connecting physical impacts with economic and social impacts
International Oceanographic Commission	work re e and f, with linkages to b,c and d	
International Council of Scientific Unions	IGBP Project re b Proposed project re e	
Food and Agricultural Organisation	a, c, e	
UNESCO		
- International Hydrological Programme	c	
- Working Group on Mean Sea-Level Rise and its influence on the Coastal Zone	e	