

LACRO Discussion Series: 4

***ENVIRONMENTAL AND
NATURAL RESOURCE
MANAGEMENT
PRIORITIES FOR LATIN
AMERICA AND THE
CARIBBEAN***

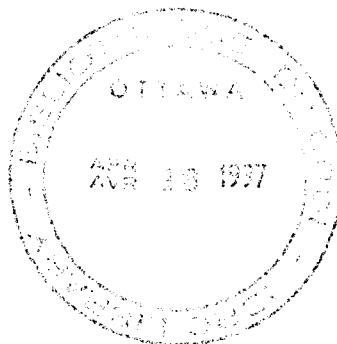
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June 21-23, 1995**

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LACRO Discussion Series

The Latin American and Caribbean Regional Office Discussion Series is intended to promote exchange and consultation on development issues.

The reports are neither official policy nor documentation of the International Development Research Centre but are intended to reflect a diversity of opinion about development issues in the Latin American and Caribbean Region.

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SECTION A

General

This section records the purpose and outcomes of the IDRC sponsored workshop on Environment and Natural Resource Management Priorities for Latin America and the Caribbean, June 21-23, Montevideo, Uruguay

MEETING BACKGROUND

Purpose

The purpose of the Environmental and Natural Resource Management Priorities for Latin America and the Caribbean workshop, organized by the Latin America and Caribbean Regional Office, International Development Research Centre (IDRC) was to:

- (a) review the value and demand for research activities in the area of environmental and natural resource management in the region;
- (b) review activities of donor agencies in this field;
- (c) identify priority areas for donor support and co-operation opportunities among funding agencies.

Objectives

The workshop focused on the following issues:

- (a) the demand and value for research on the environment and natural resources in Latin America and the Caribbean (LAC);
- (b) the continuing support of donor agencies and international/regional agencies and the possibilities of co-ordination; and
- (c) a review of current IDRC priorities and recommendations as to future approaches.

Structure

The workshop intended to raise questions, examine issues and provide a forum for the discussion of environment and sustainable development in the future. The structure of the meeting was intended to reflect this commitment to shared experience and discussion. .

The meeting attempted to cover the following themes and answer the following questions.

A. Agenda 21 and LAC Experience

Three years from Rio and with an increasing understanding of the importance of sustainability, particularly environmental sustainability, what are the main lessons which can be learned. These are the questions that seem most relevant and that this session will attempt to answer:

1. Since Rio, are there any general lessons that can be learned about Agenda 21 and its development implications?
2. What are the main obstacles and opportunities in pursuing an environmental or sustainable policy?
3. Which combination of institutions - private, public, non governmental - appears to be most effective and why?

B. Choice and Delivery

If Agenda 21 was broad - perhaps too broad and not sufficiently targeted - how have different governments and agencies coped with choosing projects and organizing their delivery. Given that external sources can assist governments and communities:

4. Do we have examples of good, exemplar projects or styles of projects that seem to work in the region?
5. How far are ecological patterns determinants of successful aid or successful projects?
6. How are projects chosen? Is there any agreement (and common lessons) as why some activities are supported and others are not?

C. Co-operation and Support

Given that funds are scarce and there are lessons to be learned from all partners:

7. Can research make more of a contribution to environmental and sustainable improvement than at present?
8. What are the most effective ways of co-operation and possibly management of development activities?
9. Can donors agree on a set of priorities (or can this group advise donors) on how to get there?

Organization

Each of the four sessions (one for each topic and one for conclusions) was organized as follows:

- a chair responsible for guiding the discussion and bringing it to a sensible end;
- an introduction by one or two main participants responsible for a review of the main issues at the commencement of each session and a summary at the end of the session;
- a rapporteur, chosen among participants, to note the main discussion topics and to produce with the other session rapporteurs a list for discussion at the last session.

OUTCOMES AND RECOMMENDATIONS

by Carlos Seré¹ & A.D. Tillett²

The present note records the outcomes and recommendations from the workshop.

The topics are organized consistent with the meeting structure and the series of questions posed at the beginning of each session to guide discussion (see below). The outcomes and recommendations are derived from the participants' deliberations and observations recorded more fully later in this report.

AGENDA 21 and the LAC Experience

IDRC was designated by the government of Canada as an Agenda 21 organization and participants views on developments since that time are particularly important. The comments refer, unless otherwise indicated, to the Latin American and Caribbean, (LAC), region.

There is consensus that since the Rio conference (1992), some progress has been made with regard to the environment and sustainable development. Environmental issues are permeating a wide range of policy discussions, from international trade to ethics and religion, and there is a growing consciousness about the long term importance of the environment if not agreement on its short term value. The principal lesson, after three years, is that environmental issues are multifaceted and complex, unlikely to be susceptible to simple rules or policy decisions; with asymmetries in the distribution of costs and benefits of most environmental interventions across countries, regions and social groups so making these issues highly political. And to address these issues, there should be an emphasis on research and particularly research with a bias toward holistic, participatory approaches.

Governments and many social groups have made statements about their concern for the environment. However, governments and others continue to find it difficult to implement practical policies consistent with their policy statements. The major obstacles to implementing AGENDA 21 (or a similar environmentally friendly policy), are regarded as the result of continued economic pressures (national and international); the close links between poverty and

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resource degradation itself partly a result of the related lack of progress in addressing poverty and population growth issues: and the unfortunate unwillingness of high income countries to accept responsibility for the lion's share of the environmental degradation to date while continuing their high rates of resource consumption as well as their unwillingness to continue funding aid programs. Policies are related to power and power relations should play a role in a full research program. However workshop participants identified opportunities which would enhance the feasibility of "greening" development policies in the region. These opportunities are closely related to the popular power of governments in the region; their increasing democratization, accompanied by a decentralization of power, together with expanded opportunities for participation and the slow, but demonstrable growth of pressure from public interest groups. In many high income countries, there is an understanding that issues such as the management of the global commons can only be addressed jointly by developing and high income countries. The North is gradually realizing that environmental issues cannot be addressed without dealing with issues of poverty, access to markets, and the required changes in lifestyles in the North. Consistent with this trend, a larger share of (diminishing) aid flows is being allocated to environmental issues. The workshop participants agreed that a major obstacle to aid and policy effectiveness was the shortage of trained personnel.

The workshop spent considerable time discussing the nature of appropriate institutions with the capacity to deal with these complex problems. It became clear that, given the public good aspect of environmental interventions, government has to be involved either as actor or as regulator. The neo-liberal economic model widely applied across the region has severely curtailed resources previously allocated to public institutions, among them universities and research institutions. These institutions are undergoing dramatic changes, particularly in terms of their links to civil society and the private sector; and appear less capable today of undertaking the training and experimentation urgently needed by policy makers. The other overriding trend in the institutional field is the acknowledgement of the need to involve a broad range of stakeholders in the decision making processes; and so involving aspects of the right to know and to be informed; participation in the planning process and the right of those directly effected by change to be consulted.

A central aspect of this new institutional landscape is the increased need of information and coordination among diverse actors, particularly development agencies. There is increasing evidence of new institutional arrangements such as ecoregional consortia, networks, electronic institutions, etc. These arrangements are in their infancy and require external support because they promise so much.

Choice and Delivery

Given the complexity of the problems addressed, no simple or uniform project design formula can be expected to lead to successful project outcomes. Nevertheless projects of multidisciplinary nature, carefully linked to the target population through effective participation mechanisms seem to have a higher probability of success than those lacking these elements. However there was a need to experiment more fully, even if the external resources were small,

and permit a range of approaches. There has been too many mistakes in large development projects and although these were now being corrected, there would be greater progress with a stronger research base by which to test policies and impacts.

The overwhelming purpose of development is the eradication of poverty and improvement in the quality of life. The linkages between poverty and environmental degradation leading to unsustainable development was stressed throughout the workshop. Although some environmental problems do not relate directly to poverty, (e.g. soil erosion caused by commercial soy-bean farming in the Cerrados) the majority of the region's environmental/natural resource management challenges are closely related to the resources that people control and how they earn their living (ie. sustainable livelihoods). The gender of a head of the household is often a good predictor of poverty so that the workshop advocated support for research directed toward this issue. Therefore projects, policies or research designs that fail to deal with poverty are also failing to address the environmental issue in an effective way. Participants unanimously agreed that IDRC should chose program areas that deal with both issues. Further the choice of a social environment (eg. urban or rural) determines the scope of the environmental problems and their interrelationship with health, social policy and other aspects of development.

Project choice criteria were not so clearly agreed and participants discussed the pros and cons of supporting a narrow set of issues against letting the recipients define the agenda. It was argued that competitive schemes with very broad subjects would very effectively tap the creativity of the region's researchers and produce better projects than those defined, for example, by program officers alone. A widely publicized competition could bring additional benefits such as ensuring that the research community on undertook comparative and co-operative projects. There are drawbacks to a widely open agenda and which relate to the loss of synergies among projects and among researchers, factors reducing the overall potential for impact. On the cost side, lack of focus increases the transaction costs for the donor agency.

Cooperation and Support

Research was seen by the participants as a key element in order to enhance environmental management because of the lack of effective research platform in contrast to other fields such as macro-economic policy. There was a general endorsement of IDRC's "empowerment through knowledge" philosophy as having continued relevance to research and policy in the LAC region. The complexity of the links among environment, society and policy requires research to enhance our understanding and in particular to the spatial and temporal dimensions of sustainability. There were many illustrations throughout the workshop of how short term policy (and sometimes investment decisions) overlooked and underestimated long term environmental consequences. The group felt that the interface between the social sciences and the biophysical sciences was a particularly important area to which properly trained researchers could make an effective and long term contribution.

Several important lessons emerged from the discussions on effective cooperation and management of development activities related to the environment. Donor agencies should not

behave as executing agencies and should therefore leave micro-management to partners. In addition, there is a need to improve our understanding of the context in which development projects are expected to operate. Examples were repeatedly given of projects where secondary environmental impacts were not anticipated or misunderstood because only the direct, first-round effects were taken into account. The conclusion demonstrates the value of ex-ante evaluations and modelling efforts and so the value of training, research and small projects.

The presentation of the operating philosophy of different donor agencies identified complementarities in their approaches, leading to the conclusion that there are substantial pay-offs to increased coordination and an implicit division of labor between them.

SECTION B

Agenda 21 & LAC Experience

The purpose of this first session was re-examine Agenda 21 and ask what lessons had been learned from this exercise. Javier Gatica of the Earth Council provides a helpful list in the first document. Then, in one of the commissioned papers, Peter Ellehøj looks at how the international donor community has responded to this challenge, which was followed by an appeal from Enrique Leff for a greater sense of co-operation and research information between both donors and recipients. The session closed with a lively general discussion.

AGENDA 21 & LAC EXPERIENCE

by Javier Gatica Pardo¹

The term management indicates the execution and decision making by participants, in this case, on environment and natural resources. Management of natural resources involves planning, resource allocation, execution, supervision and evaluation of projects with the objective of environmental sustainability and development of a higher quality of life. It poses the challenge of identifying the actors that should manage the environment and natural resources in a given area and the development of local programs and resource allocation.

IDRC should remember its mission as stated in "Empowerment through Knowledge" in order to delineate its priorities and also its basic orientation to sustainable and equitable development as stated by its institutional strategy. This approach recommends the strategic reorientation of organizations and institutions in order to contribute to the implementation of Agenda 21 and sustainable development.

Agenda 21, a broad action program adopted by the Earth Summit, attempts to "reconciliate the world economic activities with the need of protecting the planet and assuming a sustainable future for all people."

Agenda 21 is a comprehensive global action plan for the twenty-first century. It addresses the intricate relationship between environment and development in a wide range of areas. The Agenda 21 document was developed for the United Nations Conference on Environment and Development (UNCED), or the "Earth Summit", through a two-year Preparatory Committee process. In it includes a statement of goals and objectives as well as a list of strategies and actions to be taken to achieve those goals. The Earth Summit was only the first step in the long process of finding agreement between nations on concrete measures that could "reconcile the world's economic activities with the need to protect the planet and ensure a sustainable future for all people". many of the issues covered by the flexible and evolving Agenda 21 document have been the basis for the IDRC work over the years.

¹ Earth Council - San José, Costa Rica

General lessons

- Civil society is not sufficiently integrated into the decision making process. There persists fear, indifference and incapacity to participate in the process.
- The implementation of Agenda 21 and sustainable development are slow processes that require: an increase in local capacity, the use of participative diagnosis and research, the use of sustainable management methodologies and changes in consumer and production values and models.
- Do not create expectation of external funding. Sustainable development should be based on national/local resources and on the improvement of the conditions of international trade.
- National sectorial institutions respond unequally to Agenda 21 challenges. It is assumed to be the responsibility of environmental institutions.
- Multiple unlinked regulations and participatory meetings for sustainable development have taken place showing efforts for both traditional and sustainable development.
- The National Reporting to the Commission for Sustainable Development of UN on Agenda 21 implementation have notorious weaknesses: partial reports, showing an absence of a national Agenda 21.
- Civil society does not know the contents of the National Reporting to the Commission for Sustainable Development
- Rethoric and abuse on sustainable development and civil society participation.
- Many local integration experiences between actors, community and policy action, not documented.

Obstacles

- Government and civil society do not know sufficiently the negotiations and agreements related to sustainable development.
- Lack of "participatory culture." Back on representative democracy. Let others decide.

Opportunities. Agenda 21

- Is an instrument of planning and analysis at institutional, business, communal and national levels.
- Assists in the integration of efforts and institutional resources in a specific problem-area.
- Drives national and external financial resources.
- Appropriate area for the work of countries in regional groups.

Institutional mechanisms

In the preparation and execution of national, local, sectorial Agenda 21 programs the participation of relevant actors and the political will of governmental and productive sectors, civil society and universities which constitute the most promising institutional combination.

Aspects for the improvement of Agenda 21 execution

- Promote the preparation and execution of local, national and sectorial Agendas 21, identifying a specific ecosystem, participants and resources.
- Show Agenda 21 directives for sustainable development on the National Development Plans.
- Disseminate the utilization of methodologies for local sustainable development management.
- Encourage the exchange of knowledge and experiences between participants. Horizontal communication between participants.
- Improved preparation, disseminating and analysis at national level of reports to the National Reporting to the Commission for Sustainable Development.
- Strengthening of local capacity for appropriate participation.
- Stress the utilization of participatory research at local level.
- Democratize information for participants at local level.

- Incorporate sustainability preoccupation and Agenda 21 in commercial regional groups, such as NAFTA, CARICOM, Andean Pact, MERCOSUR, Central America.

AID FLOWS FOR ENVIRONMENT TO LATIN AMERICA AND THE CARIBBEAN¹

by Peter Ellehøj²

Introduction

The first half of the 1990s saw significant change in the direction of economic policy and the accomplishments of many countries in Latin America and the Caribbean. At the same time the region's reliance on foreign development assistance has also evolved: aid flows for environmental protection and natural resource management have attracted a much clearer priority both among donors and recipients. To what extent has this materialized itself in concrete financing? This paper sets out the salient features of donors' assistance from 1983 to 1993 to Latin America and the Caribbean in general, and of aid responding to environmental concerns in particular.

The analyses goes from the global to the specific. It starts with assessing general aid flows to the region relative to other regions of developing countries, and then examines how this aid is distributed within the region and what donors are active. Finally it examines the distribution by sector with emphasis on environmental activities.

The countries included in this analysis are heterogeneous, varying in size, economic and social development, resource-base, political structure, and degree of aid dependence. In order to facilitate the analysis of Official Development Assistance (ODA) flows to the region, they have been classified into three major groups: small, intermediate and more advanced economies (See Table 2). These groups have been established on a purely pragmatic basis in order to identify trends and the level and degree of involvement and commitment on the part of donors. They should only be seen as analytical groups for the purpose at hand.

The analysis is based on DAC³ statistics and on data from the Creditor Reporting System (CRS). For technical reasons, the analysis of the purpose distribution of ODA is based on the CRS

¹ The views expressed and arguments employed do not necessarily reflect the views of the Organisation or its Member countries

² Reporting Systems Division, OECD, Paris, France

³ The OECD Development Assistance Committee (DAC) is the principal international forum where bilateral aid donors can discuss their development co-operation strategies and aid programmes. It is as such not a funding agency.

system and hence on commitments, whereas the rest of the analysis is based on disbursements. Throughout this paper US dollars are used.

Aid flows to Latin America and the Caribbean compared to rest of the world

Latin America and the Caribbean (LAC) has had a relatively stable share of total ODA over the last decade. The region received 13.4 per cent of gross ODA disbursements in 1992/93 (Table 1 and Annex 1). Sub-Saharan Africa was the main recipient with 36.6 per cent, followed by Asia (27.1 per cent).

Table 1. Regional Distribution of ODA by Region

| | <i>Share of total gross disbursements (%)</i> | | <i>Share in total population 1993 (%)</i> |
|---------------------------------|---|----------------|---|
| | <i>1982/83</i> | <i>1992/93</i> | |
| Sub-Saharan Africa | 29.2 | 36.6 | 12.0 |
| South & Central Asia | 21.0 | 14.9 | 26.9 |
| Other Asia and Oceania | 17.0 | 12.2 | 42.3 |
| Middle East and North Africa | 20.6 | 23.0 | 5.6 |
| Latin America and the Caribbean | 12.1 | 13.4 | 10.8 |
| <i>Total</i> | <i>100.0</i> | <i>100.0</i> | <i>1000</i> |

Source: OECD 1994

There has been a pronounced shift in donors' interregional allocation: sub-Saharan Africa increased by over a quarter between 1982/83 and 1992/93, reflecting donors' increased preoccupation with this region. Most other regions saw declining shares. Against this background the LAC region's stable, even increasing,¹ share of aid flows is noteworthy.

Although it is outside the scope of this paper to analyse private flows, it is worth recalling the importance of this source of finance. Chart 1 below illustrates the mounting importance of private flows in the composition of financial resources to Latin America and the Caribbean. The region's increase has largely been a result of strong expansion in bond lending and foreign direct investment. It is however to be expected that private flows will decline relatively as financial markets react to the "Mexican crisis".

Chart 1. Structure of main categories of resource flows by selected regions

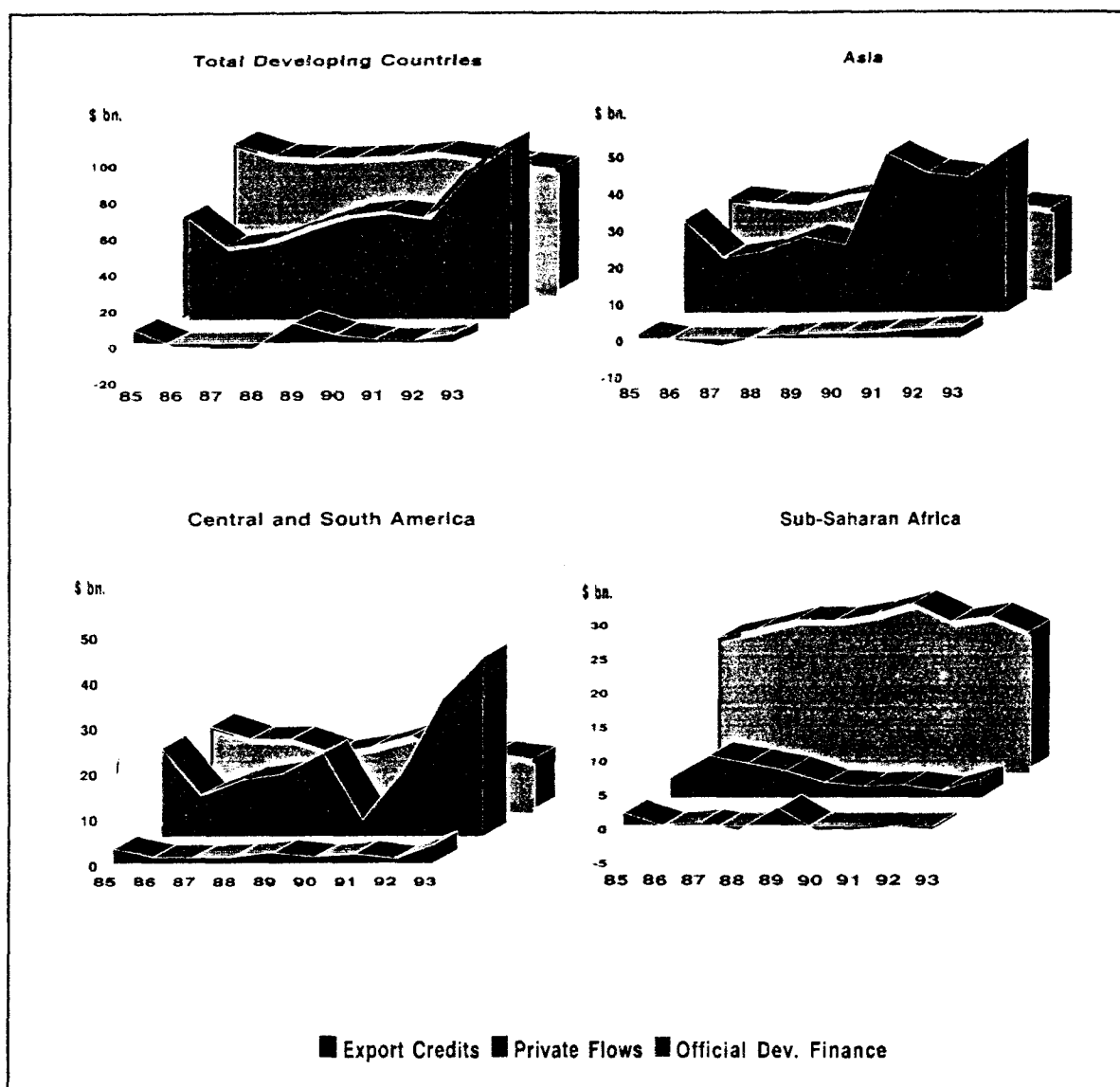


Table 2. Total ODA from all sources to Latin America and the Caribbean
(Million dollars)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Small economies | | | | | | | | | | | |
| ARUBA | | | 12 | 40 | 21 | 19 | 24 | 30 | 25 | 30 | 25 |
| BAHAMAS | 1 | 11 | 1 | 6 | 1 | 4 | 4 | 3 | 2 | 2 | 1 |
| BARBADOS | 19 | 8 | 7 | 4 | 6 | 3 | 2 | 3 | 3 | 2 | 6 |
| BELIZE | 15 | 14 | 22 | 24 | 24 | 25 | 29 | 30 | 21 | 25 | 31 |
| BERMUDA | | | 1 | | | | | 42 | -5 | -5 | -5 |
| CUBA | 13 | 12 | 18 | 18 | 33 | 20 | 56 | 51 | 38 | 24 | 44 |
| NETHERLANDS ANTILLES | 65 | 63 | 65 | 58 | 64 | 53 | 61 | 58 | 82 | 94 | 80 |
| TRINIDAD & TOBAGO | 6 | 5 | 7 | 19 | 34 | 9 | 6 | 18 | -2 | 9 | 3 |
| ANGUILLA | 2 | 2 | 3 | 3 | 4 | 4 | 6 | 4 | 6 | 5 | 5 |
| ANTIGUA AND BARBUDA | 3 | 2 | 3 | 5 | 6 | 9 | 4 | 5 | 7 | 5 | 3 |
| CAYMAN ISLANDS | | | | 2 | 2 | 12 | 1 | 3 | | | |
| DOMINICA | 10 | 17 | 17 | 12 | 16 | 18 | 24 | 19 | 17 | 13 | 9 |
| GRENADA | 7 | 27 | 34 | 24 | 19 | 20 | 15 | 14 | 16 | 12 | 8 |
| MONTserrat | 2 | 2 | 2 | 4 | 3 | 6 | 7 | 8 | 9 | 7 | 10 |
| ST. KITTS & NEVIS | 3 | 4 | 4 | 6 | 7 | 14 | 13 | 8 | 7 | 8 | 10 |
| ST. LUCIA | 7 | 6 | 7 | 12 | 11 | 18 | 18 | 12 | 23 | 29 | 26 |
| ST. VINCENT & GRENAD. | 5 | 4 | 6 | 12 | 13 | 17 | 15 | 15 | 14 | 15 | 11 |
| TURKS & CAICOS ISL. | 7 | 7 | 6 | 9 | 10 | 8 | 9 | 13 | 18 | 15 | 11 |
| VIRGIN ISLANDS (U.K.) | 3 | 2 | 2 | 1 | 2 | 2 | 6 | 6 | 6 | 5 | 3 |
| FALKLAND ISLANDS | 14 | 8 | 14 | 15 | 13 | 8 | 6 | 2 | 4 | | 6 |
| GUYANA | 31 | 23 | 27 | 30 | 28 | 27 | 44 | 169 | 131 | 93 | 107 |
| SURINAME | 4 | 5 | 11 | 14 | 22 | 21 | 51 | 62 | 44 | 80 | 80 |
| TOTAL | 218 | 221 | 268 | 317 | 341 | 317 | 402 | 574 | 469 | 468 | 473 |
| Intermediate economies | | | | | | | | | | | |
| COSTA RICA | 252 | 218 | 280 | 196 | 228 | 188 | 227 | 230 | 174 | 140 | 99 |
| DOMINICAN REPUBLIC | 100 | 188 | 207 | 93 | 130 | 118 | 143 | 101 | 67 | 64 | 2 |
| EL SALVADOR | 290 | 261 | 345 | 336 | 421 | 415 | 441 | 347 | 294 | 409 | 405 |
| GUATEMALA | 76 | 65 | 83 | 135 | 241 | 235 | 262 | 203 | 199 | 198 | 212 |
| HAITI | 133 | 133 | 150 | 181 | 213 | 142 | 197 | 172 | 182 | 102 | 127 |
| HONDURAS | 190 | 286 | 271 | 280 | 254 | 321 | 254 | 451 | 302 | 359 | 333 |
| JAMAICA | 181 | 170 | 169 | 178 | 168 | 193 | 262 | 273 | 165 | 126 | 109 |
| NICARAGUA | 120 | 114 | 102 | 150 | 141 | 220 | 245 | 335 | 841 | 658 | 323 |
| PANAMA | 47 | 72 | 69 | 52 | 40 | 22 | 19 | 99 | 102 | 161 | 80 |
| BOLIVIA | 174 | 169 | 197 | 334 | 309 | 420 | 498 | 554 | 513 | 674 | 565 |
| ECUADOR | 64 | 136 | 136 | 146 | 228 | 172 | 161 | 163 | 238 | 244 | 240 |
| PERU | 297 | 310 | 316 | 272 | 294 | 276 | 310 | 401 | 614 | 409 | 561 |
| TOTAL | 1924 | 2122 | 2326 | 2353 | 2668 | 2723 | 3019 | 3328 | 3690 | 3544 | 3054 |
| More advanced economies | | | | | | | | | | | |
| MEXICO | 132 | 83 | 145 | 252 | 156 | 174 | 99 | 160 | 278 | 317 | 402 |
| ARGENTINA | 47 | 49 | 39 | 88 | 100 | 153 | 212 | 184 | 299 | 292 | 283 |
| BRAZIL | 101 | 161 | 123 | 178 | 289 | 210 | 207 | 167 | 183 | -235 | 239 |
| CHILE | | 2 | 40 | -5 | 21 | 45 | 62 | 108 | 126 | 136 | 184 |
| COLOMBIA | 86 | 88 | 62 | 63 | 78 | 63 | 68 | 96 | 123 | 246 | 109 |
| PARAGUAY | 51 | 50 | 50 | 66 | 81 | 75 | 93 | 57 | 146 | 103 | 137 |
| URUGUAY | 3 | 4 | 5 | 27 | 18 | 41 | 39 | 54 | 52 | 73 | 121 |
| VENEZUELA | 10 | 14 | 11 | 16 | 19 | 23 | 60 | 80 | 31 | 41 | 50 |
| TOTAL | 430 | 452 | 475 | 685 | 762 | 784 | 839 | 905 | 1237 | 972 | 1524 |

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Unallocated | | | | | | | | | | | |
| WEST INDIES UNALL. | 6 | 9 | 9 | 32 | 105 | 78 | 78 | 54 | 50 | 52 | 42 |
| N. & C. AMERICA UNALL. | 48 | 68 | 121 | 83 | 45 | 85 | 45 | 44 | 61 | 132 | 80 |
| SOUTH AMERICA UNALL. | 7 | 11 | 29 | 23 | 23 | 34 | 65 | 19 | 76 | 61 | 30 |
| AMERICA UNSPECIFIED | 200 | 152 | 181 | 168 | 278 | 267 | 362 | 434 | 423 | 361 | 338 |
| TOTAL | 259 | 239 | 341 | 306 | 451 | 464 | 550 | 551 | 610 | 606 | 490 |
| TOTAL | 2831 | 3035 | 3410 | 3661 | 4222 | 4287 | 4810 | 5359 | 6006 | 5590 | 5542 |

In current dollars net ODA disbursements to Latin America and the Caribbean rose from \$ 2 831 million in 1983 to \$ 5 542 million in 1993 (Table 2) of which, \$ 4 195 from DAC countries. In constant 1993 prices, *i.e.* corrected for exchange-rate fluctuations and inflation, the flows from DAC Members increased by almost a third between 1983 and 1991 (from \$ 3 779 to \$ 5 034 million) dropping subsequently to \$ 4 195 million. Multilateral flows rose less rapidly so that total ODA flows increased by 7 per cent in the ten years from 1983 (from \$ 5 163 to \$ 5 542 million).

While these resources are significant, their impact on the region and particular countries varies. The region has a few very large economies not particularly dependent on aid, a large number of intermediate countries for which aid plays a more or less important role, and many small countries and territories for most of whom aid is extremely significant. Nevertheless the region is among the least aid dependent as Table 3 below shows, although for some individual economies external financing constitutes a considerable supplement to the GNP. In the case of Suriname, for example, ODA represents 15 per cent of GNP in 1993.

Table 3. Aid receipts as a share of GNP by regions

| Region | Aid Receipts (\$ billion) | GNP (\$ billion) | Aid Receipts/GNP 1993 (%) | Aid Receipts/GNP 1988 (%) |
|---------------------------|------------------------------|---------------------|------------------------------|------------------------------|
| Sub-Saharan Africa | 17.4 | 160 | 10.9 | 10.0 |
| Far East Asia and Oceania | 10.1 | 1 697 | 0.6 | 0.8 |
| South and Central Asia | 5.7 | 432 | 1.3 | 1.9 |
| North Africa | 3.7 | 153 | 2.4 | 1.7 |
| Middle East | 3.0 | 453 | 0.7 | 0.5 |
| South America | 2.7 | 940 | 0.3 | 0.3 |
| North and Central America | 2.5 | 406 | 0.6 | 1.3 |

Note: Net ODA from all sources combined to each group in 1993. Excludes unallocated amounts. Missing GNP data for some small island recipients have no significant effect on the figures shown. Source: "Geographical Distribution of Financial Flows to Aid Recipients", OECD, 1995.

Geographical distribution within Latin America and the Caribbean

The distribution of ODA within Latin America and the Caribbean is shown in table 2 and Annex 3. The "intermediate economies" received the largest share of net ODA: 56 per cent or the equivalent of \$ 2.3 billion. The small, mainly Caribbean economies, accounted only for 6.8 per cent. The "more advanced economies" account for almost 30 per cent of ODA, of which over 18 per cent goes to the three large countries: Mexico, Argentina and Brazil.

Within these large groups, some specific countries often weigh heavily in the group average:

- Small economies: Netherlands Antilles and Suriname alone stand for 54 per cent of flows to this group (split equally between the two).
- Intermediate economies: The three Andean countries (Bolivia, Ecuador and Peru) received almost half of the funds (46 per cent) going to this region. Of the remaining, mainly Central American countries, El Salvador and Honduras receive roughly half.
- More advanced economies: the Southern cone countries (Argentina, Chile, Paraguay and Uruguay) have more than doubled their share of ODA in this group over the period, representing 47 per cent in 1993. This is largely due to the strong increase in funding to Argentina which overtook Brazil in the mid-'80s as the second largest recipient after Mexico.

**Table 4. Total net ODA disbursements in Latin America and the Caribbean
from all sources**

(at 1993 prices and exchange rates)

| | 1983 | 1985 | 1987 | 1989 | 1991 | 1993 |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Small economies | 398 | 496 | 436 | 482 | 486 | 473 |
| Intermediate economies | 3 508 | 4 296 | 3 409 | 3 619 | 3 825 | 3 054 |
| More advanced economies | 785 | 877 | 974 | 1 006 | 1 282 | 1 524 |
| Unallocated | 473 | 629 | 576 | 659 | 632 | 490 |
| Total | 5 163 | 6 298 | 5 395 | 5 767 | 6 225 | 5 542 |

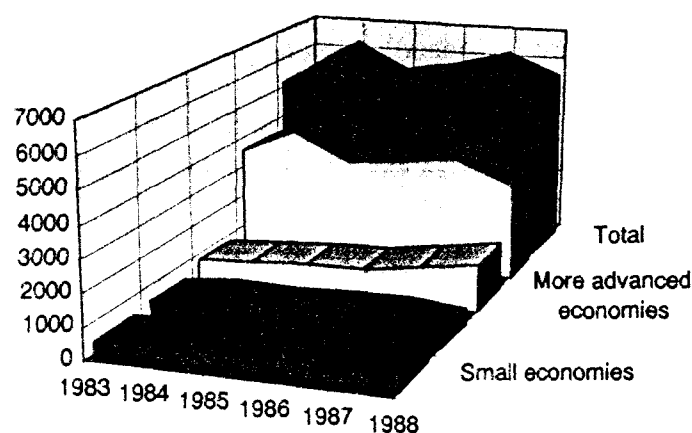


Table 5 below shows that the distribution within the region has been remarkably stable over the last decade. The group of small economies has revolved at around 7 per cent of net ODA, intermediate economies at around 65 per cent (with a marked drop to 55 per cent in 1993). The distribution within the group varies considerably however, especially for such countries in Central America as El Salvador and Nicaragua.

Table 5. Distribution of ODA between regional groups
(per cent of total)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Small economies | 6.9 | 7.1 | 7.1 | 7.9 | 7.0 | 6.2 | 7.8 | 7.9 | 5.7 | 7.0 | 6.8 |
| Intermediate economies | 67.9 | 70.0 | 70.3 | 64.6 | 65.5 | 65.2 | 63.5 | 64.8 | 63.4 | 65.8 | 55.6 |
| More advanced economies | 17.1 | 15.7 | 13.3 | 19.6 | 18.9 | 20.1 | 19.5 | 18.8 | 22.8 | 18.0 | 29.5 |
| Unallocated | 8.0 | 7.2 | 9.3 | 7.9 | 8.5 | 8.4 | 9.2 | 8.4 | 8.1 | 9.2 | 8.1 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

For the more advanced economies the average share turns around 19 per cent but, as can be seen in Annex 3, there have been large fluctuations in recent years mainly due to the larger economies of Mexico, Brazil and Argentina. These variations are however also found among other countries in the group. Chile, for example, slipped into negative flows in 1986 and surged thereafter.

Active donors and their priorities

Latin America and the Caribbean absorbs a sizeable portion of some DAC Member countries' ODA disbursements: around a quarter of gross disbursements by Canada, the Netherlands and the United States in 1992/93 (see Annex 1). For Spain this share was even larger: 54 per cent.

The United States and Japan account for almost 40 per cent of net bilateral ODA to the region (\$ 742 million and \$ 737 million respectively in 1993 although the US programme for the region has diminished in line with US aid in general). Germany and Spain have shares above 10 per cent, followed by the Netherlands, France and Italy. It is interesting to note that the European Union, i.e. the bilateral activities of EU Members and the EDF, has risen to account for roughly half of the total assistance to Latin America and the Caribbean (Annex 5).

Table 6. ODA distribution by donors
(in per cent of total)

| | 1982-84 | 1985-87 | 1988-90 | 1991-93 |
|----------------|---------|---------|---------|---------|
| Austria | | | | 1 |
| Belgium | 1 | 1 | 1 | 1 |
| Canada | 6 | 5 | 5 | 4 |
| Denmark | | | | 1 |
| Finland | | | 1 | 1 |
| France | 6 | 6 | 4 | 6 |
| Germany | 12 | 12 | 12 | 12 |
| Italy | 2 | 4 | 9 | 8 |
| Japan | 11 | 11 | 13 | 18 |
| Netherlands | 10 | 7 | 8 | 8 |
| Norway | 1 | 1 | 1 | 1 |
| Spain | | | 4 | 9 |
| Sweden | 2 | 2 | 3 | 4 |
| Switzerland | 1 | 2 | 2 | 2 |
| United Kingdom | 4 | 2 | 2 | 2 |
| United States | 45 | 48 | 34 | 22 |
| TOTAL DAC | 100 | 100 | 100 | 100 |

A quick examination of the most active donors in the three sub-regions is given below.

The small economies often depend on only a few donors. For example, for the small Caribbean countries four major donors (Canada, the Netherlands the United States, and United Kingdom) account for almost 90 per cent of bilateral aid. But smaller donors play a major role at the sub-regional level and in individual countries. Canada, for example, with only 3 per cent of total net disbursements in 1993 was the biggest donor to Guyana and St.Lucia. The Netherlands' assistance represents 55 per cent of total net ODA to the small economies but goes mainly to Netherlands Antilles, Suriname, and Aruba.

Aid to the intermediate economies comes mainly from bilateral sources (76 per cent) of which around a third from the United States. The United States provides 15 times the amounts of the next largest donor in El Salvador and is still, despite its reduced overall programme, the single largest donor in seven out of twelve of the countries in the intermediate group.

Nicaragua is the only country to receive substantial amounts from Nordic countries (31 per cent of its total ODA). Five years ago this used to be an exception in Latin America and the

Caribbean, but since then, the Nordic countries have gradually built up a programme amounting to seven per cent of all bilateral ODA.

The active multilateral players in the intermediate economies are the UN agencies, the World Bank, the IDB and the EDF. While the UN Agencies dominate in Central America, the World Bank plays the major role in the other intermediate countries.

In the more advanced economies Germany and Japan together accounted for more than 70 per cent of the bilateral aid in 1983. They now account for around 40 per cent; Italy and Spain have risen from almost nothing to 44 per cent. There was a net *repayment* of \$71 million on ODA account from the more advanced countries to the United States in 1993 (down from \$ 373 million the previous year).

Both the World Bank and IDB have been net recipients for the last seven years from the more advanced economies. All other agencies are dwarfed by the UN agencies, which provided almost 90 per cent of the net multilateral contributions in 1993, itself however a modest 17 per cent of total aid to this group.

The components of donors' programmes

Before examining environmental activities specifically, it is worth seeing the general sectoral emphasis of major donors and which aid form is chosen. The breakdown by sectors of ODA commitments to Latin America and the Caribbean shows a predominance of a few sectors and forms of aid. Technical co-operation is particularly important, constituting 45 per cent of all ODA disbursements in 1993.

The United States only provides 25 per cent of its gross disbursements in the form of technical co-operation, and accounts for about a quarter of total technical co-operation commitments. It provides a large share of its assistance in form of non-project aid. Debt reorganisation has come to play a large share and food aid continues to run at 8-10 per cent. Only around a quarter of US ODA are directly allocable by sector. The United States provides the bulk of total programme aid and almost the totality of food aid to the region (85 per cent in 1993).

Of the other donors, Germany provides a large share of its aid in the form of technical co-operation (around 60 per cent). Debt reorganisation represents 10 per cent of total German commitments. Germany's main areas of activity are the transport sector and energy but it is increasing its activities in agriculture and environment.

Japan has a high concentration on agriculture and recently on water and sanitation, and is the largest donor to these two sectors. Japan provides around a third of its ODA commitments as technical co-operation.

In all, the DAC donors account for the totality, or near totality, of commitments in several areas: education, health, public administration, energy, industry, mining and construction, and

communications interalia. Bilateral donors also provide almost all the aid given in a non-project form.

Of the multilateral donors, IDA concentrates on infrastructure, both economic and social. The Inter-American Development Bank (IDB), too, emphasises infrastructural development with a heavy focus on transport as well as water and sanitation. All of this assistance is given in the form of project aid. The UN agencies, by and large providers of technical co-operation, account for 42 per cent of multilateral net ODA disbursements in 1993, or nearly 11 per cent of total ODA.

Composition of environmental assistance to region⁴

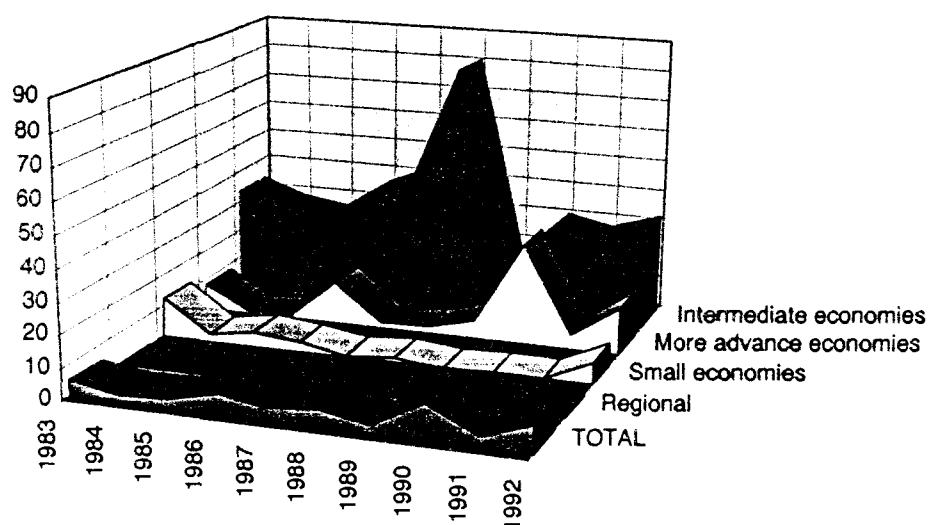
In contrast to the stability of overall assistance that was identified earlier, environmental assistance to the Latin America and the Caribbean has been characterised by a volatile but significant share of ODA commitments. As the chart below illustrates there has been a rise in absolute terms in the level of donor activities in environment.

It is not possible at this stage to assess the change in emphasis following the UNCED meeting in Rio de Janeiro in 1992. There is a considerable time lag between a donor's financial response to Rio, e.g. through changes in the composition and emphasis of national aid programmes, and the translation of this response into specific aid projects and commitments to particular countries. To this lag should be added the time before the data are reported statistically. Some general trends were already underway before Rio.

Table 7: Total ODA commitments towards environmental purposes
(in million \$)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| | 26 | 4 | 9 | 5 | | 4 | | 1 | | 17 |
| Intermediate economies | 64 | 50 | 84 | 83 | 133 | 213 | 53 | 101 | 100 | 149 |
| More advanced economies | 31 | 5 | 11 | 110 | 13 | 17 | 60 | 491 | 80 | 307 |
| Regional | | | | 6 | | 3 | 4 | 7 | 13 | 21 |
| | 122 | 58 | 104 | 204 | 147 | 238 | 118 | 600 | 194 | 494 |

⁴ Source: OECD Creditor Reporting System. Reporting of technical co-operation projects to this database is voluntary and donors' activities in this field are underestimated. Quantitatively, the impact is small, since most technical co-operation activities are small scale. Nevertheless, care is required in interpreting the data for individual sectors.

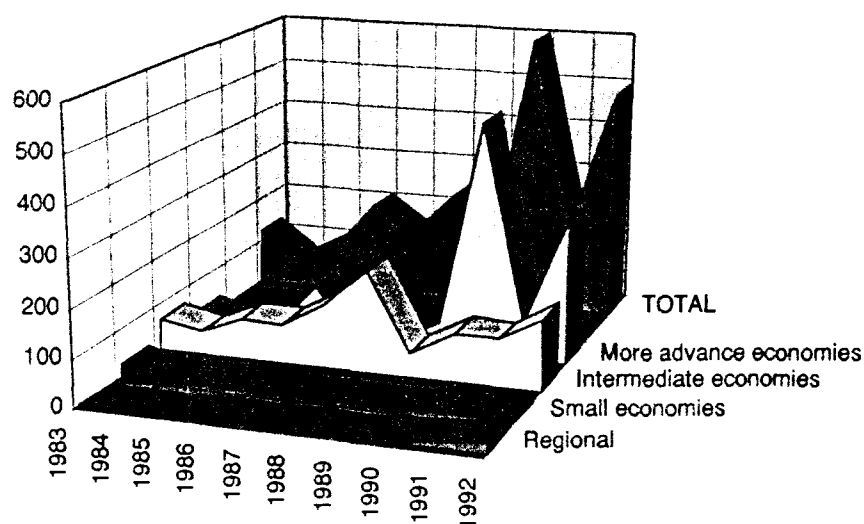


Although one should be cautious about overinterpreting the figures (see note 1 above), it is interesting to observe (Table 9) that the general shifts in donors' relative position are the same for environment specific activities as was identified earlier for global ODA to Latin America and the Caribbean. The United States takes a smaller share in the activities while Japan has grown to account for an average of 40 per cent of all bilateral environmental activities. When compared with environmental activities in all developing countries the donors examined in general play a more active part in this region than on average.

Table 8. Donors share of total bilateral environmental activities
(per cent of total)

| | <i>Latin America and the Caribbean</i> | | <i>All developing countries</i> | |
|---------------|--|----------------|---------------------------------|----------------|
| | <i>1983-87</i> | <i>1988-92</i> | <i>1983-87</i> | <i>1988-92</i> |
| Canada | 20 | 3 | 6 | 4 |
| Germany | 29 | 16 | 9 | 10 |
| Italy | 3 | 10 | 2 | 6 |
| Japan | 11 | 40 | 21 | 31 |
| Netherlands | 6 | 10 | 7 | 8 |
| Switzerland | 7 | 5 | 2 | 4 |
| United States | 26 | 13 | 29 | 14 |

Most of the environmental activities are investment projects (90 per cent). On average three-quarters of the assistance is composed of projects larger than \$ 10 million (in the case of Japan this share is close to 90 per cent). But although big projects dominate the financial picture, around half the *number* of projects are under a half million dollars.



On average, it is the more advanced economies, followed by the intermediate economies, who receive the largest share: 62 per cent and 30 per cent respectively in 1992. The fluctuations are however considerable. This can to a large extent be explained by the fact that some environmental projects are very capital intensive. Of the surge in ODA to environment in 1990, \$ 479 million was due to one single commitment by Japan's OECF for a sulphur dioxide reduction project in Mexico City.

The share of environmental commitments to overall ODA is accordingly characterised by the same fluctuations. The share of environmental projects in total ODA commitments to the intermediate economies has been around a third in recent years. For the region as a whole environmental projects represented 9 per cent of total ODA (Table 8), compared with 3 per cent for all developing countries.

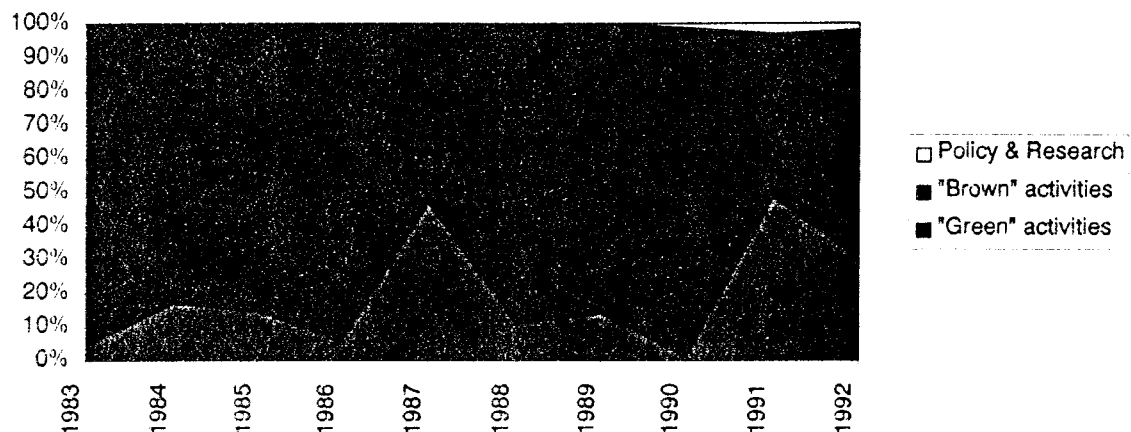
Table 8. Environmental activities as a share of ODA
(per cent of total)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Small economies | 12 | 2 | 4 | 3 | | 1 | | 0 | | 7 |
| Intermediate economies | 33 | 28 | 26 | 36 | 42 | 81 | 15 | 30 | 28 | 32 |
| More advanced economies | 8 | 1 | 1 | 14 | 2 | 2 | 6 | 32 | 5 | 15 |
| Regional | | | | 0 | | 0 | 0 | 0 | 0 | 1 |
| TOTAL | 5 | 2 | 3 | 6 | 4 | 6 | 3 | 11 | 3 | 9 |

It is not possible to make any firm assessment of the scale of multilateral contributions to the environmental sector. The IDB, IDA and the EDB all have programmes aimed at environmental activities. Their presence is particularly felt in the intermediate economies where the IDB alone some years stood for over half of the environmental assistance recorded.

If one attempts to distinct between the “green”, “brown” and more policy & research oriented activities among the environmental projects, one finds - not surprisingly - that the majority of activities are “brown” - Chart 2 below shows this clearly. “Policy and research” is only now emerging as an area that is of some significance in financial terms.

Chart 2. Composition of environmental aid



Among the “brown” activities the “water and sewerage” sector dominates: in recent years it has absorbed roughly half of total environmental resources. While this sector still dominates in the small economies of Central America and the Caribbean, the trend is downwards from the 90 per cent it represented at the beginning of the decade.

The Global issues: new instruments

Many of the environmental issues are specific to individual countries and their solution is sought within these countries. Some, however, transcend borders, either with a regional scope, as pollution of rivers or acid rain, or with a global dimension such as loss of biodiversity, global warming, pollution of international waters, and the emission of chlorofluorocarbons (CFCs). Some new instruments have been designed to meet these issues. They are not included in the previous analysis. A brief presentation can be made.

The Global Environment Facility (GEF) is the major mechanism for providing grants and concessional loan funds to developing countries for projects and activities that aim to protect the global environment. Responsibility for implementing GEF activities is shared by the UNDP, the UNEP and the World Bank. So far GEF have identified some 23 projects for Latin America and the Caribbean totalling around 159 million, representing 21 per cent of the GEF's activities.

Another new instrument is debt-for-nature swaps. The principle is as follows: an international NGO purchases developing country debt at a deep discount in the secondary market (the purchase price) and exchanges it, at a pre-arranged redemption price (often at par) with the debtor-country government. To limit the inflationary impact, the local authorities often issue a domestic (environmental) bond to raise the local currency. The local currency generated by the exchange is then used to fund agreed conservation measures. Since 1987, when the first debt-for-nature swap was concluded in Bolivia, a total of 18 transactions have been completed in 9 Latin America and the Caribbean countries. These swaps have raised about \$ 90 million for environmental projects (face value of bond or local currency equivalent) at an actual cost of \$ 23 million to acquire the sovereign debt), enabling NGOs to leverage their funds by on average 2.3 and reducing the stock of external debt of the participating developing countries by \$ 136 million (at face value). Latin America and the Caribbean accounts for 71 per cent of the conversion funds from debt-for-nature swaps.

The debt conversion and conservation effort financed through debt-for-nature swaps represents modest sums in relation to the conservation funding needed. The expansion of the scheme has been hampered by the restricted resources available to the NGOs and smaller discounts in the secondary market on developing country debt⁵. While useful in the reduction of debt, the effectiveness of such schemes in the long term for environmental preservation is yet to be tested.

These mechanisms supplement traditional projects in providing significant, though by no means adequate, external funding for environmental projects and programs.

Final remarks

It is still too early to assess the impact of UNCED on environmental aid flows to Latin America and the Caribbean. It is however noteworthy that the region has maintained a stable, even rising, share of donors' development co-operation activities. Projects aiming at environmental concerns have also grown, both in value and as a share over the period.

In the democracy of statistics all projects are equal. A million dollar project started in 1983 and aimed at improving the environment will be presented on an equal footing with a 1993 project of the same (real) amount and purpose. The two might however be diametrical opposites: inadequate policies and ill-designed projects unwittingly inflicted much environmental damage.

⁵ The more successful a country is in restoring investor confidence in its growth prospects, the narrower the discount is likely to become, hence, the smaller the leverage factor on any debt-for-nature swap.

Fortunately, much has been learnt over the period. The statistics presented in this paper do not allow for the learning process and the resulting change in quality.

Actually, many lessons have been learnt in the last decade about the quality of aid needed for environmental purposes. DAC Member countries have in recent years made major efforts to relate environment to their development co-operation activities. The Development Assistance Committee Working Party on Environment was established in 1989 with the aims of :

- strengthening the contributions of aid policies and programmes to environmental sustainability and improved natural resources management;
- achieving this through the effective integration of environmental considerations into development co-operation policies at the level of policy, programme and project design, and;
- integrate environmental considerations into the policy dialogue with developing countries.

The DAC has adopted guidelines on the relationship between environment and aid (seven to date - see annex 9). Specific workshops on the issue have also been held with participation from developing countries (including representatives from Latin America) in order to examine ways of improving the effectiveness and relevance of DAC Members' environmental aid.

Annex

| | |
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Annex 1. Regional Distribution of ODA by Individual DAC Donors and Multilateral Agencies(a)
Per cent of total gross disbursements

| | Sub-Saharan Africa | | | South & Central Asia | | | Other Asia and Oceania | | | Middle East, North Africa and Southern Europe(b) | | | Latin America and Caribbean | | |
|----------------|--------------------|---------|---------|----------------------|---------|---------|------------------------|---------|---------|--|---------|---------|-----------------------------|---------|---------|
| | 1987/88 | 1992/93 | 1987/88 | 1987/88 | 1992/93 | 1987/88 | 1987/88 | 1992/93 | 1987/88 | 1987/88 | 1992/93 | 1987/88 | 1987/88 | 1992/93 | 1992/93 |
| Australia | 9.5 | 7.0 | 14.4 | 10.6 | 4.9 | 10.7 | 77.8 | 86.8 | 73.2 | 2.0 | 1.1 | 1.5 | 0.2 | 0.2 | 0.2 |
| Austria | 8.6 | 19.5 | 16.0 | 3.8 | 1.3 | 2.5 | 17.3 | 12.0 | 19.9 | 61.1 | 62.8 | 56.7 | 9.2 | 4.4 | 4.9 |
| Belgium | 69.7 | 75.8 | 58.7 | 2.9 | 2.3 | 3.4 | 11.5 | 9.9 | 8.6 | 9.6 | 5.1 | 14.1 | 6.3 | 6.9 | 15.1 |
| Canada | 37.8 | 38.3 | 37.7 | 33.6 | 24.8 | 17.9 | 6.2 | 13.0 | 10.5 | 8.1 | 7.3 | 8.9 | 14.3 | 16.5 | 25.0 |
| Denmark | 56.5 | 63.6 | 65.9 | 29.9 | 19.1 | 17.7 | 6.4 | 6.8 | 2.6 | 4.9 | 7.3 | 6.3 | 2.3 | 3.2 | 7.5 |
| Finland | 63.7 | 64.7 | 45.0 | 9.6 | 13.6 | 11.5 | 12.5 | 6.8 | 9.8 | 6.4 | 7.4 | 21.8 | 7.8 | 7.4 | 11.9 |
| France | 51.7 | 54.3 | 61.4 | 3.5 | 4.5 | 3.5 | 21.6 | 21.9 | 9.8 | 16.7 | 14.3 | 19.2 | 6.5 | 5.0 | 6.1 |
| Germany | 30.8 | 28.3 | 26.5 | 18.4 | 15.8 | 12.6 | 14.3 | 11.1 | 9.7 | 24.0 | 30.4 | 34.8 | 12.5 | 14.3 | 12.4 |
| Ireland | 95.4 | 94.7 | 86.3 | 1.3 | 3.0 | 2.8 | 1.7 | 1.2 | 1.9 | 0.3 | 0.4 | 7.5 | 1.2 | 0.8 | 1.5 |
| Italy | 59.7 | 65.5 | 42.2 | 1.6 | 5.0 | 2.2 | 4.6 | 6.6 | 8.5 | 25.9 | 12.5 | 31.1 | 8.2 | 10.4 | 16.0 |
| Japan | 11.1 | 12.2 | 13.5 | 22.6 | 22.3 | 19.2 | 50.2 | 50.0 | 34.9 | 7.7 | 8.5 | 20.3 | 8.4 | 7.0 | 12.2 |
| Luxembourg | 0.0 | 0.0 | 57.3 | 6.6 | 0.0 | 5.7 | 0.0 | 0.0 | 3.8 | 0.0 | 0.0 | 14.7 | 0.0 | 0.0 | 18.4 |
| Netherlands | 33.1 | 39.0 | 38.2 | 21.6 | 20.4 | 16.2 | 13.8 | 16.9 | 3.9 | 6.1 | 5.5 | 13.9 | 25.4 | 18.2 | 27.9 |
| New Zealand | 0.4 | 1.2 | 3.9 | 1.5 | 1.3 | 1.9 | 97.9 | 96.9 | 92.2 | 0.0 | 0.0 | 0.4 | 0.1 | 0.6 | 1.6 |
| Norway | 56.5 | 66.6 | 62.6 | 28.5 | 21.1 | 18.5 | 6.4 | 4.3 | 4.3 | 5.1 | 0.6 | 4.9 | 3.5 | 7.2 | 9.7 |
| Portugal | 0.0 | 0.0 | 99.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| Spain | 0.0 | 19.2 | 11.8 | 0.0 | 0.0 | 0.1 | 0.0 | 12.1 | 13.0 | 0.0 | 6.4 | 20.8 | 0.0 | 62.3 | 54.3 |
| Sweden | 54.4 | 62.6 | 51.7 | 23.2 | 15.3 | 12.4 | 15.6 | 11.6 | 7.3 | 2.9 | 3.7 | 15.6 | 3.9 | 6.8 | 12.9 |
| Switzerland | 45.7 | 48.4 | 44.2 | 27.5 | 18.6 | 20.7 | 4.3 | 10.6 | 5.2 | 8.9 | 5.5 | 14.5 | 13.6 | 16.9 | 15.4 |
| United Kingdom | 39.9 | 49.1 | 47.8 | 32.6 | 27.6 | 26.0 | 7.8 | 10.1 | 7.6 | 6.6 | 6.2 | 9.5 | 13.2 | 6.9 | 9.1 |
| United States | 14.1 | 14.1 | 19.0 | 10.9 | 11.7 | 7.7 | 8.0 | 8.1 | 2.8 | 50.0 | 43.1 | 45.7 | 17.0 | 23.0 | 24.8 |
| Total DAC | 28.1 | 32.1 | 32.5 | 15.9 | 14.8 | 11.4 | 20.0 | 22.2 | 13.7 | 23.9 | 18.8 | 26.9 | 12.1 | 12.1 | 15.6 |
| CBC | 58.1 | 58.3 | 64.0 | 16.8 | 11.0 | 5.1 | 6.2 | 9.5 | 6.4 | 14.2 | 10.9 | 16.4 | 4.8 | 10.2 | 8.1 |
| IFAD(g) | 24.1 | 37.7 | 46.0 | 45.9 | 38.5 | 38.8 | 6.9 | 12.5 | 9.9 | 6.4 | 2.0 | 1.6 | 16.7 | 9.3 | 3.7 |
| UN | 33.9 | 41.8 | 44.8 | 22.8 | 20.3 | 13.7 | 14.2 | 15.9 | 6.0 | 20.5 | 9.8 | 23.9 | 8.6 | 12.3 | 11.7 |
| Agencies(d) | | | | | | | | | | | | | | | |
| Overall total | 29.3 | 34.9 | 36.6 | 21.0 | 18.2 | 14.9 | 17.0 | 19.8 | 12.2 | 20.6 | 15.5 | 23.0 | 12.1 | 11.6 | 13.4 |

a. Bcd. has specified amounts by region.

b. Developing Countries in Southern Europe are Turkey, Greece, Cyprus, States of ex-Yugoslavia, Malta, Albania and Gibraltar.

c. International financial institutions. Includes IDA, regional banks, soft window and IFAD.

d. Includes UNDP, UNICEF, UNRWA, WFP, UNHCR and UNFPA.

Annex 2. Total Net Receipts of ODA by Region and Selected Developing Countries

| | Per Cent of Total ODA | | | Per cent of DAC bil. ODA | Share in total population | ODA receipts | | ODA as percentage of LDCs GNP | | GNP per capita |
|---------------------------|-----------------------|---------|---------|--------------------------|---------------------------|--------------|----------------------|-------------------------------|---------|----------------|
| | 1982-83 | 1987-88 | 1992-93 | | | 1993 | annual real % change | 1987-88 | 1992-93 | |
| | | | | | | \$ billion | 1983-93 | | | \$ (a) |
| Sub-saharan Africa | 27.9 | 34.2 | 36.4 | 37.3 | 12.0 | 18.0 | 2.1 | 17.6 | 14.8 | .. |
| Asia | 33.3 | 35.8 | 29.8 | 29.4 | 69.2 | 14.3 | -2.1 | 2.6 | 0.9 | .. |
| Oceania | 3.5 | 3.4 | 3.0 | 3.2 | 0.1 | 1.6 | -2.0 | 40.2 | 24.3 | .. |
| North Africa & Midl. East | 24.4 | 13.3 | 14.6 | 12.3 | 5.6 | 6.4 | -6.1 | 1.9 | 3.1 | .. |
| Southern Europe | 2.2 | 1.3 | 5.3 | 6.3 | 2.3 | 3.0 | 13.1 | 0.6 | 1.7 | .. |
| Latin America | 11.7 | 12.2 | 10.9 | 11.4 | 10.8 | 5.5 | -1.9 | 1.4 | 0.5 | .. |
| Bolivia | 0.6 | 0.9 | 1.2 | 1.2 | 0.2 | 0.6 | 5.9 | 21.1 | 11.7 | 775 |
| Nicaragua | 0.6 | 0.6 | 1.0 | 0.7 | 0.1 | 0.3 | -0.5 | 17.6 | 32.9 | 357 |
| Peru | 0.9 | 0.7 | 1.0 | 1.2 | 0.5 | 0.6 | -1.8 | 2.4 | 1.8 | 1492 |
| El Salvador | 0.9 | 1.0 | 0.8 | 0.8 | 0.1 | 0.4 | -3.2 | 19.7 | 12.6 | 1265(b) |
| Mexico | 0.5 | 0.4 | 0.7 | 0.8 | 2.0 | 0.4 | 5.3 | 0.2 | 0.1 | 3747 |
| Honduras | 0.6 | 0.7 | 0.7 | 0.7 | 0.1 | 0.3 | -0.7 | 15.0 | 11.0 | 577 |
| Argentina | 0.1 | 0.3 | 0.6 | 0.6 | 0.8 | 0.3 | 22.3 | 0.3 | 0.1 | 7288 |
| Overall total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 48.8 | -0.9 | 3.0 | 1.5 | .. |

a. Actual GNP per capita derived from World Bank GNP & population data (not on World Bank Atlas basis)

b. estimates

Note: Net ODA from DAC Member and DAC Member financed multilateral organizations.

Group averages are calculated on available data only.

Annex 3/a: Total net ODA disbursements to Latin America and the Caribbean - DAC Member countries
(at 1993 prices and exchange rates)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Small economies | | | | | | | | | | | |
| ARUBA | 0 | 0 | 22 | 60 | 27 | 23 | 29 | 31 | 26 | 29 | 23 |
| BAHAMAS | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BARBADOS | 21 | 9 | 9 | 4 | 5 | 3 | 1 | 2 | 2 | 1 | 0 |
| BELIZE | 22 | 23 | 37 | 33 | 27 | 20 | 22 | 20 | 17 | 14 | 15 |
| BERMUDA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | -5 | -5 | -5 |
| CUBA | 3 | 12 | 5 | 5 | 13 | 5 | 51 | 36 | 20 | 11 | 14 |
| NETHERLANDS ANTILLES | 115 | 104 | 115 | 83 | 79 | 61 | 68 | 57 | 81 | 87 | 78 |
| TRINIDAD & TOBAGO | 3 | 3 | 1 | 24 | 42 | 3 | 2 | 7 | -5 | -3 | -2 |
| ANGUILLA | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 5 | 3 | 4 |
| ANTIGUA AND BARBUDA | 3 | 3 | 4 | 6 | 6 | 6 | 4 | 3 | 6 | 4 | 2 |
| CAYMAN ISLANDS | 0 | 0 | 0 | 0 | 1 | 14 | 0 | 2 | -1 | -1 | -1 |
| DOMINICA | 9 | 21 | 17 | 10 | 7 | 11 | 14 | 12 | 8 | 8 | 6 |
| GRENADA | 3 | 42 | 56 | 25 | 13 | 9 | 6 | 5 | 10 | 5 | 4 |
| MONTSERRAT | 3 | 3 | 3 | 5 | 3 | 5 | 8 | 8 | 9 | 5 | 6 |
| ST. KITTS & NEVIS | 3 | 3 | 4 | 3 | 5 | 12 | 13 | 5 | 3 | 4 | 2 |
| ST. LUCIA | 7 | 5 | 5 | 3 | 8 | 9 | 14 | 7 | 14 | 15 | 19 |
| ST. VINCENT & GRENAD. | 3 | 2 | 3 | 12 | 7 | 7 | 8 | 6 | 7 | 6 | 7 |
| TURKS & CAICOS ISL. | 12 | 10 | 9 | 12 | 12 | 9 | 10 | 9 | 16 | 14 | 10 |
| VIRGIN ISLANDS (U.K.) | 3 | 2 | 3 | 2 | 1 | 1 | 4 | 3 | 3 | 2 | 2 |
| FALKLAND ISLANDS | 25 | 15 | 26 | 22 | 17 | 9 | 7 | 2 | 3 | 0 | 0 |
| GUYANA | 19 | 12 | 11 | 14 | 19 | 19 | 32 | 38 | 37 | 25 | 24 |
| SURINAME | 4 | 3 | 5 | 5 | 11 | 17 | 54 | 55 | 33 | 71 | 76 |
| TOTAL | 263 | 290 | 339 | 333 | 307 | 246 | 352 | 356 | 289 | 295 | 285 |
| Intermediate economies | | | | | | | | | | | |
| COSTA RICA | 396 | 346 | 441 | 243 | 266 | 195 | 248 | 221 | 173 | 131 | 93 |
| DOMINICAN REPUBLIC | 104 | 265 | 299 | 93 | 130 | 119 | 146 | 78 | 67 | 51 | -23 |
| EL SALVADOR | 436 | 424 | 566 | 467 | 517 | 453 | 441 | 334 | 250 | 308 | 278 |
| GUATEMALA | 90 | 75 | 115 | 164 | 274 | 229 | 253 | 160 | 160 | 173 | 177 |
| HAITI | 144 | 132 | 190 | 187 | 192 | 120 | 166 | 126 | 145 | 75 | 99 |
| HONDURAS | 195 | 319 | 384 | 354 | 284 | 304 | 255 | 411 | 233 | 202 | 192 |
| JAMAICA | 285 | 291 | 292 | 238 | 187 | 205 | 271 | 270 | 156 | 110 | 94 |
| NICARAGUA | 133 | 134 | 124 | 154 | 142 | 206 | 242 | 309 | 726 | 462 | 269 |
| PANAMA | 42 | 106 | 82 | 42 | 34 | 23 | 18 | 103 | 112 | 189 | 74 |
| BOLIVIA | 243 | 204 | 233 | 290 | 272 | 277 | 369 | 391 | 369 | 490 | 419 |
| ECUADOR | 68 | 115 | 131 | 126 | 228 | 161 | 153 | 131 | 175 | 200 | 168 |
| PERU | 430 | 451 | 528 | 370 | 337 | 294 | 322 | 376 | 622 | 369 | 494 |
| TOTAL | 2566 | 2862 | 3386 | 2730 | 2863 | 2587 | 2884 | 2910 | 3189 | 2760 | 2334 |
| More advanced economies | | | | | | | | | | | |
| MEXICO | 248 | 140 | 227 | 365 | 193 | 167 | 108 | 155 | 270 | 294 | 379 |
| ARGENTINA | 51 | 48 | 57 | 85 | 81 | 137 | 217 | 178 | 280 | 249 | 229 |
| BRAZIL | 171 | 261 | 119 | 196 | 328 | 228 | 232 | 152 | 172 | -272 | 148 |
| CHILE | 12 | 18 | 85 | -1 | 30 | 56 | 62 | 89 | 109 | 115 | 158 |
| COLOMBIA | 66 | 78 | 68 | 54 | 87 | 73 | 60 | 93 | 122 | 216 | 85 |
| PARAGUAY | 65 | 62 | 52 | 67 | 70 | 75 | 107 | 51 | 133 | 64 | 94 |
| URUGUAY | 7 | 8 | 11 | 37 | 15 | 35 | 31 | 45 | 40 | 59 | 108 |
| VENEZUELA | 28 | 28 | 25 | 25 | 25 | 27 | 71 | 81 | 24 | 30 | 35 |
| TOTAL | 648 | 642 | 643 | 830 | 828 | 798 | 887 | 845 | 1150 | 754 | 1236 |
| Unallocated | | | | | | | | | | | |
| WEST INDIES UNALL. | 10 | 16 | 17 | 34 | 86 | 64 | 65 | 57 | 51 | 51 | 42 |
| N. & C. AMERICA UNALL. | 84 | 115 | 211 | 113 | 53 | 59 | 32 | 45 | 61 | 87 | 47 |
| SOUTH AMERICA UNALL. | 12 | 20 | 53 | 27 | 13 | 11 | 38 | 20 | 78 | 60 | 30 |
| AMERICA UNSPECIFIED | 195 | 141 | 170 | 161 | 221 | 202 | 284 | 256 | 215 | 187 | 221 |
| TOTAL | 302 | 293 | 450 | 335 | 373 | 335 | 418 | 378 | 405 | 385 | 340 |
| TOTAL | 3779 | 4088 | 4817 | 4228 | 4371 | 3967 | 4542 | 4489 | 5034 | 4195 | 4195 |

Annex 3/b: Total net ODA disbursements to Latin America and the Caribbean - Multilateral donors
(at 1993 prices and exchange rates)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Small economies | | | | | | | | | | | |
| ARUBA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| BAHAMAS | 2 | 5 | 1 | 8 | 1 | 5 | 5 | 2 | 2 | 1 | 0 |
| BARBADOS | 13 | 7 | 4 | 1 | 3 | 1 | 2 | 2 | 2 | 1 | 5 |
| BELIZE | 5 | 3 | 3 | 3 | 3 | 10 | 12 | 12 | 5 | 11 | 15 |
| BERMUDA | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CUBA | 21 | 10 | 29 | 21 | 29 | 20 | 16 | 19 | 19 | 12 | 30 |
| NETHERLANDS ANTILLES | 4 | 13 | 5 | 2 | 3 | 3 | 5 | 6 | 4 | 5 | 2 |
| TRINIDAD & TOBAGO | 7 | 6 | 11 | 4 | 2 | 7 | 5 | 13 | 4 | 12 | 4 |
| ANGUILLA | 0 | 0 | 2 | 1 | 2 | 1 | 4 | 2 | 1 | 1 | 1 |
| ANTIGUA AND BARBUDA | 4 | 2 | 2 | 1 | 1 | 4 | 1 | 2 | 2 | 1 | 1 |
| CAYMAN ISLANDS | 1 | 1 | 0 | 3 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| DOMINICA | 10 | 10 | 14 | 7 | 14 | 10 | 14 | 9 | 10 | 4 | 3 |
| GRENADA | 10 | 9 | 7 | 10 | 12 | 15 | 12 | 9 | 7 | 6 | 4 |
| MONTserrat | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 1 | 1 | 3 | 4 |
| ST. KITTS & NEVIS | 2 | 4 | 4 | 5 | 4 | 4 | 3 | 3 | 5 | 4 | 9 |
| ST. LUCIA | 5 | 5 | 8 | 14 | 6 | 12 | 8 | 6 | 9 | 13 | 7 |
| ST. VINCENT & GRENAD. | 7 | 5 | 7 | 6 | 10 | 12 | 10 | 11 | 7 | 8 | 4 |
| TURKS & CAICOS ISL. | 1 | 3 | 2 | 1 | 1 | 0 | 0 | 4 | 2 | 1 | 1 |
| VIRGIN ISLANDS (U.K.) | 2 | 2 | 1 | 0 | 2 | 1 | 2 | 3 | 3 | 3 | 1 |
| FALKLAND ISLANDS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| GUYANA | 37 | 31 | 39 | 31 | 16 | 14 | 21 | 143 | 100 | 66 | 83 |
| SURINAME | 3 | 7 | 6 | 3 | 7 | 8 | 7 | 11 | 13 | 7 | 4 |
| TOTAL | 134 | 123 | 148 | 124 | 119 | 130 | 130 | 259 | 197 | 163 | 188 |
| Intermediate economies | | | | | | | | | | | |
| COSTA RICA | 64 | 59 | 76 | 46 | 26 | 27 | 24 | 25 | 7 | 6 | 6 |
| DOMINICAN REPUBLIC | 78 | 86 | 84 | 44 | 35 | 22 | 26 | 31 | 2 | 12 | 25 |
| EL SALVADOR | 93 | 62 | 71 | 29 | 21 | 40 | 88 | 37 | 55 | 92 | 127 |
| GUATEMALA | 48 | 46 | 38 | 35 | 34 | 50 | 61 | 58 | 46 | 21 | 34 |
| HAITI | 99 | 116 | 87 | 81 | 81 | 49 | 71 | 59 | 44 | 24 | 28 |
| HONDURAS | 152 | 214 | 116 | 60 | 41 | 78 | 49 | 72 | 80 | 148 | 141 |
| JAMAICA | 45 | 27 | 20 | 24 | 26 | 23 | 42 | 22 | 14 | 13 | 15 |
| NICARAGUA | 87 | 78 | 65 | 68 | 38 | 55 | 51 | 49 | 146 | 181 | 54 |
| PANAMA | 44 | 28 | 46 | 35 | 18 | 3 | 4 | 3 | -6 | -31 | 6 |
| BOLIVIA | 73 | 110 | 130 | 203 | 123 | 222 | 228 | 203 | 162 | 168 | 146 |
| ECUADOR | 48 | 140 | 120 | 90 | 63 | 43 | 40 | 44 | 71 | 38 | 72 |
| PERU | 112 | 128 | 57 | 31 | 40 | 33 | 50 | 54 | 14 | 30 | 66 |
| TOTAL | 942 | 1095 | 910 | 746 | 545 | 645 | 734 | 657 | 635 | 702 | 721 |
| More advanced economies | | | | | | | | | | | |
| MEXICO | -8 | 15 | 41 | 6 | 7 | 39 | 11 | 16 | 18 | 15 | 23 |
| ARGENTINA | 35 | 44 | 15 | 44 | 47 | 45 | 38 | 19 | 30 | 37 | 53 |
| BRAZIL | 16 | 44 | 111 | 70 | 46 | 22 | 16 | 27 | 17 | 43 | 91 |
| CHILE | -11 | -14 | -10 | -7 | -3 | -2 | 13 | 27 | 21 | 17 | 26 |
| COLOMBIA | 91 | 87 | 46 | 39 | 13 | 2 | 22 | 10 | 5 | 24 | 23 |
| PARAGUAY | 29 | 32 | 40 | 31 | 34 | 15 | 5 | 10 | 19 | 36 | 43 |
| URUGUAY | -2 | -1 | -2 | 2 | 7 | 13 | 15 | 13 | 14 | 13 | 13 |
| VENEZUELA | -10 | -2 | -4 | -2 | -1 | 0 | 1 | 4 | 8 | 10 | 16 |
| TOTAL | 139 | 206 | 238 | 184 | 150 | 133 | 120 | 126 | 132 | 196 | 288 |
| Unallocated | | | | | | | | | | | |
| WEST INDIES UNALL. | 0 | 0 | 0 | 12 | 48 | 28 | 28 | 0 | 1 | 0 | 0 |
| N. & C. AMERICA UNALL. | 2 | 12 | 13 | 10 | 5 | 43 | 22 | 3 | 3 | 41 | 33 |
| SOUTH AMERICA UNALL. | 0 | 0 | 1 | 7 | 16 | 30 | 39 | 0 | 0 | 0 | 0 |
| AMERICA UNSPECIFIED | 169 | 141 | 165 | 88 | 134 | 115 | 151 | 210 | 224 | 166 | 117 |
| TOTAL | 171 | 153 | 180 | 116 | 203 | 216 | 241 | 213 | 227 | 207 | 151 |
| TOTAL | 1386 | 1576 | 1475 | 1170 | 1018 | 1124 | 1224 | 1255 | 1191 | 1268 | 1348 |

Annex 3c: Total net ODA disbursements to Latin America and the Caribbean - All donors
(at 1993 prices and exchange rates)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Small economies | | | | | | | | | | | |
| ARUBA | 0 | 0 | 22 | 60 | 27 | 23 | 29 | 32 | 26 | 30 | 25 |
| BAHAMAS | 2 | 20 | 2 | 9 | 1 | 5 | 5 | 3 | 2 | 2 | 1 |
| BARBADOS | 35 | 16 | 14 | 6 | 8 | 4 | 3 | 3 | 3 | 2 | 6 |
| BERLZE | 28 | 26 | 41 | 36 | 30 | 30 | 34 | 33 | 22 | 25 | 31 |
| BERMUDA | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 45 | -5 | -5 | -5 |
| CUBA | 24 | 22 | 34 | 27 | 42 | 24 | 67 | 55 | 39 | 24 | 44 |
| NETHERLANDS ANTILLES | 119 | 117 | 120 | 85 | 82 | 63 | 73 | 62 | 85 | 92 | 80 |
| TRINIDAD & TOBAGO | 10 | 9 | 12 | 28 | 44 | 10 | 7 | 19 | -2 | 9 | 3 |
| ANGUILLA | 4 | 3 | 5 | 4 | 5 | 5 | 8 | 4 | 7 | 5 | 5 |
| ANTIGUA AND BARBUDA | 6 | 4 | 5 | 7 | 7 | 10 | 5 | 5 | 8 | 5 | 3 |
| CAYMAN ISLANDS | 1 | 1 | 0 | 3 | 3 | 14 | 2 | 3 | 0 | 0 | 0 |
| DOMINICA | 19 | 31 | 31 | 18 | 20 | 21 | 28 | 21 | 18 | 12 | 9 |
| GRENADA | 14 | 51 | 64 | 35 | 24 | 24 | 18 | 15 | 17 | 12 | 8 |
| MONTSERRAT | 4 | 3 | 4 | 6 | 4 | 7 | 9 | 9 | 10 | 7 | 10 |
| ST. KITTS & NEVIS | 5 | 7 | 8 | 8 | 10 | 17 | 16 | 8 | 7 | 8 | 10 |
| ST. LUCIA | 13 | 11 | 13 | 17 | 14 | 21 | 22 | 13 | 24 | 28 | 26 |
| ST. VINCENT & GRENAD. | 10 | 8 | 10 | 18 | 17 | 20 | 18 | 16 | 15 | 15 | 11 |
| TURKS & CAICOS ISL. | 12 | 13 | 10 | 13 | 12 | 10 | 11 | 14 | 18 | 14 | 11 |
| VIRGIN ISLANDS (U.K.) | 6 | 4 | 4 | 2 | 3 | 2 | 7 | 6 | 6 | 5 | 3 |
| FALKLAND ISLANDS | 25 | 15 | 26 | 22 | 17 | 9 | 7 | 2 | 4 | 0 | 6 |
| GUYANA | 56 | 43 | 50 | 44 | 35 | 32 | 53 | 181 | 136 | 91 | 107 |
| SURINAME | 7 | 9 | 20 | 20 | 29 | 25 | 61 | 66 | 46 | 78 | 80 |
| TOTAL | 398 | 413 | 496 | 469 | 436 | 376 | 482 | 616 | 486 | 457 | 473 |
| Intermediate economies | | | | | | | | | | | |
| COSTA RICA | 460 | 406 | 517 | 289 | 292 | 223 | 272 | 246 | 180 | 136 | 99 |
| DOMINICAN REPUBLIC | 182 | 351 | 383 | 137 | 166 | 140 | 172 | 109 | 69 | 63 | 2 |
| EL SALVADOR | 529 | 487 | 637 | 497 | 538 | 493 | 528 | 372 | 305 | 399 | 405 |
| GUATEMALA | 138 | 122 | 153 | 199 | 308 | 279 | 314 | 218 | 206 | 194 | 212 |
| HAITI | 243 | 248 | 277 | 268 | 273 | 169 | 237 | 185 | 188 | 99 | 127 |
| HONDURAS | 347 | 533 | 500 | 414 | 325 | 382 | 304 | 483 | 313 | 350 | 333 |
| JAMAICA | 329 | 318 | 313 | 263 | 214 | 229 | 314 | 292 | 171 | 123 | 109 |
| NICARAGUA | 220 | 212 | 189 | 222 | 180 | 262 | 293 | 359 | 872 | 643 | 323 |
| PANAMA | 86 | 134 | 128 | 77 | 52 | 26 | 22 | 106 | 106 | 158 | 80 |
| BOLIVIA | 317 | 315 | 364 | 494 | 395 | 499 | 597 | 593 | 531 | 659 | 565 |
| ECUADOR | 116 | 254 | 251 | 216 | 291 | 204 | 193 | 175 | 247 | 238 | 240 |
| PERU | 542 | 578 | 584 | 401 | 376 | 328 | 371 | 430 | 636 | 399 | 561 |
| TOTAL | 3508 | 3957 | 4296 | 3476 | 3409 | 3233 | 3619 | 3567 | 3825 | 3462 | 3054 |
| More advanced economies | | | | | | | | | | | |
| MEXICO | 240 | 155 | 267 | 372 | 200 | 206 | 118 | 171 | 288 | 309 | 402 |
| ARGENTINA | 86 | 92 | 73 | 129 | 128 | 182 | 254 | 197 | 310 | 286 | 283 |
| BRAZIL | 184 | 300 | 227 | 264 | 369 | 250 | 248 | 179 | 189 | -229 | 239 |
| CHILE | 0 | 5 | 75 | -8 | 27 | 53 | 74 | 116 | 130 | 132 | 184 |
| COLOMBIA | 157 | 164 | 114 | 94 | 100 | 75 | 81 | 103 | 127 | 240 | 109 |
| PARAGUAY | 94 | 94 | 93 | 98 | 103 | 90 | 111 | 61 | 151 | 100 | 137 |
| URUGUAY | 5 | 7 | 9 | 39 | 23 | 48 | 47 | 58 | 53 | 71 | 121 |
| VENEZUELA | 18 | 26 | 21 | 24 | 24 | 27 | 72 | 85 | 32 | 40 | 50 |
| TOTAL | 785 | 843 | 877 | 1012 | 974 | 931 | 1006 | 970 | 1282 | 950 | 1524 |
| Unallocated | | | | | | | | | | | |
| WEST INDIES UNALL. | 10 | 16 | 17 | 47 | 134 | 93 | 93 | 57 | 52 | 51 | 42 |
| N. & C. AMERICA UNALL. | 87 | 126 | 224 | 123 | 58 | 101 | 54 | 48 | 64 | 129 | 80 |
| SOUTH AMERICA UNALL. | 12 | 20 | 54 | 34 | 29 | 40 | 77 | 20 | 78 | 60 | 30 |
| AMERICA UNSPECIFIED | 364 | 283 | 335 | 249 | 355 | 317 | 435 | 466 | 439 | 353 | 338 |
| TOTAL | 473 | 446 | 629 | 452 | 576 | 551 | 659 | 591 | 632 | 593 | 490 |
| TOTAL | 5163 | 5659 | 6298 | 5408 | 5395 | 5091 | 5767 | 5744 | 6225 | 5462 | 5542 |

Annex 4 - ODA disbursements to Latin America and the Caribbean in 1993

| | GRANTS | LOANS & OTHER LONG-TERM CAPITAL | | TOTAL | TECHNICAL |
|--------------------------------|----------|------------------------------------|-----------|----------|-----------|
| | | EXTENDED | REPAID | NET | COOPERATI |
| <i>Small economies</i> | | | | | |
| ARUBA | 25.42 | 0.00 | -2.45 | 22.97 | 0.13 |
| BAHAMAS | 0.42 | 0.00 | 0.00 | 0.42 | 0.18 |
| BARBADOS | 19.82 | 0.00 | -19.41 | 0.41 | 1.36 |
| BERLIZE | 22.09 | 2.68 | -9.62 | 15.16 | 11.33 |
| BERMUDA | 0.02 | 0.00 | -4.84 | -4.82 | 0.02 |
| CUBA | 12.98 | 1.14 | 0.00 | 14.12 | 5.25 |
| NETHERLANDS | 89.15 | 0.00 | -11.47 | 77.68 | 0.50 |
| ANTILLES | | | | | |
| TRINIDAD & | 9.30 | 0.00 | -10.82 | -1.52 | 3.51 |
| TOBAGO | | | | | |
| ANGUILLA | 3.55 | 0.00 | 0.00 | 3.55 | 1.91 |
| ANTIGUA AND | 6.19 | 0.16 | -3.95 | 2.40 | 1.73 |
| BARBUDA | | | | | |
| CAYMAN ISLANDS | 0.18 | 0.00 | -1.24 | -1.06 | 0.01 |
| DOMINICA | 6.79 | 1.14 | -1.77 | 6.14 | 1.91 |
| GRENADA | 4.05 | 1.32 | -1.52 | 3.85 | 3.46 |
| MONTSERRAT | 6.32 | 0.00 | -0.48 | 5.83 | 2.52 |
| ST. KITTS & NEVIS | 1.17 | 0.49 | -0.14 | 1.52 | 1.17 |
| ST. LUCIA | 16.82 | 4.03 | -2.14 | 18.71 | 3.68 |
| ST. VINCENT & | 4.80 | 3.46 | -1.24 | 7.02 | 3.27 |
| GRENAD. | | | | | |
| TURKS & CAICOS | 10.10 | 0.00 | 0.00 | 10.10 | 4.94 |
| ISL. | | | | | |
| VIRGIN ISLANDS | 2.20 | 0.00 | -0.01 | 2.19 | 2.06 |
| (U.K.) | | | | | |
| FALKLAND | 0.40 | 0.00 | -0.03 | 0.37 | 0.04 |
| ISLANDS | | | | | |
| GUYANA | 53.14 | 0.19 | -29.10 | 24.22 | 5.28 |
| SURINAME | 71.70 | 4.00 | -0.08 | 75.61 | 48.40 |
| TOTAL | 366.61 | 18.61 | -100.31 | 284.87 | 102.66 |
| <i>Intermediate economies</i> | | | | | |
| COSTA RICA | 96.13 | 28.38 | -31.40 | 93.12 | 72.39 |
| DOMINICAN | 69.56 | 18.95 | -111.62 | -23.10 | 44.14 |
| REPUBLIC | | | | | |
| EL SALVADOR | 713.02 | 186.71 | -621.75 | 277.98 | 151.67 |
| GUATEMALA | 138.09 | 47.97 | -8.66 | 177.40 | 80.65 |
| HAITI | 98.40 | 0.42 | 0.00 | 98.83 | 37.64 |
| HONDURAS | 144.95 | 53.02 | -6.39 | 191.59 | 77.79 |
| JAMAICA | 262.14 | 83.86 | -251.88 | 94.10 | 33.89 |
| NICARAGUA | 278.88 | 19.74 | -30.04 | 268.59 | 100.37 |
| PANAMA | 84.36 | 0.00 | -10.35 | 74.01 | 31.93 |
| BOLIVIA | 297.18 | 151.68 | -30.00 | 418.87 | 170.67 |
| ECUADOR | 99.30 | 98.90 | -30.11 | 168.09 | 72.93 |
| PERU | 273.21 | 280.51 | -59.37 | 494.34 | 99.40 |
| TOTAL | 2,555.21 | 970.14 | -1,191.57 | 2,333.81 | 973.47 |
| <i>More advanced economies</i> | | | | | |
| MEXICO | 108.78 | 316.87 | -46.44 | 379.22 | 92.71 |
| ARGENTINA | 99.13 | 199.36 | -69.06 | 229.42 | 73.16 |
| BRAZIL | 198.96 | 121.82 | -172.90 | 147.90 | 163.91 |
| CHILE | 150.62 | 177.31 | -169.89 | 158.02 | 84.82 |
| COLOMBIA | 129.66 | 321.70 | -365.93 | 85.43 | 68.27 |
| PARAGUAY | 65.71 | 56.37 | -28.07 | 94.01 | 52.91 |
| URUGUAY | 43.04 | 100.31 | -35.73 | 107.62 | 28.04 |
| VENEZUELA | 34.75 | 0.00 | -0.08 | 34.67 | 28.36 |
| TOTAL | 830.66 | 1,293.74 | -888.10 | 1,236.30 | 594.18 |
| <i>Unallocated</i> | | | | | |
| WEST INDCS | 41.90 | 0.00 | -0.01 | 41.89 | 13.03 |
| UNALL. | | | | | |
| N. & C. AMERICA | 47.86 | 3.21 | -4.43 | 46.64 | 58.07 |
| UNALL. | | | | | |
| SOUTH AMERICA | 30.91 | 0.00 | -0.67 | 30.24 | 19.66 |
| UNALL. | | | | | |
| AMERICA | 223.87 | 0.00 | -3.01 | 220.85 | 147.44 |
| UNSPECIFIED | | | | | |
| TOTAL | 344.54 | 3.21 | -8.12 | 339.62 | 238.20 |
| TOTAL | 4,097.03 | 2,285.70 | -2,188.10 | 4,194.61 | 1,908.51 |

Annex 5 - Net ODA disbursements to Latin America and the Caribbean by donors
(million US dollars)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| DAC Members | | | | | | | | | | | |
| AUSTRALIA | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| AUSTRIA | 11 | 6 | 7 | 5 | 6 | 7 | 9 | 13 | 26 | 13 | 31 |
| BELGIUM | 18 | 18 | 14 | 21 | 26 | 27 | 23 | 42 | 39 | 67 | 58 |
| CANADA | 112 | 150 | 131 | 140 | 141 | 199 | 182 | 184 | 176 | 195 | 167 |
| DENMARK | 5 | 3 | 6 | 4 | 14 | 15 | 12 | 28 | 34 | 44 | 49 |
| FINLAND | 7 | 6 | 8 | 11 | 13 | 27 | 26 | 28 | 42 | 28 | 23 |
| FRANCE | 116 | 99 | 152 | 181 | 198 | 155 | 120 | 206 | 312 | 196 | 282 |
| GERMANY | 251 | 194 | 211 | 351 | 524 | 414 | 410 | 559 | 492 | 557 | 573 |
| IRELAND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ITALY | 36 | 55 | 80 | 127 | 160 | 282 | 428 | 350 | 463 | 371 | 300 |
| JAPAN | 241 | 229 | 225 | 317 | 418 | 399 | 563 | 561 | 847 | 772 | 737 |
| LUXEMBOURG | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 4 | 6 |
| NETHERLANDS | 163 | 166 | 165 | 211 | 239 | 249 | 312 | 358 | 273 | 402 | 389 |
| NEW ZEALAND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| NORWAY | 9 | 13 | 14 | 24 | 30 | 40 | 43 | 69 | 60 | 66 | 47 |
| PORTUGAL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| SPAIN | 0 | 0 | 0 | 0 | 31 | 69 | 159 | 170 | 318 | 433 | 479 |
| SWEDEN | 31 | 34 | 36 | 45 | 57 | 88 | 130 | 108 | 161 | 165 | 141 |
| SWITZERLAND | 30 | 29 | 33 | 42 | 58 | 58 | 57 | 65 | 92 | 83 | 61 |
| UNITED KINGDOM | 75 | 47 | 60 | 63 | 65 | 79 | 94 | 102 | 118 | 107 | 107 |
| UNITED STATES | 966 | 1142 | 1465 | 1318 | 1440 | 1233 | 1218 | 1343 | 1397 | 790 | 742 |
| TOTAL | 2072 | 2192 | 2608 | 2862 | 3420 | 3341 | 3789 | 4188 | 4857 | 4294 | 4195 |
| Multilateral | | | | | | | | | | | |
| AIDB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AFDF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AuDB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CARRIBEAN DEV. BANK | 31 | 16 | 20 | 25 | 36 | 34 | 39 | 39 | 33 | 33 | 26 |
| EDF | 56 | 79 | 75 | 97 | 170 | 235 | 255 | 316 | 297 | 386 | 396 |
| EBRD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IBRD | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IDA | 31 | 33 | 24 | 33 | 86 | 125 | 87 | 110 | 192 | 189 | 157 |
| IDB | 364 | 438 | 351 | 283 | 121 | 134 | 144 | 155 | 87 | 73 | 88 |
| IFAD | 24 | 17 | 30 | 37 | 51 | 5 | 9 | 28 | 3 | -13 | 3 |
| IPC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IMF | -1 | -5 | -11 | 11 | -23 | 8 | 45 | 55 | 53 | 81 | 16 |
| UNDP | 85 | 74 | 79 | 104 | 110 | 137 | 133 | 152 | 158 | 230 | 332 |
| UNTA | 33 | 28 | 38 | 33 | 42 | 36 | 35 | 35 | 46 | 46 | 56 |
| UNICEF | 14 | 16 | 19 | 22 | 28 | 32 | 45 | 51 | 53 | 59 | 60 |
| UNRWA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| UNHCR | 30 | 41 | 36 | 35 | 37 | 36 | 34 | 37 | 39 | 44 | 33 |
| WFP | 43 | 60 | 86 | 71 | 100 | 110 | 107 | 117 | 117 | 89 | 90 |
| Other Multilateral | 38 | 40 | 46 | 41 | 43 | 56 | 85 | 75 | 75 | 81 | 90 |
| Arab Agencies | 9 | 7 | 5 | -1 | -5 | -1 | 4 | 0 | -3 | -1 | 0 |
| TOTAL | 760 | 845 | 799 | 792 | 796 | 947 | 1021 | 1171 | 1149 | 1298 | 1348 |
| CBC + E.U. Members | 720 | 661 | 761 | 1056 | 1427 | 1524 | 1814 | 2132 | 2350 | 2567 | 2640 |
| TOTAL | 2831 | 3035 | 3410 | 3661 | 4222 | 4287 | 4810 | 5359 | 6006 | 5590 | 5542 |

Annex 6a - ODA commitments for environment in Latin America and the Caribbean : by income group
(Million US dollars)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|--------------------------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
| Small economies | | | | | | | | | | |
| ARUBA | | | | | | | | | | |
| BAHAMAS | | | | | | | | | | |
| BARBADOS | | | | | | | | | | |
| BELIZE | 23 | 1 | | | | | | | | |
| BERMUDA | | | | | | | | | | |
| CUBA | | | | | | | | | | |
| NETHERLANDS ANTILLES | | | | | | | | | | |
| TRINIDAD & TOBAGO | | | | | | | | | | |
| ANGUILLA | | 1 | | 1 | | | | | | |
| ANTIGUA AND BARBUDA | | | | | | | | | | |
| CAYMAN ISLANDS | | | | | | | | | | |
| DOMINICA | | | | | | | | | | 7 |
| GRENADA | | | | 1 | | 1 | | | | 3 |
| MONTSERRAT | | | | | | | | | | |
| ST. KITTS & NEVIS | | | | | | | | | | |
| ST. LUCIA | | 2 | | | | | | | | 8 |
| ST. VINCENT & GRENAD. | | | | 3 | | | | | | |
| TURKS & CAICOS ISL. | | | | | | | | | | |
| VIRGIN ISLANDS (U.K.) | | | | | | | | | | |
| FALKLAND ISLANDS | | | | | | | | | | |
| GUYANA | 3 | | 9 | | | 4 | | | | |
| SURINAME | | | | | | | | | | |
| TOTAL | 26 | 4 | 9 | 5 | | 4 | | 1 | | 17 |
| Intermediate economies | | | | | | | | | | |
| COSTA RICA | | 2 | 5 | 1 | | | 3 | 7 | | 6 |
| DOMINICAN REPUBLIC | 1 | 8 | 1 | 1 | | 1 | | | 2 | 1 |
| EL SALVADOR | | | 21 | | | 170 | 8 | 3 | 1 | 29 |
| GUATEMALA | 17 | | | | | 7 | | 2 | 10 | 26 |
| HAITI | 3 | 3 | 3 | 15 | 60 | 5 | | | 1 | 5 |
| HONDURAS | 6 | 1 | 29 | 31 | 4 | 13 | 7 | 13 | 23 | 5 |
| JAMAICA | | | | | | | 1 | 3 | | 1 |
| NICARAGUA | | 3 | 1 | | | 5 | 2 | 6 | 8 | 41 |
| PANAMA | | | | | | | | | 10 | |
| BOLIVIA | 11 | 1 | 1 | 4 | | 8 | 5 | 27 | 26 | 7 |
| ECUADOR | | 29 | 4 | 24 | 59 | | 26 | 38 | 7 | 23 |
| PERU | 26 | 3 | 19 | 8 | 10 | 5 | | 2 | 5 | 9 |
| TOTAL | 64 | 50 | 84 | 83 | 133 | 213 | 53 | 101 | 100 | 149 |
| More advanced economies | | | | | | | | | | |
| MEXICO | 16 | | 10 | 1 | | | | 480 | 4 | 190 |
| ARGENTINA | | | | | | 15 | | | 42 | 2 |
| BRAZIL | 8 | | 1 | | 11 | 1 | 22 | 10 | 2 | 71 |
| CHILE | | | | | | | | | 32 | 44 |
| COLOMBIA | 3 | 4 | | 109 | 1 | | 37 | 1 | | |
| PARAGUAY | 4 | | | | | | | | | |
| URUGUAY | | | | | | | | | | |
| VENEZUELA | | | | | | | | | | |
| TOTAL | 31 | 5 | 11 | 110 | 13 | 17 | 60 | 491 | 80 | 307 |
| Unallocated | | | | | | | | | | |
| WEST INDIES UNALL. | | | | 5 | | | | | 2 | 2 |
| N. & C. AMERICA UNALL. | | | | | | 3 | | | 8 | 17 |
| SOUTH AMERICA UNALL. | | | | | | | | 6 | 3 | 2 |
| AMERICA UNSPECIFIED | | | | | | | 4 | | 1 | |
| TOTAL | | | | 6 | | 3 | 4 | 7 | 13 | 21 |
| TOTAL | 122 | 58 | 104 | 204 | 147 | 238 | 118 | 600 | 194 | 494 |

Annex 6b - ODA commitments for environment in Latin America and the Caribbean : by sub-region
(Million US dollars)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|---|------------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
| Central America and the Caribbean (incl. Guyana) | | | | | | | | | | |
| ARUBA | | | | | | | | | | |
| BAHAMAS | | | | | | | | | | |
| BARBADOS | | | | | | | | | | |
| BELIZE | 23 | 1 | | | | | | | | |
| BERMUDA | | | | | | | | | | |
| CUBA | | | | | | | | | | |
| NETHERLANDS ANTILLES | | | | | | | | | | |
| TRINIDAD & TOBAGO | | | | | | | | | | |
| ANGUILLA | | 1 | | 1 | | | | | | |
| ANTIGUA AND BARBUDA | | | | | | | | | | |
| CAYMAN ISLANDS | | | | | | | | | | 7 |
| DOMINICA | | | | | | | | | | 3 |
| GRENADA | | | | 1 | | 1 | | | | |
| MONTserrat | | | | | | | | | | |
| ST. KITTS & NEVIS | | | | | | | | | | |
| ST. LUCIA | | 2 | | | | | | | | 8 |
| ST. VINCENT & GRENAD. | | | | 3 | | | | | | |
| TURKS & CAICOS ISL. | | | | | | | | | | |
| VIRGIN ISLANDS (U.K.) | | | | | | | | | | |
| FALKLAND ISLANDS | | | | | | | | | | |
| GUYANA | 3 | | 9 | | | 4 | | | | |
| SURINAME | | | | | | | | | | |
| COSTA RICA | | 2 | 5 | 1 | | | 3 | 7 | | 6 |
| DOMINICAN REPUBLIC | 1 | 8 | 1 | 1 | | 1 | | | 2 | 1 |
| EL SALVADOR | | | 21 | | | 170 | 8 | 3 | 1 | 29 |
| GUATEMALA | 17 | | | | | 7 | | 2 | 10 | 26 |
| HAITI | 3 | 3 | 3 | 15 | 60 | 5 | | 1 | 5 | |
| HONDURAS | 6 | 1 | 29 | 31 | 4 | 13 | 7 | 13 | 23 | 5 |
| JAMAICA | | | | | | | 1 | 3 | | 1 |
| NICARAGUA | | 3 | 1 | | | 5 | 2 | 6 | 8 | 41 |
| PANAMA | | | | | | | | | 10 | |
| TOTAL | 53 | 20 | 69 | 53 | 64 | 204 | 22 | 35 | 62 | 126 |
| Andean region | | | | | | | | | | |
| BOLIVIA | 11 | 1 | 1 | 4 | | 8 | 5 | 27 | 26 | 7 |
| ECUADOR | | 29 | 4 | 24 | 59 | | 26 | 38 | 7 | 23 |
| PERU | 26 | 3 | 19 | 8 | 10 | 5 | | 2 | 5 | 9 |
| COLOMBIA | 3 | 4 | | 109 | 1 | | 37 | 1 | | |
| VENEZUELA | | | | | | | | | | |
| TOTAL | 40 | 37 | 24 | 144 | 71 | 13 | 69 | 68 | 38 | 40 |
| Southern cone | | | | | | | | | | |
| CHILE | | | | | | | | | 32 | 44 |
| ARGENTINA | | | | | | 15 | | | 42 | 2 |
| PARAGUAY | 4 | | | | | | | | | |
| URUGUAY | | | | | | | | | | |
| TOTAL | 4 | | | | | 15 | | | 75 | 46 |
| Mexico & Brazil | | | | | | | | | | |
| MEXICO | 16 | | 10 | 1 | | | | 480 | 4 | 190 |
| BRAZIL | 8 | | 1 | | 11 | 1 | 22 | 10 | 2 | 71 |
| TOTAL | 24 | | 11 | 1 | 11 | 2 | 22 | 490 | 6 | 261 |
| Unallocated | | | | | | | | | | |
| WEST INDIES UNALL. | | | | 5 | | | | | 2 | 2 |
| N. & C. AMERICA UNALL. | | | | | | 3 | | | 8 | 17 |
| SOUTH AMERICA UNALL. | | | | | | | | 6 | 3 | 2 |
| AMERICA UNSPECIFIED | | | | | | | 4 | | 1 | |
| TOTAL | | | | 6 | | 3 | 4 | 7 | 13 | 21 |
| TOTAL | 122 | 58 | 104 | 204 | 147 | 238 | 118 | 600 | 194 | 494 |

Annex 7 - ODA commitments for environment in Latin America and the Caribbean - by donor

In million US dollars

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|----------------|------|------|------|------|------|------|------|------|------|------|
| AUSTRALIA | | | | | | | | | | |
| AUSTRIA | | | | | | | | | | |
| BELGIUM | | | | | | | | | | |
| CANADA | 30 | 5 | 2 | 12 | 4 | 5 | 2 | 12 | 4 | 8 |
| DENMARK | | | | | | | | | 8 | 1 |
| FINLAND | | | | | | | | | 3 | |
| FRANCE | | | | | | | | 1 | | 12 |
| GERMANY | 15 | 1 | 10 | 5 | 13 | 12 | 30 | 17 | 31 | 19 |
| IRELAND | | | | | | | | | | |
| ITALY | | 3 | | | 1 | 16 | | | 50 | 4 |
| JAPAN | | | 7 | 115 | | 6 | 6 | 487 | 29 | 243 |
| LUXEMBOURG | | | | | | | | | | |
| NETHERLANDS | | | 1 | 1 | 5 | 5 | 22 | 2 | 10 | 29 |
| NEW ZEALAND | | | | | | | | | | |
| NORWAY | 1 | | | | | 2 | | | | 1 |
| PORTUGAL | | | | | | | | | | |
| SPAIN | | | | | | | | | | 2 |
| SWEDEN | | 1 | | | | | | | | |
| SWITZERLAND | 1 | | 4 | 2 | 6 | 9 | 4 | 6 | 8 | 1 |
| UNITED KINGDOM | | | | | | 4 | | | | |
| UNITED STATES | 11 | 14 | 11 | 12 | 8 | 14 | 8 | 17 | 51 | 26 |
| TOTAL | 57 | 28 | 35 | 147 | 38 | 72 | 73 | 542 | 194 | 348 |

In per cent of total

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|----------------|------|------|------|------|------|------|------|------|------|------|
| AUSTRALIA | | | | | | | | | | |
| AUSTRIA | | | | | | | | | | |
| BELGIUM | | | | | | | | | | |
| CANADA | 52 | 21 | 5 | 8 | 10 | 7 | 3 | 2 | 2 | 2 |
| DENMARK | | | | | | | | | 4 | |
| FINLAND | | | | | | | | | 2 | |
| FRANCE | | | | | | | | | | 3 |
| GERMANY | 26 | 3 | 30 | 3 | 35 | 16 | 41 | 3 | 16 | 6 |
| IRELAND | | | | | | | | | | |
| ITALY | | 12 | | | 3 | 22 | | | 26 | 1 |
| JAPAN | | | 21 | 78 | | 8 | 8 | 90 | 15 | 70 |
| LUXEMBOURG | | | | | | | | | | |
| NETHERLANDS | | 1 | 3 | 1 | 14 | 6 | 30 | | 5 | 8 |
| NEW ZEALAND | | | | | | | | | | |
| NORWAY | 1 | | | | | 3 | | | | |
| PORTUGAL | | | | | | | | | | |
| SPAIN | | | | | | | | | | 1 |
| SWEDEN | | 6 | | | | | | | | |
| SWITZERLAND | 2 | 2 | 11 | 1 | 16 | 13 | 6 | 1 | 4 | |
| UNITED KINGDOM | | | | | | 5 | | | | |
| UNITED STATES | 19 | 54 | 30 | 8 | 21 | 19 | 11 | 3 | 26 | 8 |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Annex 8 - Distribution of ODA commitments for environment by sector
(per cent of total)

Latin America and the Caribbean

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| FORESTRY DEVELOPMENT | 1 | 14 | 11 | 3 | 42 | 8 | 10 | 1 | 34 | 18 |
| AFFOREST./FUEL W./CHARCOAL | | | | | 3 | 1 | 1 | | | |
| FISH STOCK CONSERVATION | 3 | | | 3 | | 1 | | | | |
| ENERGY CONSERVATION | 1 | 3 | 1 | | | | 1 | | | |
| LAND DEVELOP./RECLAMATION | 14 | 16 | 7 | 4 | 5 | 9 | 5 | 1 | 9 | |
| RURAL WATER SUPPLY | 17 | 10 | 3 | 5 | 2 | 6 | 19 | 2 | | |
| SANITARY SERVICES | | | 4 | 1 | 4 | 2 | 4 | | 2 | 18 |
| WATER AND SEWERAGE | 65 | 56 | 71 | 85 | 42 | 73 | 58 | 9 | 33 | 45 |
| ENVIRONMENTAL PROTECTION | | | 3 | | 2 | 1 | 2 | | 10 | 11 |
| RURAL WATER & SEWERAGE | | | | | | | | 1 | 2 | 1 |
| WATER POLLUTION CONTROL | | | | | | | | | 1 | |
| WASTE MGMT./DISPOSAL | | | | | | | | | | 2 |
| PEST CONTROL | | | | | | | | | | |
| NOISE CONTROL | | | | | | | | | | |
| AIR POLLUTION CONTROL | | | | | | | | 80 | | |
| OZONE LAYER PRESERVATION | | | | | | | | | | |
| MARINE POLLUTION CONTROL | | | | | | | | | | |
| EROSION CONTROL | | | | | | | | | 1 | |
| DESERTIFICATION CONTROL | | | | | | | | | | |
| FLOOD PREVENTION/CONTROL | | | | | | | | | 1 | |
| ENVIRONMENT POLICY ELABORATION | | | | | | | | 1 | 3 | 2 |
| ENVIRONMENT RESEARCH/INFO. | | | | | | | | | | |
| SITE PRESERVATION | | | | | | | | | 1 | 1 |
| SETTLEMENT SUPPORT | | | | | | | | 3 | | |
| NATURAL RESERVES | | | | | | | | 1 | 12 | 1 |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

BREAKDOWN BY SUB-REGIONS:

Central America and the Caribbean (incl. Guyana)

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| FORESTRY DEVELOPMENT | | 35 | 13 | 7 | 2 | 5 | 29 | 9 | 5 | 1 |
| AFFOREST./FUEL W./CHARCOAL | | | | | | | | | | |
| FISH STOCK CONSERVATION | 6 | | | | | | 1 | | | |
| ENERGY CONSERVATION | 2 | 9 | 1 | 2 | | | 4 | 3 | | |
| LAND DEVELOP./RECLAMATION | 14 | 29 | 6 | 13 | 9 | 2 | 19 | 9 | 16 | |
| RURAL WATER SUPPLY | 37 | 21 | 3 | 18 | 4 | 7 | 38 | 42 | | 1 |
| SANITARY SERVICES | | 1 | | 2 | | 3 | | | | 36 |
| WATER AND SEWERAGE | 41 | 5 | 77 | 58 | 85 | 83 | 3 | 1 | 12 | 43 |
| ENVIRONMENTAL PROTECTION | | | | | | | 5 | 1 | 18 | 6 |
| RURAL WATER & SEWERAGE | | | | | | | | 16 | 7 | 1 |
| WATER POLLUTION CONTROL | | | | | | | | | | |
| WASTE MGMT./DISPOSAL | | | | | | | 1 | | 1 | 8 |
| PEST CONTROL | | | | | | | | | | |
| NOISE CONTROL | | | | | | | | | | |
| AIR POLLUTION CONTROL | | | | | | | | | | |
| OZONE LAYER PRESERVATION | | | | | | | | | | |
| MARINE POLLUTION CONTROL | | | | | | | | | | |
| EROSION CONTROL | | | | | | | | 4 | | |
| DESERTIFICATION CONTROL | | | | | | | | | | |
| FLOOD PREVENT./CONTROL | | | | | | | | | | |
| ENVIRONMENT POLICY ELABORATION | | | | | | | | 4 | 9 | 1 |
| ENVIRONMENT RESEARCH/INFO. | | | | | | | | | | |
| SITE PRESERVATION | | | | | | | | 8 | 2 | 2 |
| SETTLEMENT SUPPORT | | | | | | | | | | 1 |
| NATURAL RESERVES | | | | | | | | 3 | 30 | |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Annex 8 - Distribution of ODA commitments for environment by sector (cont.)
(per cent of total)

| Andean Region | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| FORESTRY DEVELOPMENT | 1 | 2 | 9 | 1 | 85 | 52 | 2 | 6 | 15 | 7 |
| APFOREST./FUEL W./CHARCOAL | | | | | 7 | | | | | |
| FISH STOCK CONSERVATION | | | | | | | | | | |
| ENERGY CONSERVATION | | | | | | | | | | |
| LAND DEVELOP./RECLAMATION | 13 | 9 | 11 | 1 | 2 | 4 | 2 | | 18 | |
| RURAL WATER SUPPLY | | 3 | 6 | | 1 | 8 | 21 | | | |
| SANITARY SERVICES | | | 14 | | | | 6 | | 2 | 6 |
| WATER AND SEWERAGE | 86 | 86 | 45 | 98 | 2 | 30 | 68 | 62 | 38 | 48 |
| ENVIRONMENTAL PROTECTION | | | 15 | | 3 | 6 | 1 | | 16 | 28 |
| RURAL WATER & SEWERAGE | | | | | | | | | | 6 |
| WATER POLLUTION CONTROL | | | | | | | | | | |
| WASTE MGMT./DISPOSAL | | | | | | | | | | |
| PEST CONTROL | | | | | | | | | | |
| NOISE CONTROL | | | | | | | | | | |
| AIR POLLUTION CONTROL | | | | | | | | | | |
| OZONE LAYER PRESERVATION | | | | | | | | | | |
| MARINE POLLUTION CONTROL | | | | | | | | | | |
| EROSION CONTROL | | | | | | | | | 5 | |
| DESERTIFICATION CONTROL | | | | | | | | | | |
| FLOOD PREVENT./CONTROL | | | | | | | | | | |
| ENVIRONMENT.POLICY.ELABORATION | | | | | | | | | | 1 |
| ENVIRONMENT.RESEARCH/INPO | | | | | | | | 1 | | |
| SITE PRESERVATION | | | | | | | | | | |
| SETTLEMENT SUPPORT | | | | | | | | 29 | | |
| NATURAL RESERVES | | | | | | | | | 6 | 3 |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Southern cone | | | | | | | | | | |
| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
| FORESTRY DEVELOPMENT | | 100 | | | 93 | | 25 | | 37 | 1 |
| APFOREST./FUEL W./CHARCOAL | | | 22 | 100 | | | | | | |
| FISH STOCK CONSERVATION | | | 78 | | | | | | | 4 |
| ENERGY CONSERVATION | | | | | | | | | | |
| LAND DEVELOP./RECLAMATION | | | | | | 100 | | | | |
| RURAL WATER SUPPLY | | | | | | | | | | |
| SANITARY SERVICES | | | | | | | | | 2 | |
| WATER AND SEWERAGE | 100 | | | | | | | | 56 | 94 |
| ENVIRONMENTAL PROTECTION | | | | | 7 | | | 100 | | 1 |
| RURAL WATER & SEWERAGE | | | | | | | | | | |
| WATER POLLUTION CONTROL | | | | | | | 75 | | 3 | |
| WASTE MGMT./DISPOSAL | | | | | | | | | | |
| PEST CONTROL | | | | | | | | | | |
| NOISE CONTROL | | | | | | | | | | |
| AIR POLLUTION CONTROL | | | | | | | | | | |
| OZONE LAYER PRESERVATION | | | | | | | | | | |
| MARINE POLLUTION CONTROL | | | | | | | | | | |
| EROSION CONTROL | | | | | | | | | | |
| DESERTIFICATION CONTROL | | | | | | | | | | |
| FLOOD PREVENT./CONTROL | | | | | | | | | | |
| ENVIRONMENT.POLICY.ELABORATION | | | | | | | | | 1 | |
| ENVIRONMENT.RESEARCH/INPO | | | | | | | | | | |
| SITE PRESERVATION | | | | | | | | | | |
| SETTLEMENT SUPPORT | | | | | | | | | | |
| NATURAL RESERVES | | | | | | | | | | |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Annex 8 - Distribution of ODA commitments for environment by sector (cont.)
(per cent of total)

Mexico & Brazil

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| FORESTRY DEVELOPMENT | | 56 | | | | 19 | | | 68 | 31 |
| AFFOREST./FUELW./CHARCOAL | | | | | | 81 | 6 | | | 1 |
| FISH STOCK CONSERVATION | | | | | | | | | | |
| ENERGY CONSERVATION | | 44 | | | | | | | | |
| LAND DEVELOP./RECLAMATION | 17 | | 7 | | | | | | | |
| RURAL WATER SUPPLY | | | | | | | | | | |
| SANITARY SERVICES | | | | | 50 | | 1 | | 24 | 15 |
| WATER AND SEWERAGE | 83 | | 93 | 100 | 50 | | 92 | 2 | | 41 |
| ENVIRONMENTAL PROTECTION | | | | | | | 1 | | | 18 |
| RURAL WATER & SEWERAGE | | | | | | | | | | |
| WATER POLLUTION CONTROL | | | | | | | | | | |
| WASTE MGMT./DISPOSAL | | | | | | | | | | |
| PEST CONTROL | | | | | | | | | | |
| NOISE CONTROL | | | | | | | | | | |
| AIR POLLUTION CONTROL | | | | | | | | 98 | | 1 |
| OZONE LAYER PRESERVATION | | | | | | | | | | |
| MARINE POLLUTION CONTROL | | | | | | | | | | |
| EROSION CONTROL | | | | | | | | | | |
| DESERTIFICATION CONTROL | | | | | | | | | | |
| FLOOD PREVENT./CONTROL | | | | | | | | | | |
| ENVIRONMENT.POLICY.ELABORATION | | | | | | | | | | |
| ENVIRONMENT.RESEARCH/INFO | | | | | | | | | 8 | |
| SITE PRESERVATION | | | | | | | | | | |
| SETTLEMENT SUPPORT | | | | | | | | | | |
| NATURAL RESERVES | | | | | | | | | | |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Unallocated

| | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| FORESTRY DEVELOPMENT | 100 | | 100 | | | | 86 | 7 | 43 | 1 |
| AFFOREST./FUELW./CHARCOAL | | | | | | | | | | |
| FISH STOCK CONSERVATION | | | | 92 | | 59 | | | | |
| ENERGY CONSERVATION | | | | | | | | | | |
| LAND DEVELOP./RECLAMATION | | | | | | | | | | 4 |
| RURAL WATER SUPPLY | | | | | | | | | | |
| SANITARY SERVICES | | | | | | | | | | |
| WATER AND SEWERAGE | | | | 7 | | | | | | |
| ENVIRONMENTAL PROTECTION | | | | 1 | 100 | 41 | 14 | 23 | 14 | 33 |
| RURAL WATER & SEWERAGE | | | | | | | | | | |
| WATER POLLUTION CONTROL | | | | | | | | | | |
| WASTE MGMT./DISPOSAL | | | | | | | | | | |
| PEST CONTROL | | | | | | | | | | |
| NOISE CONTROL | | | | | | | | | | |
| AIR POLLUTION CONTROL | | | | | | | | | | |
| OZONE LAYER PRESERVATION | | | | | | | | | | |
| MARINE POLLUTION CONTROL | | | | | | | | | | |
| EROSION CONTROL | | | | | | | | | | |
| DESERTIFICATION CONTROL | | | | | | | | | | |
| FLOOD PREVENT./CONTROL | | | | | | | | | 20 | |
| ENVIRONMENT.POLICY.ELABORATION | | | | | | | | 41 | | 47 |
| ENVIRONMENT.RESEARCH/INFO | | | | | | | | | | |
| SITE PRESERVATION | | | | | | | | | | |
| SETTLEMENT SUPPORT | | | | | | | | | | |
| NATURAL RESERVES | | | | | | | | 29 | 22 | 14 |
| TOTAL | 100 | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Annex 9

DAC WORKING PARTY ON DEVELOPMENT ASSISTANCE AND ENVIRONMENT

Key Works Published

"Development Co-operation for Assisting Developing Countries in Dealing with Environmental Problems: A Review of DAC Members Policies and Programmes", in: Development Co-operation -- Efforts and Policies of the Members of the Development Assistance Committee, Paris 1990.

Policy Statement of the Meeting of OECD Ministers on Environment and Development, Paris 1991 [SG/PRESS(91)71].

OECD Documents Series:

Economic Instruments for Environmental Management in Developing Countries -- Proceedings of an OECD Workshop held in Paris, 8 October 1992 --, Paris 1993.

Capacity Development in Environment -- Proceedings of a Workshop held in Costa Rica, 9-11 November 1993 --, Paris 1994.

Developing Environmental Capacity: A Framework for Donor Involvement, Paris 1995.

Planning for Sustainable Development: Country Experiences, Paris 1995.

General Distribution Documents

Donor Assistance to Capacity Development in Environment, Paris 1995 [DAC Development Co-operation Guidelines Series]

Proceedings of an OECD Workshop on National Plans for Sustainable Development, Ottawa, 13-15 October 1993, Paris 1993 [OCDE/GD(93)186].

Effective Technology Transfer, Co-operation and Capacity Building for Sustainable Development: Common Reference Paper, Paris 1994 [OCDE/GD(94)12].

Contributing to Sustainable Development: DAC Orientations for Donor Assistance to Capacity Development in Environment, Paris 1994 [OCDE/GD(94)113].

Trade, Environment and Development Co-operation, Paris 1995 [OCDE/GD(95)7].

OECD Workshop on Trade, Environment and Development Co-operation, Paris, 28 October 1994 -- Summary Report --, Paris 1995 [OCDE/GD(95)10].

OECD Workshop on Development Assistance and Technology Co-operation for Cleaner Industrial Production in Developing Countries -- Hanover, 28-30 September 1994 -- Summary Record [OCDE/GD(95)42].

Information Brochure

The DAC Working Party on Development Assistance and Environment DAC Guidelines on Aid and Environment

- No. 1. Good Practices for Environmental Impact Assessment of Development Projects
- No. 2. Good Practices for Country Environmental Surveys and Strategies
- No. 3. Guidelines for Aid Agencies on Involuntary Displacement and Resettlement in Development Projects
- No. 4. Guidelines for Aid Agencies on Global Environmental Problems
- No. 5. Guidelines for Aid Agencies on Chemicals Management
- No. 6. Guidelines for Aid Agencies on Pest and Pesticide Management
- No. 7. Guidelines for Aid Agencies on Disaster Mitigation

Statistical Information

Geographical Distribution of Financial Flows to Developing Countries 1989-1993

Creditor Reporting System "Gazette" - Quarterly Report on Individual Aid Commitments

Development Co-operation: Efforts and Policies of the Members of the Development Assistance Committee - 1994 Report

External Debt Statistics

(The above statistical publications also exist in electronic form)

To obtain any of the above publications, write to:

*Publications Service,
OECD
2, rue André-Pascal
75775 Paris CEDEX 16
France*

Commentary
**"AID FLOWS FOR ENVIRONMENT TO
LATIN AMERICA AND THE CARIBBEAN"**

by Enrique Leff¹

In his interesting presentation Peter Ellehøj presented us a very clear view of aid flows to Latin America on environmental themes. The flow of resources shows that, although there is a recent tendency, an increase in funding for environmental projects and environmental analysis, these funds are still insufficient to solve the ecological problems of the region. A clear expression of the difficulties in funding sustainable development is the resistance of the countries of the North to fulfil the Earth Summit recommendation of a contribution of 0.7% of their GNP for projects and programs on sustainable development.

The flow of resources is an indicator of effective support for the building of a new economic and social order and which integrates the condition of ecological sustainability. However, the content and environmental aspects of many of these projects, now draped in ecological costumes, should be evaluated, because as often as not these projects continue to replicate dominant development models, in some cases including just an environmental impact study as a precondition.

Considering the subject of this meeting -environmental and natural resource management priorities- I would like to stress the fundamental importance of establishing a knowledge base and a specific agenda for research on sustainable development. The arrival of environmental issues has complicated previous development models which have ignored the ecological conditions of production systems, assigning the cost of economic productivity to the environment. The result is the emergence of a group of complex environmental and social problems. In such cases disciplinary approaches are worthless and the possibility of a simple technological solution is questionable where environmental degradation is closely related to causes and processes of social inequality and poverty and the dominant models of production and consumption. It is uncertain that market liberalization will balance the ecological instability, decrease the gap between rich and poor countries, end social inequity and eradicate poverty.

Although it is possible to prioritize regional environmental deterioration problems and social degradation (deforestation and biodiversity loss, soil erosion and desertification, air pollution, unsatisfactory water management and soil use, production and disposal of contaminating and toxic materials, and their relationship with poverty generation, health depreciation and life

¹ UNEP, Regional Office for Latin America and the Caribbean - México

quality deterioration), the solution to these problems involves both new environmental and conservation ethics and the development of new knowledge.

The forging of this new information base involves the development of knowledge at different levels, from conceptual and methodological frameworks for the analysis of complex environmental processes, to the production of new technologies, friendlier to the environment and which are able to preserve the resource base and to so increase its productive potential. These strategies must be supported by national research and development policies on the sustainable use of natural resources, involving the production of new natural resources patrimony accounts, as well as new production strategies at the local level, strengthening community capacity for the productive and sustainable management of natural resources.

International agencies ought to play a role in the promotion and support for the generation of this new knowledge and its application in the environmental and sustainable development policies. UNEP has been carrying out ventures in this sense to promote the training of human resources in the environmental area. IDRC has been supporting important research projects on development that include these environmental criteria. We are sure that a collective effort in this field will drive new capacities for stimulating changes towards sustainable development, carrying out the mandate assigned by Agenda 21 to IDRC and UNEP.

Finally, I trust that collective strategies enabling the generation of financial resources will be generated through the development of good projects and the legitimation of this field of sustainable development.

Session 1 - General discussion

There was a shared opinion that the economic strategy of a country or group of countries defines the environmental agenda and that the extent to which progress is achieved on sustainable development largely will depend on how successfully environmental considerations are incorporated into economic policies (point reiterated in the afternoon session).

In this regard, research must generate models which allow the incorporation of the environment into public and sectoral policies and this, at different levels (inter-country comparisons required); for example press for adoption by all commercial block members of common environmental controls on products traded among member countries. In addition to applied research, basic research is needed, for instance on methods to measure certain environmental functions in environmental economics.

A challenge is to make compatible sustainable development, growth and poverty alleviation, which are all inter-related and to influence technology, policy and institutional change so as to increase the compatibility between these three objectives. There is no universal or magic formula.

The question was raised as to whether there should be a common agenda for North and South or for all countries of LAC. To the extent that external funding is diminishing and national governments are turning into more important sources of funding -some actually increasing revenues from tax collection (Peru)-, these will carry increasingly more weight in deciding which priorities should be funded and pursued.

Sustainable development is a process and it needs to be operationalised sufficiently so that benchmarks can be set against which to measure progress of efforts towards following up on Agenda 21.

The need to develop and strengthen the training and educational capacity was raised many times. Initiatives should address all levels, from local to postgraduate support and in peripheral regions which need further support (Universidade Federal do Para - UFPa). A review of WB environmental projects in Brazil over last 20 years highlighted the need to train government employees as well, so that they can manage the coordination of multiple donor interventions in large-scale development projects (experience showed this does not happen if left to the donor agencies themselves).

The context of ODA and present trends point to some constraints and opportunities when recommending on the future role of IDRC in LAC:

- Canada's contribution to ODA in LAC is already small and diminishing, so IDRC's choices must be highly strategic (multiplier effect potential);
- recently growing, though still minimal, ODA allocation to green issues, environmental policy and research triggers opportunities where IDRC could play a lead role with limited resources, that is, work with others on the interface of brown and green issues (degradation prevention) and better instruct infrastructural investments through more comprehensive planning and management research;
- research could focus on the instruments needed to ensure that available information does in fact influence and instruct decision-making. Conditions for this will not be found everywhere, which means that IDRC should be selective of where and when it will play;
- collaboration between IDRC and other ODA donors should bear in mind that overall ODA is rising in several intermediate economies where IDRC has concentrated support for some time and that environmental ODA in particular is largely going to more advanced economies where IDRC has helped to build institutions which now lead regional research initiatives.

Luc Mougeot¹

¹ Program Officer, Urban Environment, Environment and Natural Resources Division, International Development Research Centre (IDRC), Ottawa, Ontario, Canada

SECTION C

Choice and Delivery

The second session commenced with an interesting presentation by Michael Jenkins of the MacArthur Foundation's Biodiversity program. The text reproduces part of a longer report, available from the Foundation on its changing Agenda and the importance of changing goals and learning from experience. The paper by A.D. Tillett reviewed the current conditions in Latin America that might effect environmental policy making; and Raúl O'Ryan presented Chile's current policies and its search for new policy instruments. The text reproduced in this report states the conclusions to a larger report. David Kaimowitz used the previous papers to discuss research strategies and social conditions while Carlos Seré reviewed priority setting methods with particular reference to natural resources and their possible application to environmental priority making. The comments by Stephen Vosti review the strengths and weaknesses of this approach.

THE CHANGING AGENDA FOR BIODIVERSITY GRANTMAKING¹

by Michael Jenkins²

- The term "biodiversity" is now used and accepted on a much wider basis, from having been virtually unheard of until the early and mid-1980s.
- Some very powerful organizations have now become involved and are going to be spending relatively large amounts of money on biodiversity conservation -as this report documents.
- There is a growing -if still limited- appreciation that biodiversity issues are complex and will require approaches which recognize not only scientific but political, social, economic and cultural realities.

These changes may appear minor in relation to recent events of global significance -the breakup and prospect of chaos in the former Soviet Union; the consolidation of democracy and economic progress in many parts of Latin America; the rapid growth in the East Asian economies, the likely emergence of China as a major global power early in the next century; the stalling of European integration as the respective nations become reabsorbed in domestic problems; and uncertainty over the United States' readiness to continue extending its military power overseas. But if substantial biodiversity losses continue, even these fundamental shifts will eventually dwindle in significance.

The world is becoming more complex, and apparently more susceptible to change. The implications of social or political changes for biodiversity are impossible to anticipate. But effective and sustainable conservation in the future will require approaches which are based on careful analysis of site-specific issues and their linkages to national and global processes, which are flexible enough to deal with varying conditions, and which are nurtured over sufficiently long periods to induce fundamental change.

The need to re-focus the World Environment and Resources (WER) program

Jus a few years ago -as one of the most significant players in biodiversity conservation - the MacArthur Foundation could afford to experiment with a wide variety of potential innovations

¹ Taken from "Mac Arthur Foundation" pp 34-38; - July, 1995

² Associate Director, WER, Mac Arthur Foundation, Chicago, USA

covering broad geographic and thematic areas. But the world has changed and it is now time for the Foundation to refocus its biodiversity grants. There is growing concern that the WER Program's sense of direction has become blurred and that the Foundation's clear leadership in biodiversity conservation is eroding. More specifically, that the geographic and thematic scope of the program has over-diversified to such an extent that the overall mission has lost clarity, and that the program is increasingly being driven by its grantees rather than by goals established and articulated by the Foundation.

Ever-increasing geographic and thematic diversification have placed impossible demands on WER Program staff, who have done an extraordinary job in keeping the program going. This has led to over-reliance on grantees and potential grantees for problem diagnosis as well as the identification and evaluation of proposed funding initiatives. While the Program is given great credit for some remarkable successes with some individual grants, there is a perception that it is failing to ask itself hard questions at a strategic level about the overall impact and effectiveness of its grantmaking. As a result, the Program is starting to react to the changing biodiversity agenda rather than establishing it. In combination with the new grantmaking opportunities represented by the emergence of the GEF and other international conservation programs, this suggests that the WER Program's early phase may have matured and that the time for strategic rethinking has arrived.

The views expressed in the preceding paragraphs are not universally held. Some people would - and undoubtedly will - disagree. But these views have been articulated by concerned individuals with credibility, reasonable objectiveness and a considerable depth of experience. They therefore merit careful consideration.

High priority WER program areas for the 1990s

The GEF has done little to identify and address the underlying causes of biodiversity losses, and appears unlikely to effectively encourage local participation in its biodiversity projects. The remainder of this chapter explores these key issues as a basis for some of the recommendations of this report.

Identifying and Addressing the Underlying Causes of Biodiversity Losses

There has been little analysis of the relationships between biodiversity and other sector of the national and international economy -especially in developing countries. These relationships are often complex and poorly understood. As a result, important policy decisions are being made all over the world without consideration of their impacts on biodiversity in poorer countries. This not only leads to unforeseen -and often avoidable- environmental costs but causes many potential economic benefits and viable investment opportunities linked to biodiversity conservation to be overlooked or underestimated. The lack of relevant biodiversity policy analysis was particularly evident at UNCED. Here, discussions on North-South issues with important biodiversity implications - such as trade, energy consumption, agricultural pricing and tropical forest management- often degenerated into uninformed squabbling, with Northern and

Southern governments blaming each other for the world's environmental problems and refusing to commit themselves to finding solutions in their own countries.

The WER Program has invested effectively in protected areas, community-based conservation, ecological research, and so on. These areas have not diminished in importance. But a much deeper and broader understanding is now needed in two areas of biodiversity policy analysis. First, the biodiversity impacts of policies and programs in sectors such as energy, international trade, agriculture and forestry. Second, the potential contribution of biodiversity to national economic development through the establishment of regulatory frameworks and incentives for sustainable use in areas such as genetic poverty rights, tourism, agriculture, forestry, and so on. This area has been virtually ignored by the GEF.

Engaging developing country governments in a more constructive environmental dialogue and evaluation of policy options should be given high priority. Powerful ministries such as finance, planning, energy agriculture and foreign affairs need to be drawn into discussions, as well as the often weak environmental agencies. Improving the quality and quantity of biodiversity information flowing to decisionmakers is a prerequisite. There is an urgent need to provide new and technically-sound perspectives on existing information on topics such as legal and economic aspects of genetic property rights, international trade agreements, access to natural resources, tropical forest management, pricing of tourism services, problems of landless -but land hungry- migrants, and so on. Such policy analysis can then provide a basis for targeting specific reforms of the most important factors contributing to biodiversity losses. To reach and influence developing country decisionmakers, such policy research programs should be carried out by independent, credible and financially-secure organizations which are- and this is critical-based in these countries.

Work by World Resources Institute, among other, has clarified some of the linkages between adverse policies and environmental degradation in some important areas. First, government fiscal incentives which encourage unsustainable tropical forest logging or conversion to agriculture. Second, the impact of structural adjustment lending on developing country natural resources (also the subject of a recent study by WWF International). Finally, adjustments to national income accounting systems have been proposed to reflect losses in natural resource capital such as forests or topsoil. These efforts have in turn spawned further studies. But none of these analyses have given specific attention to biodiversity, and critics for the southern countries maintain that WRI is too "top-down" in its biodiversity policy dialogue.

A few isolated developing country groups are doing pioneering work in biodiversity policy analysis. But funding tends to be available only for short-term studies which reflect donor priorities. Developing country institutions for biodiversity policy research need long-term financial support to attract the best people -mainly their own nationals- to develop research programs relevant to their own national priorities, and to implement these programs. GEF grants are not being used to address this need.

The MacArthur Foundation has already made a substantial contribution to environmental policy analysis by establishing World Resources Institute. It may now be appropriate for the Foundation

to build on this successful investment by financing a limited number of carefully-selected organizations for biodiversity policy analysis in the developing world. This will be a recommendation of this report.

Re-Evaluating Local Participation in Biodiversity Conservation

The grants of the WER Program have been a major influence in changing the emphasis of conservation projects towards more participatory approaches based on local cooperation and support, and away from the traditional park concept of excluding local people. The need to explore common interests with local people and establish community-level social and economic incentives to enhance conservation has now become widely-accepted. There is no viable alternative to increasing the effective participation of local people in both conservation and development.

Although relatively new in the conservation world, the importance of local participation has been recognized for some time in the development field -even though the large international agencies have generally failed to put the concept into practice. Eliciting increased local participation in projects is a complex and time consuming -but not necessarily expensive -undertaking. In the words of Michael Cernea, effective participation means "... empowering people to mobilize their own capacities, be social actor rather than passive subjects, manage the resources, make decisions, and control the activities that affect their lives". For both development and conservation projects, this means involving people in the identification of their priorities and needs, and in decisionmaking, implementation and evaluation. Unfortunately, most so-called "participatory" projects treat people as the passive beneficiaries of project activities rather than active collaborators.

In the environmental field there is now a growing realization that community-based conservation -although essential- represents an extremely challenging undertaking which has so far generated few clear successes. Unambiguously successful and convincing examples where local peoples' development needs have been effectively reconciled with biodiversity conservation remain difficult to find -even after several years of explicit emphasis on the role of local people in conservation. NGOs have some very talented and committed individuals doing excellent work in this area. But the most promising initiatives are still no more than that - promising initiatives.

There are several reasons why progress in demonstrating the feasibility of community-based conservation has been limited. In addition to a widespread under-appreciation of what local participation really involves, most existing projects are being implemented on an extremely small scale, for time periods which are too short, with little attention to the strategic objective of demonstrating the potential for systematic change. This is at least partly why the GEF has very few convincing participatory models to build on.

It can reasonable be argued that the community-oriented approach to conservation is too new and the pioneering efforts too early in their implementation for lessons and clear successes to have emerged. But the current donor fascination with this topic is unlikely to continue indefinitely

without some fairly concrete demonstrations of progress. If financial support to community-based conservation is to be maintained, increased and -most important of all- taken over by conventional and mainstream institutions like the GEF, it will be essential to find ways to come up with more concrete conclusions on replicability, sustainability and cost-effectiveness during the next few years.

The WER Program has an opportunity to respond to this challenge and reassert its leadership role in community-based conservation by making a long-term commitment to a systematic learning process, based on a new generation of carefully-monitored and rigorously-designed participatory conservation projects to be implemented by its grantees. This will also be a recommendation of this report.

STRATEGIC IMPERATIVES IN LAC

Notes for discussion

by A.D. Tillett

Introduction

The purpose of this paper is to draw a map of some of the key environmental management issues facing Latin America and the Caribbean. This foolish, perhaps heroic, task was to be subsumed under the title, "Green vs. Brown" as a reasonable way of selecting issues to be discussed, (perhaps in opposition to each other), forcing a funding agency like this to make a choice between agreed categories. Further readings suggested that although a "green versus brown" division may have some merits, there are other competing views that need to be considered; and that, given current development patterns in Latin America and the Caribbean (henceforth, LAC), any recommendations to concentrate on a particular field(s), which themselves could be quite narrow, must take a broader view of the links between the environment and society.

The Environment and Sustainable Development

One of the first comprehensive attempts to link the environment with development problems is to be found in the World Commission on Environment and Development or the Brundtland Commission (1983-87). The Commission, as a reminder, developed three major points;

- a. the various crises were linked in two ways; first, that is "these are not separate crises; an environmental one, a development crisis, an energy crisis. They are all one."; and second, that the crises are global in nature because they are the result of "ecological stress" with the result that there is "an accelerating ecological interdependence among nations.";
- b. development, to be considered successful, could no longer satisfy present satisfactions but ensure that the next generation was taken into account; the task is "to make development sustainable - to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs";
- c. current institutions were "independent, fragmented, working to relatively narrow mandates with closed decision processes" and therefore did not have either the information or authority to deal with either national or international problems. "...many industrialized and most developing countries carry huge economic burdens from inherited problems such as air and water pollution, depletion of ground water, and the proliferation

of toxic chemicals and hazardous wastes. They have been joined by more recent problems - erosion, desertification, acidification, new chemicals and new forms of waste -that are directly related to agricultural,energy, forestry and transportation policies and practices".

Brundtland Commission Strategic Imperatives

| No | IMPERATIVE | QUOTATION |
|----|--|---|
| 1 | Reviving Growth | "...a relatively rapid rise in per capita incomes in the Third World". |
| 2 | Changing the quality of Growth | "must be more soundly based on the realities of the stock of capital that sustains it; requires views of human needs and well being that incorporate such non economic variables as education and health enjoyed for their own sake, clean air and water and the protection of natural beauty". |
| 3 | Meeting essential human needs | "The principal development challenge is to meet the needs and aspirations of an expanding developing world population" (employment, food, energy,housing water supply sanitation). |
| 4 | Sustainable level of population | "...the challenge now is to lower quickly population growth rates..." "Developing-country cities are growing more quickly than the capacity of authorities to cope; shortages of housing, water, sanitation and mass transit are widespread". |
| 5 | Conserving and enhancing the Resource base | "The conservation of agricultural resources is an urgent task because in many parts of the world cultivation has already been extended to marginal lands, and fishery and forest resources have been overexploited". |
| 6 | Reorienting technology and managing risk | "In all countries the process of generating alternative technologies upgrading traditional ones and selecting and adapting imported technologies should be informed by environmental resource concerns". |
| 7 | Merging environment & economics in decision making | "Many of the environmental and development problems that confront us have their roots in this sectoral fragmentation of responsibility. Sustainable development requires that such fragmentation should be overcome". |

The Brundtland Report also produced a series of strategic imperatives, listed above, and will be used to provide a check list for a discussion of Latin America's progress or otherwise to sustainability during the last decade. Apart from the last two of the seven categories, they have some capacity of being measured.

Latin America and Caribbean Development

There are two general features of LAC's economic and social growth which are key issues for sustainable development.

First, LAC has been highly dependent on natural resources since the conquest and continues, as its present day export pattern demonstrates. In 1970, 88 per cent of the value of its merchandize exports were primary commodities or minerals; in 1992 it still made up more than one half, at 62 per cent. Only three countries, Jamaica, Brazil and Mexico were exporting more industrial than commodities and fuel (see T.1). In 1993, the first two leading exports were either commodities or minerals (including oil) for all but two countries; the Bahamas which produces electric circuits and Mexico, passenger cars. And for the last twenty years, a period of dynamic expansion in international trade in manufactured goods, Latin America's leading exports continued to be dominated by primary products. It should be noted that the agricultural sector contributed only 11.8 per cent of GNP in 1970 and 10.1 per cent in 1993.¹

The second dominant feature is urbanization with over 73 per cent of the region living in urban areas in 1993 of which 34 per cent are in settlements, rather agglomerations, of 1 million inhabitants or more (see T.2). In 1970, only 57 per cent of the population lived in urban areas and 26 per cent in cities of over a million. Urbanization is the result of three different forces; (i) the urban birth rate; (ii) migration and (iii) reclassification because of changing size. Whatever the balance, Latin America and the Caribbean is the most urbanized developing region and compares with high income economies (HIE's) which according to World Bank data have an urban population of 78 per cent (1993).

In summary Latin America's economic growth is resource dependent and its social structure is increasingly urban.

¹ Anuario Estadístico de América Latina y el Caribe, (1994) Santiago.p.81. The same source provides employment, that is economically active, data for agriculture as 40.9 per cent (1970) and 32.1 per cent (1980). No figures are provided for 1990.

T.1 LAC Commodity & Primary Products
(percent total exports - value)

| | | 1970 | | | 1992 | | | CHANGE |
|-----|------------------|------|-----|-------|------|-----|-------|------------------|
| | | FMM | OPC | TOTAL | FMM | OPC | TOTAL | (total) 90/70 |
| 22 | Nicaragua | 3 | 81 | 84 | 2 | 90 | 92 | 8 |
| 34 | Honduras | 9 | 82 | 91 | 3 | 84 | 87 | -4 |
| 44 | Bolivia | 93 | 4 | 97 | 66 | 22 | 88 | -9 |
| 54 | Peru | 49 | 49 | 98 | 49 | 31 | 80 | -18 |
| 55 | Guatemala | 0 | 72 | 72 | 2 | 68 | 70 | -2 |
| 58 | Dominican R. | 4 | 77 | 81 | 1 | 79 | 80 | -1 |
| 59 | Ecuador | 1 | 97 | 98 | 45 | 51 | 96 | -2 |
| 62 | El Salvador | 2 | 70 | 72 | 3 | 56 | 59 | -13 |
| 67 | Colombia | 11 | 81 | 92 | 29 | 39 | 68 | -24 |
| 68 | Jamaica | 25 | 22 | 47 | 18 | 27 | 45 | -2 |
| 69 | Paraguay | 0 | 91 | 91 | 1 | 84 | 85 | -6 |
| 79 | Costa Rica | 0 | 84 | 84 | 1 | 72 | 73 | -11 |
| 82 | Panama | 21 | 75 | 96 | 1 | 78 | 79 | -17 |
| 85 | Chile | 88 | 7 | 95 | 47 | 38 | 85 | -10 |
| 92 | Brazil | 11 | 75 | 86 | 13 | 29 | 42 | -44 |
| 95 | Venezuela | 97 | 2 | 99 | 86 | 3 | 89 | -10 |
| 98 | Uruguay | 1 | 79 | 80 | 1 | 58 | 59 | -21 |
| 99 | Mexico | 19 | 49 | 68 | 34 | 13 | 47 | -21 |
| 100 | Trinidad | 78 | 9 | 87 | 64 | 6 | 70 | -17 |
| 102 | Argentina | 1 | 85 | 86 | 10 | 64 | 74 | -12 |
| | Latin America | 43 | 45 | 88 | 32 | 30 | 62 | -26 |
| | <u>Memo item</u> | | | | | | | |
| | HIE | 11 | 16 | 27 | 7 | 11 | 18 | -9 |
| | Canada | 26 | 22 | 48 | 18 | 18 | 36 | -12 |

Source: WDI, (1994), T.15, p.190-192

FMM = Fuels, minerals, metals; OPC = Other primary commodities

Latin America and Strategic Imperatives

Brundtland's strategic imperatives offer a way of examining Latin American and Caribbean progress toward sustainable development².

(1) Reviving Growth

Has Latin American and the Caribbean returned to a growth path and if so why? The recent past cannot be considered an encouraging guide. In a period (1980-92) when world production grew by 3 per cent per annum and GNP per capita by 1.2 per cent, Latin American and the Caribbean economies grew by 1.8 per cent and per capita income continued another year of decline by an average annual rate of -0.2 from 1980. There was no sustained growth for LAC and although the figures from the BID show a positive increase between 1990-93, the adjustment and restructuring undertaken by a number of economies does not seem to be reflected in per capita growth. As can be seen in T.A1, only four countries show positive per capita income growth and only one, Chile, above the rate achieved by High Income Economies (HIE's).

Many LAC economies have undertaken and more give lip service to the "market friendly" reforms that make up the "Washington Consensus".³ These reforms have been advocated for two reasons; first, as promoting capitalism as an economic and social system with positive political spillovers (under certain conditions) and second as policy advice intended to promote growth. The two are linked. In a passage written principally about Eastern Europe and the Former Soviet Union, but applicable to Latin America and its current growth policies, Jeffrey Sachs, whose devotion cannot be doubted, argues that the "capitalist revolution" consists of:

"core reforms as having six common points: (1) open international trade; (2) currency convertibility; (3) private ownership as the main engine of growth: corporate ownership as the dominant organizational form of large enterprises; (5) openness to foreign investment; and (6) membership in key international institutions, including the International Monetary Fund(IMF), the World Bank and the GATT. The revolution is remarkable in two dimensions; the "extensive margin" (the world wide scope of the policy

² Tables are to be found as an appendix and are intended to illustrate the discussion. The data is taken principally from the World Bank's World Development Indicators and CEPAL's Anuario Estadístico de América Latina y el Caribe.

³ See John Williamson, Latin American Adjustment: How much Has Happened?, Washington, (1990).

changes), and the "intensive margin"(the depth and complexity of the new economic links between countries)"⁴.

Market friendly changes were to be the underpinning of rapid growth and Mexico was one of the star pupils. Since *el efecto tequila*, there have been some muttered doubts about details; but the Bank continues to advocate the same policies, with little modification, and in a recent publication it makes the two following points, first with regard to external financing, a key factor in the reform process and which is likely to continue to be in demand in this region⁵;

"Maintaining strong economic fundamentals is the key to ensuring stability and steady growth in capital private inflows. When a reversal of inflow occurs, as recently in Mexico, it may appear sudden but its causes can be traced to slippages in economic policy and performance".

And further the constraints that globalization imposes on economic management;

"The premium on sound economic policies has risen. In a more integrated global economy, the rewards of such policies are larger, but so are the penalties for policy errors".

The success of these reforms depend on a growing world economy. In October 1994, the IMF saw world output as growing at 3.6 per cent in 1995 and LAC by 3.3 per cent⁶. These estimates are now in the process of being revised down for industrial countries by economic forecasters and consequently the growth of world trade is predicted to be slower and so with fewer opportunities for LAC exporters.

As the macroeconomic framework is now key to Latin America's economies and (and its use of environmental resources), is there a viable alternative to greater external and domestic market opening?

⁴ See "Consolidating Capitalism", Foreign Policy, Spring (1995), p.51.

⁵ Quoted from Global Economic Prospects and the Developing Countries in the Financial Times, April 19, 1995.

⁶ World Economic Outlook, October 1994, T.1, p.12. For Western Hemisphere read LAC.

T.2 LAC: Urban population

| | Growth Rates | | | | Percent Urban | |
|------------------|------------------|-----------|------------------|---------|---------------|---------------|
| | Total Population | | Urban Population | | Capital city | Cities (1m +) |
| | 1980-92 | 1992-2000 | 1980-92 | Percent | | |
| 22 Nicaragua | 2.7 | 2.7 | 3.9 | 61 | 46 | |
| 34 Honduras | 3.3 | 2.8 | 5.3 | 45 | 35 | |
| 44 Bolivia | 2.5 | 2.4 | 4.0 | 52 | 34 | 29 |
| 54 Peru | 2.1 | 1.8 | 2.9 | 71 | 42 | 45 |
| 55 Guatemala | 2.9 | 2.8 | 3.5 | 40 | 23 | |
| 58 Dominican R. | 2.1 | 1.5 | 3.9 | 62 | 52 | 54 |
| 59 Ecuador | 2.5 | 2.0 | 4.4 | 58 | 21 | 55 |
| 62 El Salvador | 1.4 | 1.7 | 2.2 | 45 | 26 | |
| 67 Colombia | 1.9 | 1.4 | 2.9 | 71 | 21 | 41 |
| 68 Jamaica | 1.0 | 0.6 | 2.1 | 54 | 52 | |
| 69 Paraguay | 3.0 | 2.8 | 4.4 | 49 | 48 | |
| 79 Costa Rica | 2.8 | 1.9 | 3.8 | 48 | 71 | |
| 82 Panama | 2.1 | 1.7 | 2.8 | 54 | 37 | |
| 85 Chile | 1.7 | 1.3 | 2.1 | 85 | 42 | 44 |
| 92 Brazil | 2.0 | 1.4 | 3.3 | 77 | 2 | 51 |
| 95 Venezuela | 2.6 | 2.2 | 3.4 | 91 | 23 | 30 |
| 98 Uruguay | 0.6 | 0.5 | 1.0 | 89 | 44 | 47 |
| 99 Mexico | 2.0 | 1.9 | 2.9 | 74 | 34 | 41 |
| 102 Argentina | 1.3 | 1.0 | 1.7 | 87 | 41 | 50 |
| Latin America | 2.0 | 1.6 | 2.9 | 73 | 24 | 46 |
| <u>Memo item</u> | | | | | | |
| HIE | 0.7 | 0.5 | 0.8 | 78 | 11 | 33 |

Sources:

Columns (1), (2), WDI (1994), T.25 (p.210); (3), (4), (5) T.31 (p.222)

(2) Changing the Quality of Growth

Although there is no one indicator for the quality of life - it is multidimensional - poverty and equality (measured by income distribution) can be regarded as a helpful surrogate. There is nothing, after all, like being able to choose for yourself and money income gives that possibility. So degrees of poverty and command over resources is a valid, if limited, way of measuring the quality of growth.

During the last decade, where data is available (which is often untrustworthy and difficult to handle), it appears that economic developments (policies and events) have worsened income inequalities. Static and trend poverty estimates tell a similar story (see T.A2). CEPAL, for example, has calculated a poverty index based on "the percentage of households having incomes amounting to less than twice the cost a basic basket of food" for urban and rural households and it is the case that poverty tends to greater among rural households (although because of urbanization there are fewer non households). In a number of countries the gap between rural and urban households is not as substantial as one might expect. And one reason may be that income inequality is increasing within both urban and rural environments, with the inference that urban poverty is growing.

It is possible to make estimates over time by using quintile data - that is households rank ordered by income and then divided into five categories amounting to 20 per cent of households. By using the first two quintiles (20 percent of population and then 40 per cent with the lowest income) for two periods 1979-81 and 1990-92, (the date depending on the census or the survey) and comparing the two periods, the results show that in only two cases (Colombia and Uruguay) has income distribution improved over time; and in the remainder distribution has got worse. Further, in no cases apart from (possibly) Argentina and Uruguay do the first forty per cent of households rise above CEPAL's poverty line.

Not only was growth retarded but poverty has increased in the LAC region. How much inequality can a political system tolerate? There must come a time when poverty becomes a threat, first to urban health and then to social health measured by general urban behaviour (crime and public safety); and then possibly to order. And this has an impact on the way that governments set policies, if they have to face elections, and on their ability to govern. Further, poverty is closely allied to the overuse of common resources - trees, pastures, etc as well as being cruel fate in itself. Can there be an effective sustainable development if income inequalities are increasing?

(3) Meeting Essential Human Needs

Human needs can be defined as food, housing, education and employment. The data does not permit a full exploration - particularly in the case of housing - but the indices suggest encouraging progress. Indeed, there is something of a paradox as most of the human

needs indicators, at least those in the appendices, show a degree of change not apparent in the income data.

- a. Food: The overall trend in per capita food production, according to the Bank, declined by -0.3 for the principal LAC countries. Agriculture grew more rapidly in twelve of the 20 countries and declined in the poorest, Nicaragua, and one of the richest, Trinidad. The quantum indices for total production, (1993), however, show that food production, was higher, if only slightly than agricultural production in almost all countries; the exceptions are Honduras and Panama, excluding Nicaragua which fell.

The relations between agriculture, food and the environment is a complex one but Latin America is likely to continue to a net exporter, for example, because of its comparative advantage in natural resource endowments. The FAO, in a recent report, saw only two obstacles, overvalued currencies and commodity price declines, as limiting LAC's agricultural export expansion, although they did point out that much would depend on the world's economic environment⁷.

There are two policy issues which are likely to impact on the use of natural resources. First, institutional changes which have their origin in the reduction of subsidies to both consumers and research institutions. In latter case, national research institutes are being encouraged to privatize or seek private funds. Second, the doctrine of food security seems to have been replaced by food self reliance or food availability. The most striking case is that of Mexico which, even before NAFTA, was purchasing wheat from the United States. Indeed both Canada and the United States regard agriculture as one of the principal advantages of expanding free trade in LAC. Competition from these producers is likely to have a major impact on small domestic producers. And so it is likely, if income remain stagnant and subsidies are not replaced by target programs, food production will continue to be extended to marginal soils. Third, the future of the world food market is clouded with potential barriers, uncertainty about China and the capacity of the world to feed itself⁸.

- b. Calories and proteins; calory intake increased in 20 countries and proteins per day in 11 of 33 countries listed in T.A3.2 for the period 1979/81 to 1988/90. More recent data could not be obtained.
- c. Education and Employment The spread of education, measured by adult illiteracy for example, has been an important development achievement in Latin America

⁷ The State of Food and Agriculture, (1993) p.35f.

⁸ "Our estimates show that the world is perfectly capable of feeding 12 bn people one 100 years from now"
Per Pinstrup-Anderson, q. The Economist, June 10, 1995, p.39.

and the Caribbean. All of the sample countries demonstrated a growth in literacy and in 1990 only one country, Guatemala, had an illiteracy rate above 27 per cent of the adult population (15 years plus) compared with six countries twenty years before. Reductions in illiteracy are strongly associated with urbanization and it can be expected that as societies become more urban so the opportunities for schooling increase. Education is widely seen as the key to advancement in Latin America and people - both rich and poor - pay a substantial portion of their incomes to support their children. In many societies the privatization of schooling encourages or reflects inequalities although the data shows that primary school coverage is substantial in most LAC countries. The main challenge, it is agreed, is to improve the quality of education in the region.

The second set of figures demonstrates the growth of the "economically active population", the ages between 10 or 12, (depending on the source), when people begin to seek employment and 64 years. It should be noted that labour growth rates between 1982-92 have been higher than per capita growth and in cases, apart from Colombia, Costa Rica, Chile, greater than the growth of the GNP⁹. Employment is a key social and economic factor in open economies and there is a sense that these figures under-represent the demand for effective livelihoods. Job creation, particularly for the unskilled and less educated, remains a major - perhaps the major challenge - for LAC economies.

- d. Access to Drinking Water is an important measure of human needs and in most countries there have been striking advances in urban supplies with several countries achieving 100 per cent access by 1990. Paraguay and Ecuador, both of which have undergone rapid urbanization, together with Peru, are the only countries with less than 70 per cent coverage. Rural access remains an important challenge to Nicaragua, Bolivia, Peru, El Salvador, Chile and Argentina. (see T.A3.4).
- e. Access to Sanitation shows substantial increases during this decade in Honduras, Guatemala, Dominican Republic, Panama and Brazil although access appears to have declined in the urban areas of Colombia and Paraguay; and in the rural areas of Argentina and Paraguay. Some countries, however, show surprising low urban coverage - Jamaica, Paraguay and Bolivia. (see T.A3.5).

In summary there appear to have been advances in basic human needs in Latin America with some major exceptions. Given that environmental interests appear to increase with income, when will the environment be considered a basic human need?

⁹ Labour and GNP growth rates appear to be equal in Brazil and Argentina for this period (see T.A3.1).

(4) Sustainable Level of Population

The concept of a sustainable level of population has been subject to considerable debate, with the majority of experts contending that unless population rates slow, pressure on the natural and social environment will delay any improvement in quality of life. A first step, the reduction of the death rate occurred several decades ago and the period between 1970-1992 has witnessed declines in the crude birth rate. LAC's average crude birth rate is now 26 per thousand, a reduction of -10, indicating that the region has achieved a demographic transition. The crude birth rate fell by 10 births per thousand or more in twelve countries (see T.A4.1).

A combination of urbanization and the increasing age of the population, reflected in both life expectancy and the age cohorts, is leading to a second transition. The indicators of this epidemiological transition are changes in the principal causes of mortality and morbidity from a predominance of infectious diseases associated with a lack of primary health care (eg. respiratory diseases, diarrhoea etc) to chronic and degenerative diseases associated with genetic or personal behaviour and associated with "health risks"(eg. heart disease, accidents etc)¹⁰. Although there have been declines in both infant and under five mortality, moving the age of death to higher age groups, (see T.A4.2) the transition is not following the path found in North America and Europe. Rather, with variations, there are mixed morbidity patterns, with countries not only demonstrating both pre-transition and transition characteristics but contrasts within regions of the same country; and in addition a return of some infectious diseases previously thought to have been overcome. The authors of the article noted below describe this pattern as "prolonged polarization" and which they see as placing increasing burdens on LAC's stretched social programs. The epidemiological transition has a high cost which Latin American countries will wish to reduce.

The demographic transition thus gives way to an epidemiological transition, which in its prolonged form, places the social environment under greater pressure.

¹⁰

"De hecho muchas de las circunstancias emergentes en la transición no son en absoluto un signo de progreso, sino más bien la expresión de modos deficientes de industrialización, urbanización y consumo masivo que se traducen, entre otros, en problemas de contaminación atmosférica, accidentes laborales y de tránsito, trastornos mentales, consumo de sustancias nocivas como tabaco, alcohol y otras drogas, y hábitos de alimentación poco saludables" Frenk J. et al "La Transición Epidemiológica en América Latina", Boletín de la Oficina Sanitaria Panamericana, (1991), p.485-496.

(5) Conserving and Enhancing the Resource Base

One indicator of this strategic imperative is land use, which can be divided into five categories by use; arable, crops, permanent pasture and irrigated land (see T.A5)¹¹. The outstanding feature is the decline of land used for forests with major reductions, given 1980 stock in Mexico, Central America, Ecuador, Paraguay and Haiti. In absolute numbers almost half the reduction took place in Brazil. The numbers do not permit an accurate estimate of current use although the principal increases are to be found in permanent pasture and arable land. Land under crops did not increase during this period, although there are variations between countries.

The decline in forests has been associated with trade. Wood is a traded commodity and there have been a number of attempts to control deforestation, particularly in tropical timber through trade actions (i.e. certification programs, etc) and it not clear if these actions, work against the interests of producer nations. According to the FAO,

"..trade is not a major cause of deforestation and as such, trade policies alone cannot ensure sustainable management of the forests. Only a minor proportion of the wood harvested actually enters world trade and the linkages between trade policies and forest management are very indirect"¹².

Variations in land use are, at one level, a normal part of the process of economic and social change; how far are they the product of an avoidable pressure on resources and what are the long term consequences of this change? The increase in population can lead to extensive cropping with resulting soil degradation of marginal soils; in addition, although no Latin American country is predicted to have scarce water resources in 2000¹³, there is growing concern about the salinization of irrigated land as well as the impact of the hydrovia waterway and continuing hydro expansions, principally by Brazil and Argentina. Regional per caput water availability, which was estimated to stand at 48,800 cubic metres in 1980 will decline to 28,300 in 2000, but remain well above those for other regions. As a region, Latin America does not have a water shortage; does it have particular water problems that should become a policy or research priority?

¹¹ The table indicates the gross change in the number of hectares during the 12 year period by land type; and the percentage change from 1980 as the base year.

¹² See The State of Food and Agriculture, (1993), p.62.

¹³ Although Barbados is included in this category.

(6) Re-orientating Technology and Managing Risk

LAC's degree of progress for this strategic imperative is difficult to estimate. There have been some changes in agricultural production techniques, for example, in the reduced use of chemical pesticides and other agricultural chemicals. These changes appear to be closely related to import requirements, particularly in Europe and the United States. How far these changes are really new non-tariff barriers - which are extensive for agricultural products - and how far they are part of a commitment to the environment is not clear. There have also been technology changes in the industrial and mining sectors, particularly for those countries like Chile and Mexico that wish to enter NAFTA and which may have to agree to the side agreements; although it should be added there is still a widespread belief in North America that the migration of industry is associated with the avoidance of environmental and labour laws.

In Europe and the United States there is a growing emphasis on "green products" with associated labelling, insurance requirements and performance standards. And this has given rise to an environmental technology market which the OECD estimates at about \$200 bn, principally in North America and Europe with good prospects in Asia, Eastern Europe and the former Soviet Union. There are now, for example, an estimated 2,000 environmental technology companies in Germany dealing in air quality control, waste management and waste water equipment and services. The industry is a product of government and inter-government regulations and it is likely that these will be applied to imported products, it can expect to find clients in Latin America. How much attention does the non or small exporting company pay to environmental technology in Latin America? Will this industry prosper because of export requirements and a shift in technology levels?

(7) Merging Environment and Economics in Decision Making

The theoretical case has been made by international agencies, particularly the work of the World Bank. Various publications, notably the World Development Report of 1992, describe the distinction between development and the environment as a false dichotomy, dependent on both the **lack** of development as well as **growth**. The Bank's approach is consistent with its macro-economic views, calling for effective property rights, consumer preferences, facing down political pressures, improving information and involving local people. Environmental issues have become part of the political coinage of the 1990's. In addition there is strong evidence that governments in the region are, for various reasons, taking environmental policy selectively but seriously. Brazil has produced an ambitious "basic document" which emphasises small scale development for the Amazon and its different zones; Mexico has passed important environmental laws consistent with its NAFTA partners; Chile has completed a major study on environmental issues with the support of the World Bank. The list could continue and it would demonstrate that, when compared to ten years ago, there has been considerable progress.

There is also a cost and it is one, beyond a certain point, that societies may not be able or willing to pay. In the United States, for example, as well as Canada, some politicians believe that current regulations, for example for Environmental Impact Assessments, stand in the way of economic growth. There is, at present, an attempt to dismantle the United States Environmental Protection Agency as well as to add stronger compensation provisions to the Clean Water Act; and these changes put in question the role of public environmental protection.

The World Bank in the WDR 1992 produced a list for policy makers which consisted of six points; how far have countries gone in this region? Or are likely to go and under what circumstances?

1. Build the environment into policy making
2. Make population a priority
3. Act first on local damage
4. Economize on administrative capacity
5. Assess tradeoffs - and minimize them
6. Research, inform, train
7. Remember; prevention is cheaper than cure

Source: WDR, (1994) p.22

In summary there has been some progress in Latin America and the Caribbean taking the strategic imperatives as a base. Opinions about the range and durability of the reforms differ and so it will be useful to discuss a number of general impressions regarding the direction that a donor agency might take.

Questions and approaches

In reading some of the material for this note, three questions occur:

- a. What is the appropriate unit for the analysis of sustainable development?

If resources and ecology define human activities, then one conventional unit of analysis, the nation state, is less than satisfactory as their boundaries were drawn on a relatively arbitrary basis and with little more than an indirect nod to ecological zones. There have been attempts to compensate for this lack but the exercises involve considerable time and skill. For example, Manuel Winograd, (with others) has, developed a series of Life Zone maps for Latin America, which consist of 18 different zones based on a combination of topography, hydrography, climate (precipitation, biotemperature and evaporation) together with current vegetation and land use.¹⁴ Winograd makes the following comments regarding indicators:

"The indicators that emerge from this process must answer the needs for analysis at various levels and stages of the development or ecological process. They must apply to separate components of the development or ecological process and be consistent with the stated definition of sustainable development.... Depending on which level analysed (i.e. plot, basin, ecosystem or productive activity) different factors will emerge (economic, social, technological or environmental) and therefore the necessary indicators to monitor the process."¹⁵

The ecological approach to sustainable development respects natural resources - a necessary scientific requirement - but requires, in most cases, an unlikely commitment to policy co-ordination between states.

- b. What is the appropriate unit of account for policy making?

Laws are passed by nation states and most international agreements, as the tortuous history of the Law of the Sea demonstrates, require sovereign agreement. The interests of states are the responsibility of their governments which have, in theory, a social contract with their populations or at least an accepted right to speak for them. Yet much of the present environmental agenda crosses boundaries and requires agreements which require a constraint of sovereignty which countries need a compelling reason to accept. In addition, some agreements (such as the WTO) which apply to most states represent the views of the powerful about the common good rather than a consensus among nations. There is no agreement in international law, as I understand it, that defines

¹⁴ See Winograd M. Environmental Indicators for Latin America and the Caribbean: Toward Land Use Sustainability, IICA-GTZ/OAS/WRI (undated).

¹⁵ *ibid.* p.2.

"common heritage" or the "global commons" so that apart from in a small number of cases, national interests are likely to predominate.

c. What is the appropriate way to value environmental resources?

There are many books and papers on this subject, but if the resource is valued differently by different governments (eg. carbonoxide emissions in China or uncut forests in Malaysia), the estimates of the costs and benefits will differ. One possible and attractive way to neutralize the policy or political weight assigned to different environmental resources is to look at their use value. If environmental resources are considered as environmental assets, then they can have a direct use (i.e. food by a household); indirect but functional benefits often provided by governments (flood control, storm protection) or implied future use (conserving habitats, biodiversity); and in addition there are values for environmental assets which do not reflect use or potential use but a moral imperative to preserve living things because they are part of the earth's heritage.

Questions about issues

As sustainable development and environmental issues are involved in most human activities, and their research will involve particular and sophisticated skills, most donors support a limited number of key issues. This review suggests a number of ways of dividing these activities; with IDRC concentrating on one or two. Examples:

- a. social environment, the behaviour and welfare of human beings in human settlements with an emphasis on urban areas because of the concentration of Latin America's population in towns and cities. The research support would attempt to target, for example, vulnerable groups or city management and build up a coherent and useful description of the urban ecology.
- b. world integration; the increasing impact of international finance, trade, technology and international institutions on LAC countries and so the growing interdependence between nations, two processes of which Latin America is a part. The Brookings Institute, in a general introduction to a series of studies on this subject¹⁶ calls attention to the diminished national autonomy which characterize contemporary national policy making; the growing importance of cross border spillovers in an era of tariff reduction and trade liberalization which can lead to (unwelcome) international regulation of goods and bad, such as scientific research or pollution. How far can one country impose its political judgements and legal rules on another? The authors propose a continuum of what they describe as management convergence, between full national autonomy over decisions to

¹⁶ Integrating National Economies: Promise and Pitfalls, 1994 f. 21 studies are planned.

federalist mutual government, and which could well be useful for Latin American countries as a way of analyzing the cross border management of environmental resources¹⁷.

- c. specific locations; to recognize that environmental behaviour is dependent upon location and specific, often unique, ecological attributes and which cannot easily or sensibly be converted into policy generalizations without greater knowledge. Many of the most interesting books or documents on environmental policy contain detailed case studies, principally of Asia, and it is unlikely that the only reason is the relative novelty of the subject. Rather without such case studies it may be impossible to fashion effective policy.
- d. grass roots and popular participation; effective policy relies on general political agreement and so the active or passive willingness of people to alter their behaviour. National or regional policies require a degree of popular support and viceversa, policies are often created by public pressure. In many poor communities, marginal to national life and which often suffer the worst consequences and have the least choice, sustainability and environmental action depends on the communities themselves defining and creating opportunities. And for indigenous peoples, environmental protection may also be a way of preserving their own way of life against, for example, predatory agriculture. This topic would target issues of poverty, inequality and sustainability and is therefore difficult to work in.
- e. tools; the Bank and others have made important contributions to the methods of identifying and valuing natural resources and their impact on the economy and society. But how are they used? And who uses them? And under what circumstances? One's impression is that LAC has a long way to go before environmental evaluation become as current as, for example, the vocabulary of cost-benefit analysis. Perhaps the important role is for in house training and graduate education as much as specific and concrete problems, to which, of course they intended to contribute.

Responses

In social analysis, which include issues of sustainable development, the definition of a problem depends as much on the way it can be solved as on objective criteria. For example, how far can markets solutions, government regulation or public control contribute to or hinder different environment solutions?

¹⁷ The other categories are mutual recognition (professional licenses), monitored decentralization (G7), co-ordination (Montreal Protocol), explicit harmonization (Basle agreement on banking arrangements).

There are those, like Deepak Lal, who argue that sustainable development is a slippery concept and that international environmental pressures will lead to both unwarranted interference with national sovereignty and reduce opportunities for the poor to increase their welfare. In his view, concern about the Amazon forest, for example, should be left to national definitions of national interest and the market not "international greenery"¹⁸.

The World Bank, in its recent Development Report on infrastructure (1994), has produced a common sense four fold scheme to deliver basic urban services (water, sanitation) and national services such as telephones and electricity. The Report argues that past waste and inefficiency together with inadequate maintenance has led to substandard performance and that new ways of contracting out services are necessary and possible because of changing technology and financing. There classification is reproduced below:

1. Public ownership with public operation
2. Public ownership with private operation
3. Private ownership with private operation
4. Community and user provision

How far can market solutions work in Latin America and the Caribbean and under what conditions? The possibility of this solution depends on one's view of Latin American performance over the last decade and the success or failure of the policies that contribute to the strategic imperatives.

¹⁸ See Against Dirigisme: The Case for Unshackling Economic Markets, San Francisco, (1994), p.223-252. He paraphrases Dr.Johnson, "externalities are the last refuge of the dirigiste".

Appendix Tables

| | |
|------|-----------------------------------|
| A1. | Growth of GNP per capita. |
| A2. | Poverty and Income Distribution. |
| A3.1 | Agriculture and Food Production. |
| A3.2 | Calories and Proteins per capita. |
| A3.3 | Education and Employment. |
| A3.4 | Access to Drinking Water. |
| A3.5 | Access to Sanitation. |
| A4.1 | Birth and Death Rates. |
| A4.2 | Infant and Under 5 Mortality. |
| A5. | Changes in Land Use. |

T.A1 LAC: Growth of GNP per capita

| | GNP per capita | | Growth rates | | |
|------------------|----------------|---------------|----------------|----------------|----------------|
| | (1992) (1) | (1992) (2) | 1980-92 (2) | 1980-90 (3) | 1990-93 (3) |
| 22 Nicaragua | 2,160 | 340 | -5.3 | -4.3 | -3.4 |
| 34 Honduras | 1,930 | 580 | -0.3 | -0.8 | 1.1 |
| 44 Bolivia | 2,270 | 680 | -1.5 | -2.3 | 1.2 |
| 54 Peru | 3,080 | 950 | -2.8 | -3.3 | 0.3 |
| 55 Guatemala | 3,370 | 980 | -1.5 | -2.0 | -1.2 |
| 58 Dominican R. | 3,360 | 1,050 | -0.5 | -0.3 | 1.7 |
| 59 Ecuador | 4,380 | 1,070 | -0.3 | -0.8 | 1.0 |
| 62 El Salvador | 2,230 | 1,170 | 0.0 | -1.8 | 2.6 |
| 67 Colombia | 5,760 | 1,330 | 1.4 | 1.5 | 1.8 |
| 68 Jamaica | 3,770 | 1,340 | 1.4 | 0.3 | 0.1 |
| 69 Paraguay | 3,510 | 1,380 | -0.7 | 0.0 | -0.2 |
| 79 Costa Rica | 5,550 | 1,960 | 0.8 | -0.6 | 2.6 |
| 82 Panama | 5,540 | 2,420 | -1.2 | -1.4 | 5.8 |
| 85 Chile | 8,090 | 2,730 | 3.7 | 1.1 | 5.4 |
| 92 Brazil | 5,250 | 2,770 | 0.4 | -0.7 | -0.1 |
| 95 Venezuela | 8,790 | 2,910 | -0.8 | -1.7 | 3.0 |
| 98 Uruguay | 7,450 | 3,340 | -1.0 | -0.3 | 3.3 |
| 99 Mexico | 7,490 | 3,470 | -0.2 | -0.7 | 0.1 |
| 100 Trinidad | 8,410 | 3,940 | -2.6 | -4.2 | -0.7 |
| 102 Argentina | 6,080 | 6,050 | -0.9 | -2.2 | 6.6 |
| | | | | | |
| Latin America | | 2,690 | -0.2 | -1.0 | 1.5 |
| <u>Memo item</u> | | | | | |
| HIE | | 22,160 | 2.3 | | |

Sources:

- (1) PPP estimates, WDI, (1994), T.30, p.220-221: a number of the estimates are based on regressions
- (2) WDI, (1994) T.1, p.162
- (3) Progreso Económico y Social (1994): T.B.2, (1988 US dollars)

T.A2 LAC: Poverty and Income Distribution

| | Poverty (percent) | | Quintile distribution | | | | | |
|---------------|----------------------|-------|-------------------------|---------|--------|-------------------------|---------|--------|
| | | | (20 percent households) | | | (40 percent households) | | |
| | 1990-92 | | Lowest Q 1 | | | Lowest Q1 & Q2 | | |
| | Total | Rural | 1990-92 | 1979-81 | Change | 1980 | 1990-92 | Change |
| Argentina | 10 (U) | | 6.72 | 5.86 | -0.86 | 17.3 | 15.17 | -2.13 |
| Bolivia | 16 (U) | | | 4.41 | | | 13.00 | |
| Brazil | 43 | 56 | 3.91 | 3.08 | -0.83 | 11.2 | 9.60 | -1.56 |
| Chile | 28 | 29 | | 5.2 | | | 14.58 | |
| Colombia | 38 (U) | | 3.44 | 4.14 | 0.70 | 11.0 | 12.93 | 1.90 |
| Costa Rica | 25 | 25 | 6.71 | 5.61 | -1.10 | 18.8 | 16.96 | -1.86 |
| Guatemala | 63 | 72 | | 4.77 | | | 12.82 | |
| Honduras | 73 | 79 | | 4.52 | | | 13.18 | |
| Mexico | 36 | 46 | 7.80 | 6.44 | -1.36 | 20.1 | 16.57 | -3.54 |
| Panama | 36 | 43 | 4.68 | 3.86 | -0.82 | 15.5 | 13.30 | -2.18 |
| Paraguay | 36 (M) | | | 5.72 | | | 16.17 | |
| Peru | 52 | 64 | | | | | | |
| Uruguay | 8 (U) | | 6.78 | 8.97 | 2.19 | 17.7 | 21.88 | 4.20 |
| Venezuela | 33 | 36 | 6.97 | 5.74 | -1.23 | 20.2 | 16.39 | -3.81 |
| | | | | | | | | |
| Latin America | 39 | 53 | | | | | | |

Sources:

Hogares en situaciones de pobreza, Anuario Estadístico, (1994) T.31, p.46

Quintile data, Anuario Estadístico, (1994), T.30,p.45

(U) Urban (M) Metropolitan

T.A3.1 LAC Agriculture and Food Production

| | Growth rates | | | Quantum Indices | |
|------------------|--------------|-------------|--------------------------|---------------------------|--------------------|
| | 1980-92 | | 1979-92 | (1979-81 = 100) | |
| | GNP | Agriculture | Food Prod. Per capita | Agriculture Production | Food Production |
| 22 Nicaragua | -1.7 | -2.0 | -3.2 | 79 | 95 |
| 34 Honduras | 2.8 | 3.0 | -1.3 | 142 | 137 |
| 44 Bolivia | 0.6 | 1.8 | 1.3 | 145 | 147 |
| 54 Peru | -0.6 | 1.7 | 0.0 | 114 | 120 |
| 55 Guatemala | 1.4 | 1.7 | -0.8 | 116 | 136 |
| 58 Dominican R. | 1.7 | 0.4 | -1.8 | 129 | 139 |
| 59 Ecuador | 2.3 | 4.7 | 0.7 | 151 | 153 |
| 62 El Salvador | 1.3 | 0.1 | 1.4 | 95 | 116 |
| 67 Colombia | 3.7 | 3.2 | 1.0 | 143 | 146 |
| 68 Jamaica | 1.8 | 1.0 | 0.8 | 129 | 129 |
| 69 Paraguay | 2.8 | 3.4 | 0.4 | 158 | 161 |
| 79 Costa Rica | 3.3 | 3.5 | 0.2 | 145 | 149 |
| 82 Panama | 0.9 | 2.5 | -1.5 | 117 | 114 |
| 85 Chile | 4.8 | 5.6 | 1.8 | 145 | 146 |
| 92 Brazil | 2.2 | 2.6 | 1.2 | 141 | 147 |
| 95 Venezuela | 1.9 | 2.6 | -0.1 | 137 | 139 |
| 98 Uruguay | 1.0 | 0.7 | 0.4 | 121 | 122 |
| 99 Mexico | 1.5 | 0.6 | 0.1 | 121 | 126 |
| 100 Trinidad | -3.7 | -6.8 | -0.1 | 98 | 101 |
| 102 Argentina | 0.4 | 1.2 | -0.3 | 110 | 112 |
| | | | | | |
| Latin America | 1.8 | 2.0 | -0.3 | 127 | 132 |
| <u>Memo item</u> | | | | | |
| HIE | 2.9 | | | | |

Sources:

Column 1-3: WDI, (1994), T.2, p. 164-165: T4, p.168-169

Columns 4 & 5: Anuario Estadístico, T.312, (p.604), T.315, (p.610)

T.A3.2 LAC: Calories and Proteins per capita

| | Calories per day | | | Proteins per day (grammes) | | |
|--------------|------------------|---------|--------|----------------------------|---------|--------|
| | 1979-81 | 1988-90 | Change | 1979-81 | 1988-90 | Change |
| Antigua | 2,089 | 2,307 | 218 | 63.6 | 77.5 | 13.9 |
| Argentina | 3,195 | 3,068 | -127 | 106.3 | 99.2 | -7.1 |
| Bahamas | 2,449 | 2,777 | 328 | 69.8 | 80.3 | 10.5 |
| Barbados | 3,072 | 3,217 | 145 | 84.6 | 97.9 | 13.3 |
| Belize | 2,679 | 2,575 | -104 | 67.5 | 71.5 | 4.0 |
| Bolivia | 2,120 | 2,013 | -107 | 53.9 | 51.9 | -2.0 |
| Brasil | 2,707 | 2,730 | 23 | 60.4 | 61.4 | 1.0 |
| Chile | 2,645 | 2,484 | -161 | 73.6 | 68.0 | -5.6 |
| Colombia | 2,409 | 2,453 | 44 | 51.9 | 55.8 | 3.9 |
| Costa Rica | 2,581 | 2,711 | 130 | 63.3 | 63.9 | 0.6 |
| Cuba | 2,954 | 3,129 | 175 | 71.8 | 73.0 | 1.2 |
| Dominica | 2,360 | 2,911 | 551 | 59.9 | 74.0 | 14.1 |
| Ecuador | 2,292 | 2,399 | 107 | 49.9 | 49.9 | 0.0 |
| El Salvador | | | | | | |
| Granada | 2,245 | 2,400 | 155 | 61.9 | 64.0 | 2.1 |
| Guatemala | 2,146 | 2,254 | 108 | 53.9 | 54.9 | 1.0 |
| Guyana | 2,499 | 2,495 | -4 | 62.1 | 65.7 | 3.6 |
| Haiti | 2,051 | 2,005 | -46 | 48.3 | 48.1 | -0.2 |
| Honduras | 2,133 | 2,210 | 77 | 52.2 | 54.0 | 1.8 |
| Jamaica | 2,632 | 2,558 | -74 | 63.1 | 62.1 | -1.0 |
| Mexico | 3,000 | 3,062 | 62 | 81.3 | 80.2 | -1.1 |
| Nicaragua | | | | | | |
| Panama | 2,321 | 2,269 | -52 | 57.0 | 58.0 | 1.0 |
| Paraguay | 2,660 | 2,684 | 24 | 74.6 | 68.2 | -6.4 |
| Peru | 2,102 | 2,037 | -65 | 54.8 | 53.7 | -1.1 |
| R. Dominican | 2,268 | 2,310 | 42 | 49.3 | 50.3 | 1.0 |
| St. Kitts | 2,164 | 2,435 | 271 | 60.3 | 70.8 | 10.5 |
| St. Lucia | 2,194 | 2,424 | 230 | 55.8 | 68.0 | 12.2 |
| St. Vincent | 2,454 | 2,460 | 6 | 53.9 | 57.8 | 3.9 |
| Suriname | 2,440 | 2,436 | -4 | 61.0 | 62.3 | 1.3 |
| Trinidad | 2,930 | 2,770 | -160 | 77.5 | 64.8 | -12.7 |
| Uruguay | 2,815 | 2,668 | -147 | 84.2 | 82.4 | -1.8 |
| Venezuela | 2,719 | 2,443 | -276 | 69.0 | 61.0 | -8.0 |
| Total | | | | | | |

Source: Anuario Estadístico, (1994), T.34, p.50-51

T.A3.3 LAC: Education and Employment

| | Adult Illiteracy (percent 15+) | | | EAP Growth Rates | |
|------------------|-----------------------------------|------|--------|---------------------|-----------|
| | 1970.0 | 1990 | Change | 1982-92 | 1992-2000 |
| 22 Nicaragua | 42.5 | | | 3.8 | 3.8 |
| 34 Honduras | 43.1 | 27 | -16.1 | 3.8 | 3.7 |
| 44 Bolivia | 36.8 | 23 | -13.8 | 2.7 | 2.6 |
| 54 Peru | 27.5 | 15 | -12.5 | 2.8 | 2.7 |
| 55 Guatemala | 54.0 | 45 | -9.0 | 3.0 | 3.3 |
| 58 Dominican R. | 33.0 | 17 | -16.0 | 3.3 | 2.7 |
| 59 Ecuador | 25.8 | 14 | -11.8 | 3.0 | 2.7 |
| 62 El Salvador | 42.9 | 27 | -15.9 | 3.1 | 3.1 |
| 67 Colombia | 19.2 | 13 | -6.2 | 2.6 | 2.2 |
| 68 Jamaica | 3.9 | 2 | -1.9 | 2.7 | 2.2 |
| 69 Paraguay | 19.9 | 10 | -9.9 | 3.0 | 2.7 |
| 79 Costa Rica | 11.6 | 7 | -4.6 | 2.7 | 2.3 |
| 82 Panama | 18.7 | 12 | -6.7 | 2.8 | 2.3 |
| 85 Chile | 11.0 | 7 | -4.0 | 2.2 | 1.5 |
| 92 Brazil | 33.8 | 19 | -14.8 | 2.2 | 2.1 |
| 95 Venezuela | 23.5 | 8 | -15.5 | 3.2 | 2.8 |
| 98 Uruguay | 6.1 | 4 | -2.1 | 0.7 | 1.0 |
| 99 Mexico | 25.8 | 13 | -12.8 | 3.1 | 2.7 |
| 100 Trinidad | 7.8 | | | 2.3 | 2.0 |
| 102 Argentina | 7.4 | 5 | -2.4 | 1.2 | 1.6 |
| | | | | | |
| Latin America | | 15 | 15.0 | 2.5 | 2.3 |
| <u>Memo item</u> | | | | | |
| HIE | | | | 0.6 | 0.4 |

Sources:

Column (1) Anuario Estadístico.

Column (2) WDI, (1994), T.1, p.

Columns (4) & (5) WDI, (1994), T.25, p.210-211. EAP = Economically Active Population

T.A3.4 LAC: Access to Drinking Water
(percent population)

| | Total | | | Urban | | | Rural | | |
|-----------------|-------|------|--------|-------|------|--------|-------|------|--------|
| | 1980 | 1990 | Change | 1980 | 1990 | Change | 1980 | 1990 | Change |
| 22 Nicaragua | 39 | 55 | 16 | 81 | 76 | -5 | 10 | 21 | 11 |
| 34 Honduras | 59 | 64 | 5 | 50 | 85 | 35 | 40 | 48 | 8 |
| 44 Bolivia | 36 | 53 | 17 | 69 | 76 | 7 | 10 | 30 | 20 |
| 54 Peru | 50 | 53 | 3 | 68 | 68 | 0 | 21 | 24 | 3 |
| 55 Guatemala | 46 | 62 | 16 | 89 | 92 | 3 | 18 | 43 | 25 |
| 58 Dominican R. | 60 | 68 | 8 | 85 | 82 | -3 | 33 | 45 | 12 |
| 59 Ecuador | 50 | 54 | 4 | 82 | 63 | -19 | 16 | 44 | 28 |
| 62 El Salvador | 50 | 47 | -3 | 67 | 87 | 20 | 40 | 15 | -25 |
| 67 Colombia | 86 | 86 | 0 | | 87 | | 79 | 82 | 3 |
| 68 Jamaica | 51 | 72 | 21 | | 95 | | 46 | | |
| 69 Paraguay | 21 | | | 39 | 61 | 22 | 10 | | |
| 79 Costa Rica | 90 | 92 | 2 | 100 | 100 | 0 | 68 | 84 | 16 |
| 82 Panama | 81 | 84 | 3 | 100 | 100 | 0 | 65 | 66 | 1 |
| 85 Chile | 84 | 87 | 3 | 100 | 100 | 0 | 17 | 21 | 4 |
| 92 Brazil | 72 | 87 | 15 | 80 | 95 | 15 | 51 | 61 | 10 |
| 95 Venezuela | 86 | 92 | 6 | 92 | 91 | -1 | | 50 | 50 |
| 98 Uruguay | 81 | 95 | 14 | 96 | 100 | 4 | 2 | | |
| 99 Mexico | 73 | 89 | 16 | 64 | 94 | 30 | 43 | | -43 |
| 100 Trinidad | 97 | 96 | -1 | 100 | 100 | 0 | 93 | 88 | -5 |
| 102 Argentina | 54 | 64 | 10 | 65 | 73 | 8 | 17 | 17 | 0 |
| | | | | | | | | | |
| Latin America | | | | | | | | | |

Source: WDI, (1994), T.A.2

T.A3.5 LAC: Access to Sanitation

| | Total | | | Urban | | | Rural | | |
|-----------------|-------|------|--------|-------|------|--------|-------|------|--------|
| | 1980 | 1990 | Change | 1980 | 1990 | Change | 1980 | 1990 | Change |
| 22 Nicaragua | 18 | | | 35 | | | | | |
| 34 Honduras | 31 | 62 | 31 | 40 | 89 | 49 | 26 | 42 | 16 |
| 44 Bolivia | 19 | 26 | 7 | 37 | 38 | 1 | 4 | 14 | 10 |
| 54 Peru | 37 | 58 | 21 | 57 | 76 | 19 | 3 | 56 | 53 |
| 55 Guatemala | 30 | 60 | 30 | 45 | 72 | 27 | 20 | 52 | 32 |
| 58 Dominican R. | 15 | 87 | 72 | 25 | 95 | 70 | 4 | 75 | 71 |
| 59 Ecuador | 26 | 48 | 22 | 39 | 56 | 17 | 14 | 38 | 24 |
| 62 El Salvador | 47 | 59 | 12 | 80 | 85 | 5 | 26 | 38 | 12 |
| 67 Colombia | 66 | 64 | -2 | 100 | 84 | -16 | 4 | 18 | 14 |
| 68 Jamaica | | | | | 14 | | | | |
| 69 Paraguay | 92 | 47 | -45 | 95 | 31 | -64 | 89 | 70 | -19 |
| 79 Costa Rica | 87 | 96 | 9 | 93 | 100 | 7 | 82 | 93 | 11 |
| 82 Panama | 45 | 85 | 40 | 62 | 100 | 38 | 28 | 68 | 40 |
| 85 Chile | | 85 | | 99 | 100 | 1 | | 6 | |
| 92 Brazil | 21 | 72 | 51 | 32 | 84 | 52 | | 32 | |
| 95 Venezuela | 87 | | | 90 | | | 70 | 72 | 2 |
| 98 Uruguay | 59 | | | 59 | | | 60 | | |
| 99 Mexico | 38 | | | 51 | 85 | 34 | 12 | | |
| 100 Trinidad | 92 | 98 | 6 | 95 | 100 | 5 | 88 | 92 | 4 |
| 102 Argentina | 79 | 89 | 10 | 89 | 100 | 11 | 32 | 29 | -3 |
| | | | | | | | | | |
| Latin America | | | | | | | | | |

Source: WDI, (1994), T.A.2

T.A4.1 LAC: Birth & Death Rates, 1970, 1992
(per 1000 population)

| | Crude Birth Rates | | | Crude Death Rates | | |
|-----------------|-------------------|------|--------|-------------------|------|--------|
| | 1970 | 1992 | Change | 1970 | 1992 | Change |
| 22 Nicaragua | 48 | 35 | -13 | 14 | 6 | -8 |
| 34 Honduras | 49 | 37 | -12 | 15 | 7 | -8 |
| 44 Bolivia | 46 | 36 | -10 | 19 | 10 | -9 |
| 54 Peru | 41 | 27 | -14 | 14 | 7 | -7 |
| 55 Guatemala | 45 | 37 | -8 | 14 | 7 | -7 |
| 58 Dominican R. | 41 | 26 | -15 | 11 | 6 | -5 |
| 59 Ecuador | 43 | 29 | -14 | 12 | 7 | -5 |
| 62 El Salvador | 44 | 32 | -12 | 12 | 7 | -5 |
| 67 Colombia | 36 | 24 | -12 | 9 | 6 | -3 |
| 68 Jamaica | 34 | 25 | -9 | 8 | 6 | -2 |
| 69 Paraguay | 38 | 35 | -3 | 7 | 6 | -1 |
| 79 Costa Rica | 33 | 26 | -7 | 7 | 4 | -3 |
| 82 Panama | 37 | 25 | -12 | 8 | 5 | -3 |
| 85 Chile | | 12 | | | 12 | |
| 92 Brazil | 35 | 23 | -12 | 10 | 7 | -3 |
| 95 Venezuela | 38 | 30 | -8 | 7 | 5 | -2 |
| 98 Uruguay | 21 | 17 | -4 | 10 | 10 | 0 |
| 99 Mexico | 43 | 28 | -15 | 10 | 5 | -5 |
| 100 Trinidad | 28 | 24 | -4 | 8 | 6 | -2 |
| 102 Argentina | 23 | 20 | -3 | 9 | 9 | 0 |
| | | | | | | |
| Latin America | 36 | 26 | -10 | 10 | 7 | -3 |
| Memo item | | | | | | |
| HIE | 18 | 13 | -5 | 10 | 9 | -1 |

Source: WDI, (1994), T.26

T.A4.2 LAC: Infant and Under 5 Mortality
(per 1000 live births)

| | Infant Mortality | | | Under 5 Mortality | | | |
|------------------|------------------|------|--------|-------------------|------|------|--------|
| | 1970 | 1992 | Change | 1960 | 1980 | 1991 | Change |
| 22 Nicaragua | 106 | 56 | -50 | 209 | 143 | 86 | -57 |
| 34 Honduras | 110 | 49 | -61 | 203 | 100 | 62 | -38 |
| 44 Bolivia | 153 | 82 | -71 | 252 | 175 | 125 | -50 |
| 54 Peru | 108 | 52 | -56 | 236 | 130 | | |
| 55 Guatemala | 100 | 62 | -38 | 205 | 136 | 85 | -51 |
| 58 Dominican R. | 90 | 41 | -49 | 152 | 94 | | |
| 59 Ecuador | 100 | 45 | -55 | 180 | 101 | 63 | -38 |
| 62 El Salvador | 103 | 40 | -63 | 210 | 120 | 70 | -50 |
| 67 Colombia | 74 | 21 | -53 | 132 | 59 | | |
| 68 Jamaica | 43 | 14 | -29 | 76 | 39 | 16 | -23 |
| 69 Paraguay | 57 | 36 | -21 | 90 | 61 | | |
| 79 Costa Rica | 62 | 14 | -48 | 112 | 29 | 16 | -13 |
| 82 Panama | 47 | 21 | -26 | 104 | 31 | 21 | -10 |
| 85 Chile | 66 | 32 | -34 | 138 | 35 | 20 | -15 |
| 92 Brazil | 95 | 57 | -38 | 181 | 93 | 69 | -24 |
| 95 Venezuela | 53 | 33 | -20 | 70 | 42 | | |
| 98 Uruguay | 46 | 20 | -26 | 47 | 42 | 23 | -19 |
| 99 Mexico | 72 | 35 | -37 | 141 | 81 | 39 | -42 |
| 100 Trinidad | 52 | 15 | -37 | 73 | 40 | 24 | -16 |
| 102 Argentina | 52 | 29 | -23 | 68 | 41 | 26 | -15 |
| | | | | | | | |
| Latin America | 85 | 44 | -41 | | | | |
| <u>Memo item</u> | | | | | | | |
| HIE | 20 | 7 | -13 | | | | |
| Canada | | | | 33 | 13 | 9 | -4 |

Source:

Infant mortality: WDI, (1994), T. 27, p. 214-215

Under 5 Mortality: World Resources, T.16.3 (p.273)

(hectares 000's)

| | Arable Land | | Crops | | Forest | | Perm. Pasture | | Irrigated Land | |
|--------------|-------------|-------|--------|------|----------|-------|---------------|-------|----------------|-------|
| | Change | % | Change | % | Change | % | Change | % | Change | % |
| Mexico | 150 | 0.7 | 50 | 3.3 | (6,840) | -14.3 | 0 | 0.0 | 1,120 | 22.5 |
| Costa Rica | 2 | 0.7 | 22 | 9.9 | (190) | -10.4 | 330 | 16.4 | 59 | 96.7 |
| El Salvador | 5 | 0.9 | 0 | 0.0 | (36) | -25.7 | 0 | 0.0 | 10 | 9.1 |
| Guatemala | 130 | 10.2 | 5 | 1.0 | (960) | -21.1 | 120 | 9.2 | 47 | 60.3 |
| Honduras | 80 | 5.1 | 18 | 9.1 | (897) | -22.4 | 170 | 7.1 | 10 | 12.2 |
| Nicaragua | 25 | 2.3 | 2 | 1.2 | (1,308) | -29.0 | 620 | 12.7 | 8 | 10.0 |
| Panama | 65 | 14.9 | 40 | 33.3 | (970) | -23.3 | 120 | 8.8 | 4 | 14.3 |
| Subtotal | 307 | 5.9 | 87 | 6.4 | (4,361) | -22.7 | 1,360 | 10.8 | 138 | 31.4 |
| Argentina | 0 | 0.0 | 0 | 0.0 | (1,050) | -1.7 | (1,200) | -0.8 | 120 | 7.6 |
| Bolivia | 245 | 13.1 | 73 | 39.0 | (700) | -1.2 | (550) | -2.0 | 35 | 25.0 |
| Brasil | 10,868 | 28.1 | (972) | -9.3 | (30,335) | -5.9 | 15,386 | 9.0 | 1,200 | 75.0 |
| Chile | (48) | -1.2 | 52 | 24.3 | 120 | 1.4 | 600 | 4.6 | 13 | 1.0 |
| Colombia | 208 | 5.6 | 53 | 3.6 | (4,400) | -8.3 | 2,430 | 6.4 | 130 | 32.5 |
| Ecuador | 91 | 5.9 | 467 | 50.8 | (3,650) | -26.2 | 917 | 22.8 | 36 | 6.9 |
| Paraguay | 570 | 35.2 | (35) | 30.4 | (7,330) | -36.3 | 5,900 | 37.3 | 7 | 11.7 |
| Peru | 180 | 5.6 | 30 | 10.0 | (2,900) | -4.1 | 0 | 0.0 | 120 | 10.3 |
| Uruguay | (143) | -10.2 | (2) | -4.3 | 42 | 6.7 | (112) | -0.8 | 61 | 77.2 |
| Venezuela | 135 | 4.4 | 25 | 3.7 | (3,475) | -10.5 | 600 | 3.5 | (50) | -20.8 |
| Subtotal | 12,106 | 14.4 | (309) | -1.9 | (53,678) | -6.4 | 23,971 | 5.1 | 1,672 | 23.8 |
| Antigua | 0 | 0.0 | 0 | | (1) | -16.7 | 1 | 33.3 | 0 | |
| Bahamas | 1 | 14.3 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | |
| Barbados | 0 | 0.0 | 0 | | 0 | | (2) | -50.0 | 0 | |
| Belice | 0 | 0.0 | 5 | 71.4 | 0 | 0.0 | 4 | 9.1 | 1 | 100.0 |
| Cuba | 85 | 3.4 | 55 | 8.1 | (199) | -8.0 | 363 | 13.9 | 148 | 19.4 |
| Dominica | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | |
| Grenada | 0 | 0.0 | (3) | 33.3 | 0 | 0.0 | (2) | -66.7 | 0 | |
| Guyana | 0 | 0.0 | 1 | 6.7 | 0 | 0.0 | 10 | 0.8 | 5 | 4.0 |
| Haiti | 15 | 2.8 | 5 | 1.4 | (23) | -39.7 | (14) | -2.8 | 5 | 7.1 |
| Jamaica | 2 | 1.0 | 4 | 6.7 | (11) | -5.6 | 0 | 0.0 | 2 | 6.1 |
| R. Dominican | (70) | -6.5 | 100 | 28.6 | (25) | -3.9 | 0 | 0.0 | 65 | 39.4 |
| St. Kitts | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | |
| St. Lucia | 0 | 0.0 | 1 | 8.3 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| St. Vincent | (1) | -20.0 | 2 | 40.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Suriname | 17 | 42.5 | 2 | 22.2 | (90) | -0.6 | 4 | 23.5 | 18 | 42.9 |
| Trinidad | 5 | 7.1 | 1 | 2.2 | (12) | -5.2 | 0 | 0.0 | 1 | 4.8 |
| Subtotal | 54 | 1.1 | 173 | 11.2 | (361) | -1.0 | 364 | 5.4 | 245 | 20.1 |
| Total | 12,617 | 10.8 | 1 | 0.0 | (65,240) | -7.0 | 25,744 | 4.6 | 3,175 | 23.2 |

Source: Calculated from Anuario Estadístico, (1994), T.317 (p.614-623)

Commentary
"STRATEGIC IMPERATIVES FOR LAC"

by David Kaimowitz¹

The paper focuses on average figures for LAC. However, there is a great deal of diversity within the region. Regional averages tend to be dominated by the two largest countries - Brazil and Mexico. The intermediate countries which IDRC and other bilateral donors have traditionally concentrated on tend to be less urban, less industrialized, poorer, and to have weaker national institutions. Most of the latter countries are in the Andean and Central American sub-regions. IDRC's strategy should reflect the needs of that sub-set of countries it expects to concentrate on.

The paper's discussion of reviving growth makes an implicit critique of the current economic policies in the region that is not really drawn out. In addition to correctly observing that growth has been lower than conventional wisdom might lead one to believe, it is equally important to note that what growth there has been has been largely financed (as in the 1970s) by external rather than domestic savings and that export growth has come largely from (unsustainable) exports of non-renewable energy and metal products and from agricultural products often produced with minimal regard to maintaining the resource base.

The paper correctly points out that there have been some significant successes in the region in recent years, such as the decline in illiteracy and infant mortality, improved access to potable water and electricity, and the maintenance of per capita food supplies despite rapidly growing populations. On the environmental side there has been a notable decline in deforestation rates in Brazil, slow but steady progress with dealing with air pollution in Santiago and Mexico City, the substitution of some of the most environmentally harmful pesticides, and the protection of millions of hectares of marginal lands in the Southern Cone through commercial tree plantation. IDRC would do well to study some of the success stories, as well as the failures.

One important issue which the paper fails to acknowledge is the current crisis of agriculture in the region and its possible implications for the environment and rural poverty. Unlike the period of the regional debt crisis in the 1980s, when agriculture performed better than the rest of the economy, in recent years this has not been the case. Some of the principal causes of this situation include the appreciation of real exchange rates, low international agricultural prices, the elimination of certain protectionist policies favoring specific crops, and the decline of public investment for agriculture.

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Deforestation is a major problem and the functioning of land markets, property rights issues, government subsidies, and rural poverty are much more important causal factors than are trade issues per se. Likewise, soil degradation is a major issue, but cannot be explained by population growth per se. (El Salvador by the way does have scarce water resources).

The "merging of environment and economics in decision making", should be central to IDRC's work related to the environment in the future. At the national level, trade policy, monetary policy, and fiscal policy probably have a greater impact on environmental and social variables than do most environmental and social policies per se. Examples of this include: (a) dramatic increases in air pollution following the reduction of tariffs on car imports in Costa Rica; (b) reductions in pesticide use in Honduras and Nicaragua following major devaluations in these countries; (c) increases in soil erosion in Chile resulting from the implementation of price bands that promoted the substitution of crop rotations by wheat monocropping; (d) national road building policies in many countries which have stimulated massive deforestation; and, (e) macro policies in El Salvador which have promoted rural urban migration, which has had negative effects on water supply and water quality.

While it is true that national economic policies are generally blunt instruments for influencing environmental variables, and there is still relatively little known about these interactions, I am convinced that this is an area of research which could have a very high pay off for IDRC. Major new issues can be raised, at a low cost, which can have important impacts over large areas and numbers of people. Moreover, despite increased interest in environmental policy, there is still relatively little empirical research on the impact of economic policy on the environment.

Increasingly, sectoral economic policies - such as research, technical assistance, small scale infrastructure, rural credit, land titling, etc. are being defined at the local and regional levels. Here, more than analyzing the content and impact of the policies as such, it is necessary to rethink the institutional framework in which these policies are formulated and implemented. Key issues here include mechanisms for vertical and horizontal coordination, financing mechanisms, how to balance technical capacity and democratic accountability, local non-formal social organizations, conflict resolution methodologies, and the potential roles of municipal governments, NGOs, farmer organization, churches, regional projects, etc. Work on these topics could build off pre-existing IDRC activities in different regions, but with greater emphasis on institutional and organizational issues.

Finally, I think it is important to emphasize that when IDRC prioritizes specific environmental problems, it will also implicitly be prioritizing different social groups who are the primary beneficiaries. For the urban poor, the primary environmental issues probably relate to the availability, quality, and price of water and energy. The rural poor are most affected by changes in their access to natural resources (quality and quantity of soil, forests, water, and genetic resources). Pesticide poisoning is a key issue for agricultural workers. The urban middle classes tend to be more concerned with air pollution, food safety, traffic, and land fills, while the international community has a direct interest in climate change, biodiversity, and factors leading to international migration.

ENVIRONMENTAL CHALLENGES FOR CHILE¹

by Raúl O'Ryan²

Talking about "the" environment leads to confusion, in particular in developing contexts. Environmental issues are diverse, complex and interrelated between each other and with other urgent economic problems. As a result, it is often the case that the whole of economic policy seems to depend on decisions related to the environment. An effort has been made in this paper to identify the economic issues specific to environmental concerns. The focus has been on establishing the issues and how they apply for Chile, distinguishing between the depletion of natural resources and natural habitats, and environmental pollution.

International trade and industrialization, in particular energy generation and use, and urbanization processes, are elements of the context that are key to understanding the pressures to be faced by natural resources and natural habitats as well as the consequences on environmental quality. International trade will exert an important influence on the environment through increasing demands of natural resource based products. However, barriers to trade should not be used to protect the environment in Chile since they would be second-best and inefficient instruments. An important conclusion is that green barriers imposed by other countries are a real, though not necessarily a critical, threat for Chile's export products and a strategy must be worked out by the export sector and the State to minimize the likely consequences on Chile's exports. A second threat to Chile's export strategy is associated to consumer based barriers. Ecolabelling will be used increasingly in the future and Chile must develop a strategy to successfully compete under these conditions. A final conclusion related to trade is that Chile will not become a pollution haven as a result of its increasing integration into world markets. Rather it seems that for the same level of economic growth, the level of industrial pollution would have been higher had Chile been closed to trade.

Given current trends, growth in income will result in more pollution due to more energy use by all sectors and generation by electric power plants. The natural habitat may be severely affected as new hydropower plants are required to satisfy increasing demand for electricity. Biomass consumption and its negative effects on indoor air pollution and deforestation can be expected to continue. To mitigate the effect on the environment of energy production and consumption it is necessary, first, to delink economic growth and energy consumption. The National Energy

¹ In "Sustainable Development and the Environment in Chile: A review of the issues". Chapter 5, July, 1995, pp 61-66.

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Commission has established as a goal for the end of the decade to reduce energy consumption by 10 percent. Whether this will be possible is still an open question. Utility sponsored demand side management (DSM) programs are an attractive option to reduce the expected growth in energy demand. In particular institutional arrangements are required to give incentives to produce "Negawatts" as opposed to Megawatts. Social costing, requiring that electric utilities consider the full social cost rather than the private cost, of their investment and operating practices is another important step. This may be especially relevant for promoting the use of renewable resources like solar energy for the generation of electricity in the north of Chile. A second issue is delinking energy use and pollution through adequate policies and enforcement mechanisms. The focus here should be on regulating emissions through the use of cost-effective policies.

Finally, urban environmental problems had been largely ignored until recently in Chile, reflecting the view that one can "grow first, clean-up later". To reduce future environmental problems associated to urbanization it is necessary to establish national urban strategies that reorient the central economic and major sectoral policies that now reinforce Santiago's growth, urban decline and poverty. It is necessary to promote the development of small and intermediate urban centers, together with the strengthening of their local governments, and the establishment of adequate services and facilities. Unfortunately, the available evidence suggests that most attempts by central governments to balance spatial development have been both expensive and ineffective. However, some lessons related to spatial strategies for urban development that seem pertinent for Chile have been discussed.

Native forest depletion, overfishing and soil degradation are three of the main problems related to natural resources. Native forests cover a significant portion of Chile's southern territory. Until two decades ago, depletion of native forests was due basically to clearing for agriculture and livestock. In the last decade the rapid growth of the dynamic commercial timber sector and as a result of plantation forestry, is seen as threatening native forests, in particular in the Xth region. Moreover, after 1987, favorable market conditions for both chips and native forest wood is also putting pressure on these forests. The economic forces currently behind the conversion and destruction of native forests do not incorporate the externalities associated to their activities. As a result, there is an important role for regulation in use of native forests. The irreversibility of some of the environmental consequences -loss of species, disruption of ecosystems, or loss of a unique environment- require that preventive measures in the form of set asides be examined carefully. Other preventive instruments for projects with major impact on the environment, such as environmental impact assessments (EIA), and resource management plans to establish the mitigation actions are required. Research geared to generating relevant information on species, ecosystems, landscape values, substitution possibilities for the resource, value of the resources, etc. must be promoted and financed -at least partially- by the State given the public good character of much of this information.

The fishing sector was the fastest growing sector during the last decade. As a result, Chile has one of the five largest fishing industries in the world. Fisheries present a different type of problem than native forests. In this case the commercially valuable stock is a common property not subject to clearly defined ownership rights. There will thus be a tendency toward

overinvestment and overexploitation. Unfortunately, evidence on the overexploitation of pelagic resources is accumulating. Managing fisheries efficiently requires overcoming the problems posed by open-access. Chile's current law, though an improvement over the previous situation of completely open access without restrictions on the catch, is a far cry from an optimal transferable quota system. As a result, it can be expected that inefficiencies and overexploitation of the resource will continue.

Soil degradation is a serious problem. Estimates of land damaged or lost for agricultural use are impressive: almost 50 percent of the country's continental surface, 34 million ha, are subject to degradation processes. There are two economic issues associated to soil degradation. First, it is necessary to generate the mechanisms that would allow internalizing the external effects on other plots of land and on rivers and lakes. A first step required is the use of preventive instruments such as environmental impact assessments if a project has significant effects on soil degradation. Second, the effort that society is willing to make to recover (at least part of) the degraded soils must be established. This would preserve the option to use these soils productively in the future. The State has invested US\$ 335 million in the last two decades in reforestation programs. Whether more (or less) resources should be devoted to soil protection is an open question.

An important problem when actual development projects are considered, is the difficulty in identifying the values involved, especially the environmental values that would be sacrificed. It is key for Chile that policy-makers develop methods that will allow capturing many, or at least some of the relevant non-market values. In particular the use of environmental impact assessments (EIA) in the future to identify the non-market values at stake will help identifying the environmental effects of an initiative and can contribute to the proposal of mitigating and/or compensating activities. The current Environmental Law has included EIA as an important preventive instrument for environmental protection and its application should make a significant difference in the future for megaprojects with environmental impacts. A second issue after identifying the main impacts, is putting a value on them where possible. The substitute service approach, productivity approach, hedonic approach, travel cost approach and constructed markets (in particular contingent valuation) are different methods for this. There is very little experience with the use of these methods in Chile and this should be an area of increasing applied work in the future.

Pollution, in its many forms, is widely regarded as the major environmental problem in Chile. In particular air pollution in Santiago is one of the country's most significant environmental problems in terms of the number of people affected. 4.8 million people are subject to concentration levels of particulates, CO and ozone that violate the allowed quality standards. Health effects are significant. Due to the magnitude of the problem significant efforts have been included through the establishment of a "compensation system" for large industrial sources. This system is a precursor to a marketable permit system and allows these firms flexibility in reaching their reduction requirements. It is currently being implemented and substantial difficulties must still be overcome to make it operational. Estimations of the costs and benefits of air pollution control vary. However a recent study suggests that annual health benefits would be close to US\$ 200 million while the costs would be approximately US\$ 50 million per year.

Pollution of surface water bodies by biological contaminants is a common problem, in particular close to cities. With the exception of a small pilot plant in Santiago that treats approximately 4 percent of the city's water, there are no sewage treatment plants in Chile. Santiago is again a case in point. Measurements suggest that the Zanjón de la Aguada has been practically an open sewer crossing the city. Known health risks are mainly associated with the use of contaminated river water for irrigation purposes which ultimately leads to contaminated food. The number of patients suffering from water-borne epidemical diseases in Santiago, most probably due to irrigation with polluted water and subsequent consumption of contaminated food are extremely high. For example, national typhus and paratyphus rates observed in 1988 were 6 times those observed in Spain and 200 times greater than the rate in the United States in the same year. However, preliminary estimations of the costs and benefits suggest that building treatment plants is not justified. The costs are simply too high: required investments are estimated at over US\$ 500 million and yearly operating costs are close to US\$ 50 million. Health benefits are in the order of only a few million dollars per year. Alternatives that prevent people from eating raw vegetables are cheaper and sufficiently effective as has been shown in the last two years with reductions of up to 87 percent in typhus and paratyphus cases. A second problem that has not received much attention even though it is becoming critical in the IInd and IVth Region is water scarcity.

Solid waste generation has grown significantly in the past decade, however it does not pose a difficult environmental problem. Toxic substances and hazardous waste has received very little attention, but may well be a sleeping "time bomb". For example, control of residual liquid discharges (LIR) is currently undertaken only if a specific source is causing serious problems with water quality. Information on the levels of toxic substances is skimpy and policies to manage these substances efficiently have not been established.

A major conclusion to be derived from the present review is that it is not possible to lump all the problems together. Some require urgent action, e.g. air pollution, soil erosion, loss of native forests; others require more information to develop specific policies, e.g. air pollution, residual industrial liquids, megaprojects. Where possible, the social benefits must be weighed against the costs to determine whether the investments are timely. This is specially true for the case of investments in water sewage treatment plants.

Huge investments will be required to improve current environmental quality and preventing future damage. Establishing priorities for action is thus highly recommended. In particular, setting the appropriate goals is key to an efficient allocation of resources. Adequate policy instruments must also be identified to reduce the costs while obtaining the desired environmental quality goals. The policies to be used must consider a mix of market-based incentives and command and control policies. The applicability of each type of policy depends on the specific context in which it is applied, so there is no way to know a-priori which is most suitable. specific studies are required in each case.

It is not possible to cover all environmental problems in one study, and this has not been the intention. Rather, based on perceptions and the available literature, an effort has been made to establish the environmental issues that seem most relevant for Chile's current development

strategy. This effort should be the beginning of a more informed discussion on the issues presented and will hopefully lead to a better use of the available economic tools. These tools can help illuminate the trade-offs that are present as well as lead to more efficient policy choices by policy-makers.

EXPERIENCES IN PRIORITY SETTING: LESSONS FOR ENVIRONMENTAL RESEARCH IN LATIN AMERICA AND THE CARIBBEAN

by Carlos Seré

Introduction

Overall the recommendations in Agenda 21 called forth for new financial resources to tackle the most urgent problems of environment and development are of the order of 125 billion US dollars. To put this in the context of the International Development Research Centre (IDRC), the resources available to IDRC amount to less than 0.1% of the resources called for in Agenda 21, while as all the DFI's together provides resources (in the form of loans) in the order of one third the amount called for (Rath, 1994).

Donor agencies and policy makers are continuously faced with the resource allocation issue. In the environmental field a series of dimensions make such decisions particularly difficult: problems are complex, dynamic, frequently with transboundary or even global implications, markets are imperfect or non-existent. This paper looks at methodological approaches to deal with the resource allocation issue in the context of research funding, then looks at methods used in making allocations in the environmental field, to then analyze the outcomes of some real environmental prioritization processes undertaken in or for the Latin America and the Caribbean (LAC) region and for some specific subsets of issues. Conclusions are drawn from the above for agencies facing the need to make allocation decisions in this complex real life setting.

Approaches used to set research priorities issues

The base for resource allocation in economic theory is quite simple. Resource allocation is optimized if the marginal productivity of one resource unit is equal to all alternative uses. Research priority setting from an economist's perspective is just another case of investment analysis. The simple principle of equating marginal productivity across alternative investment choices is nevertheless not that easy to implement, particularly for research investments. Reasons are:

- a) difficulties in foreseeing the society wide impacts of research results;
- b) difficulties in valuing those future benefits; and
- c) difficulties in assessing probabilities of success of the research process.

The need to make research priority decisions has led to a range of approaches to circumvent some of the above problems. Approaches vary in their data requirements and their scientific rigor when assessed from an economic theory perspective. They will be described briefly as there is a wide literature covering these approaches (e.g. Norton and Davis, 1981).

a) Peer reviews:

They are the basic instrument of quality control in the Western research system. Chubin and Hackett (1990) present a good review of the approach. As Alston et al (1994) state, this methodology is more appropriate for prioritization among individual project proposals than among broad programs. Socio-economic methods should be applied there (see below). Peer reviews can contribute to the definition of technical parameters for economic surplus models.

b) Delphi analysis:

This approach constitutes an improvement of peer reviews. Evaluators are confronted with the results of prior rounds and are given a chance to explain their rating and or to change assessments. Over two to three iterations assessments tend to converge to a consensus. This approach is used particularly in industrial development for technology foresight.

c) Congruence analysis:

This approach looks at the research funding allocation problem by comparing the share of output value of individual commodities or related problems vis a vis the share of research expenditure on these commodities or problems. The underlying assumption is that the productivity per money unit invested in each alternative is similar. Thus additional information on success probabilities, etc is not built into the decision process. The technique is inherently conservative as no funds are allocated to emerging fields or for that matter environmental problems.

In the agricultural sector the effort of the Consultative Group of International Agricultural Research (CGIAR) to use this approach to allocate resources to international agricultural research is particularly noteworthy (TAC, CGIAR, 1992). In this case the congruence analysis was modified by incorporating weightings to reflect focus on poverty alleviation. Thus the model became a scoring model (see next section), in which values of production were an important dimension.

d) Economic surplus models:

These models are based on welfare economics theory. They require explicit statement of the supply shifts to be induced by research. These supply shifts cause changes in prices within a comparative static framework. Thus these models do not explicitly take into account second and further order impacts of research in the economy. They are able to

predict equity dimensions of first order effect of technical change and are thus frequently used in policy analysis (Janssen, undated). They are therefore particularly attractive to deal with commodity-based research, where impacts can be directly traced to specific markets and where supply and demand parameters are relatively well-known, given the commodity nature of these internationally traded goods. A recent extension of these models has been to explicitly deal with research externalities (spill-overs) across regions, a dimension of particular interest to the CGIAR, given the international public goods research the system's research investment is generating.

e) Scoring models:

Scoring models are approaches to combine quantitative and qualitative data in a framework which attempts to replace complete economic surplus models by proxies. In the agricultural case values of crop production are frequently used as proxies for welfare gains, share of a crop produced by small farmers as a proxy for equity considerations. Other criteria such as probability of success of the research investment, estimated number of scientist person years of investment required, etc. are defined for each of the alternative research investment options being considered. This process is frequently undertaken using peer review/Delphi exercises to provide consensus estimates. The criteria for each project are then aggregated to some indicator of project merit. Frequently weightings are introduced to more precisely reflect the relative importance of individual objectives of the institution making the allocation decisions. An interesting example of the application of this technique is the priority setting exercise undertaken by the International Potato Center (Collion and Gregory, 1993). As Alston et al 1994, indicate the ease of implementation is attained at a certain risk in terms of alternative outcomes depending on the way the information is presented (e.g. absolute or relative terms, units of measurement). Frequently more than one indicator is used as a proxy for the same dimension e.g. percentage of crops in the diet of the poor and percentage of the crops grown by small farmers as indicators equity leading to "double counting" and increased weight given to that factor. In spite of criticisms, particularly from economists, scoring models are widely used because of their flexibility to incorporate dimensions for which "hard, quantitative" data are difficult to obtain. Furthermore the approach is intuitively understandable and can thus be used by general scientists not specialized in priority setting methods. This feature enhances "buy in" from stakeholders.

A good synthesis of the state of the arts in research evaluation and planning is given by the Office of Technology Assessment OTA (1986):

"In summary, OTA finds that the metaphor of research funding as an investment, while valid conceptually, does not provide a useful practical guide to improving federal research decision making. The factors that need to be taken into account in research planning, budgeting, resource allocation, and evaluation are too complex and subjective: the payoffs too diverse and incommensurable; and the institutional barriers too formidable to allow quantitative models to take the place of mature, informed judgement.

Bibliometric and other science indicators can be of some assistance, especially in research program evaluation, and should be used more widely. However, they are extremely limited in their applicability to interfield comparisons and future planning. The research planning and budgeting experience in some U.S. corporations and R&D forecasting efforts in Japan suggest a need to improve communications between the parties that carry out and utilize research. Also, to assure that a wide range of stakeholders, points of view, and sources of information are taken into account in formulating R&D plans and budgets,"

Along the same vein, Averch (1994) concludes his recent review stating that:

"current economic approaches give rough snapshots of how the large R&D aggregates affect entire firms, industries, or economies. These snapshots are useful for the highest level of decision making about R&D."

But both methodological issues and costs of information gathering limit the usefulness at lower levels of aggregation. Kostoff (1994) comes to a similar assessment of the applicability of cost-benefit analyses for the evaluation of basic research.

The conclusion of this review is that agricultural research is rather the exception than the rule in being amenable to economic ex-ante and ex-post evaluation. This is clearly related to:

- a) the type of research: generally rather applied and thus clearly linkable to a commodity and thus to a market impact, and
- b) the type of commodity affected: large transparent markets, homogeneous goods produced in an atomistic market structure, thus making assessment of impact in terms of prices and quantities easy.

It is clear that these attributes are quite different from the ones of environmental research (resource rather than commodity oriented, impacts with substantial valuation problems, system-wide impacts of research, etc).

Methodologies used in prioritizing environmental investments

This section reviews approaches chosen to rank environmental problems/potentials. The perspective goes beyond research looking at all sorts of interventions.

- a) Delphi analysis of Chile's environment

In the late eighties the Department of Ecology of the Catholic University of Chile conducted a Delphi exercise to identify and rank environmental problems country-wide (Hajek et al, 1990). USAID supported this project. For each of the 13 regions of the country a panel of experts was appointed including persons from the planning agencies of the local government, independent

professionals, producer organizations, academia, community representatives, politicians, communication media representatives, other outstanding personalities.

Each panel member was asked to list the main environmental problems of his region. The total listing of problems was consolidated and grouped into categories of problems.

Panel members were then asked to rank problems on a scale of 1 to 5 in terms of their importance and in terms of feasibility of control (0 being the lowest value).

Average values were then computed for each score and these values were submitted again to the panel. Members could then reassess their initial judgement. Substantial departures from the central values were explained. These steps were undertaken iteratively until reasonable consensus was reached. Environmental problems were additionally mapped by the regional panels.

This exercise was later updated through a new round of regional seminars (Espinoza et al, 1994). A database was developed with further information of the sector of the economy most directly involved, the type of problem (pollution, natural resource degradation, human environment degradation) and a more detailed classification by resource or sector involved.

This exercise identified 1288 environmental problems in Chile. The fact that separate rankings by importance and by potential for control were elicited does not allow overall rankings related to the efficiency of allocating resources to the solution of problems. The approach is clearly more valuable in describing problems than in providing guidelines for action. As stated by the authors, the development and choice of problem solving strategies is not addressed by this effort. The extreme degree of disaggregation is very valuable for local level intervention but is less so for national policy design.

b) Comparative risk assessment

This approach was developed by the US Environmental Protection Agency (EPA) to set priorities for environmental interventions at the State level. The approach has also been applied internationally. The comprehensive description of the approach (EPA, 1993) mentions applications in Bangkok, Thailand; Quito, Ecuador; and Tetuen, Morocco. EPA staff indicated that the approach has been used recently in Mexico and El Salvador (Martin, Debora: personal communication).

The approach is based on:

- Broad participation of wide range of stakeholders, supported by environmental "experts" feeding information into the decision making committees.
- Three types of risks are considered: human health risks, ecological risks and risks to the quality of life. Human health risks involve actual, estimated or anticipated cases of human disease or injury caused by environmental problems. Ecological risks are damages to the structure and function of natural ecosystems as well as to their biotic and abiotic

components, e.g. fragmentation or loss of wildlife habitat, physical landscape modification and degradation. Risks to the quality of life relate to negative economic and social impacts of environmental pollution. Examples are the cost of replacing or treating contaminated water supplies.

- Risks considered are "residual" risks, risks present beyond what is being done presently to handle them, i.e. the approach is a marginal analysis of different options.
- Development of list of problem areas. Several approaches are suggested such as: by programmatic lines, by source, by pollutant or stressor, by affected resource, by geographic area, by economic sector.
- Ranking of risks is based on negotiated consensus building, voting or development of scoring procedures. Individual rankings are produced for the three types of risks described above. In some projects rankings by type of risk are consolidated into one prioritized list.
- Risk management strategies are developed for the problem areas defined . They are related to environmental goals and appropriate strategies selected in an iterative process. These are then recommended for implementation and results are monitored.

The approach is clearly related to above-described scoring models. No formal attempt is suggested to apply economic surplus measures to quantify magnitude of impacts. Emphasis is on utilizing existing information and collective judgements for making decisions and to do so in a way which will be conducive to political support to enhance the probability of success.

Minard and Jones (1933) from the The Northeast Center for Comparative Risk (NCCR) made a very thorough and thought provoking review of six state level comparative risk studies undertaken in the US. The review clearly documented the value of the thorough analysis of environmental problems and the exercise of ranking them. It proved difficult to develop priorities for action and to derive them consistently from those identified risks. As stated by the reviewers, magnitude of the risk does not necessarily translate into priority for action at the decision level for which actions are being planned.

"The projects show that producing recommendations is relatively easy, although getting anyone to implement them is another story. The projects suggest that the comparative risk process have so far failed to devote enough time to analyzing and ranking risk reduction strategies. The rigor that goes into understanding problems has too quickly been abandoned when the projects shifted into more political territory" (Minard and Jones, op. cited, p.5.)

The bottom line: environmental priorities for the LAC region as seen by different agencies/authors

The previous section has shown the difficulties in producing clear rankings of environmental problems. The search for examples of actual environmental priorities revealed that these exercises are still rare and tend to result into long lists of problems grouped in few categories (of highest priority, very high priority and high priority). In this section the outcomes of selected prioritization exercises are presented.

a) Aggregate regional prioritization exercises

IDB/UNDP (1991?) led a regional initiative to produce the document "Our Own Agenda" to present a regional perspective on environment and development at the Rio UNCED conference. This report produced by a group of regional experts presents an agenda classified into regional themes, international themes and global themes. The priority issues were ranked in declining order of severity and importance from an environmental point of view.

The regional issues are:

- * Land use
- * The environment in human settlements
- * Water resources
- * Ecosystems and biological patrimony
- * Forest resources
- * Sea and shoreline resources
- * Energy
- * Mineral resources (non-energy)
- * Industry

The main international issues are:

- * Shared river basins and ecosystems
- * Acid rains
- * The destination of toxic wastes
- * Conventional wars
- * Ecological security

The main global themes are:

- * Nuclear risk
- * Global warming
- * Drugs
- * Loss of biodiversity

- * Destruction of the ozone layer
- * Contamination and exploitation of ocean resources
- * Use of resources of the Antarctic
- * Use of outer space

It is not obvious whether the latter two sets of issues have also been ranked by importance. It is certainly interesting to note that the highest priority among the regional themes is allocated by land use followed by the environment in human settlements. On the other hand other "brown" issues related to industry, mining, energy are ranked rather low in the list.

USAID's environmental strategy for Latin America and the Caribbean (US AID, 1993) defines five areas for strategic action:

- * Conservation of tropical forests and other habitats for biological diversity
- * Sustainable agricultural practices
- * Improved management and protection of water and coastal resources
- * Promotion of environmentally sound energy production and use
- * Reduction of urban and industrial pollution

It is interesting to note the divergencies between the two regional priority setting exercises. From USAID's perspective green issues rank substantially higher than from the IDB/UNDP perspective. This difference may be related to different country weightings. USAID is mainly involved in poorer countries with a more rurally based economy and a lower degree of urbanization, vis a vis the average of the region, which is reflected in the regional document. Furthermore a heavier weighting of green issues in the USAID agenda is consistent with the stated global environmental priorities for USAID: global climatic change and conservation of biodiversity.

b) Biodiversity conservation prioritization exercises

As stated in the previous section biodiversity conservation is seen as a high priority global environmental issue. Latin America is seen as a particularly important region for these global efforts given its high biodiversity and relatively lower degree of intervention related to population density and degree of urbanization. Two interlinked approaches to conservation priority setting for the LAC region will be described briefly.

The World Bank and the World Wildlife Fund developed a biogeographic approach to setting conservation priorities (Dinerstein et al. 1995). They classify the region into five major ecosystem types (METs), 11 major habitat types (MHTs) and 191 ecoregions. They use two sets of criteria to rank the priority for the ecoregions: conservation status and biological distinctiveness. The conservation status classification is based on the following criteria: total loss

of original habitat, number and size of blocks of intact habitat, rate of habitat conversion, degree of fragmentation or degradation, and degree of protection. The biological distinctiveness of an ecoregion is assessed within its major habitat type. Thirty-four ecoregions in Latin America and the Caribbean were considered globally outstanding.

Ecoregions of highest conservation importance were identified by crossing information on conservation status and biological distinctiveness. Fifty-five out of 178 ecoregions (excluding mangrove ecosystems) were designated as of highest priority at the regional scale.

They include:

- 24 ecoregions in tropical moist broadleaf forests;
- 5 in tropical dry broadleaf forests,
- 2 in temperate forests,
- 5 in tropical and subtropical coniferous forests,
- 2 in grasslands, savannas and shrublands,
- 4 in flooded grasslands,
- 8 in montane grasslands,
- 2 in Mediterranean scrub,
- 2 in deserts and xeric shrubland, and
- 2 in restingas.

The study does not address social, political and economic factors which, the authors argue, are more fluid than the biological variables and should be applied in intra region analyses.

USAID sponsored a similar study by the Biodiversity Support Program (1995) which developed priorities for investing in biodiversity conservation in Latin America and the Caribbean. This was basically a Delphi exercise based on data assembled for specific aspects. Three dimensions were addressed a) biological importance b) conservation threat and opportunity and c) policy/institutional feasibility and human utility. The analysis was based on biologically and ecologically distinct geographic units called regional habitat units, largely based on the work done by WWF as part of the above described WB/WWF study. Table 1 presents the priority rankings produced by the workshop. A major finding of these studies is the fact that temperate forest and dry regions have regionally outstanding biological value and have been not received significant attention in the past. This contrasts with the conventional wisdom of the urgency for conservation work in tropical rainforest areas. The studies rate a large fraction of these regions as in a stable conservation status.

c) Examples of country-level priority setting

Environmental policy is largely a national issue. This section presents an example of an explicit environmental priority setting exercise. This seems to be the exception, rather than the rule.

The Chilean Delphi exercise presented above produced a broad list of ranked problems. These have been classified and aggregated at the country level. Table 2 presents the results in terms

of frequency of problems identified. In spite of all the limitations of such an approach some interesting issues emerge. The frequency assigned to urban problems clearly overrides the one assigned to natural resource management issues. Industrial issues rate quite low.

The major finding of this review of diverse environmental priority setting exercises is that clearly efforts are focusing mainly on the environmental impacts and only very superficially if at all at the resources needed for the implementation of possible interventions. Thus in terms of contributing to the allocation decisions, they do help to exclude projects of low potential impact but fall short in terms of prescribing choices among remaining alternatives.

Conclusions

- a) Environmental priority setting, particularly with reference to research investments is a nascent field. Outputs presently resemble shopping lists, rather than priorities for action.
- b) Literature searches and broad consultations through environmental Internet networks (INFOTERRA, SARD, ELAN) were not able to locate applications of economic methods to set priorities among broad environmental research issues. A range of methodological issues need to be resolved such as the rationale for using discounting rates, inter-generational equity issues, before their broader use will become feasible.
- c) The lack of information on valuation of natural resources, as well as on elasticities of demand for these, make it difficult to foresee economic surplus models applied to broad, decision-oriented environmental research priority setting exercises in the near future.
- d) The above considerations lead to the need to utilize more synthetic, less data-intensive approaches and to emphasize participation as the tool to handle complexity. This does not imply that efforts to document and compare magnitude of environmental/natural resource management issues are not a valuable input to the decision making process.
- e) Given IDRC's very limited funding vis a vis the environmental challenges facing the LAC region, investing substantial resources in elaborate procedures may be inefficient vis a vis the value of those resources allocated to an issue ranked important through less elaborate, participatory procedures.
- f) Participation seems a key dimension of these post-normal science decisions. For agencies like IDRC dealing with limited funds in a vast and heterogeneous region, getting the appropriate degree and nature of participation is a challenge.
- g) Given the above considerations, the image of a concerted planning effort to allocate resources in different countries and to different issues, similar to the planning of a large multinational company should be replaced by the one of a small entrepreneur identifying a few niches in which he or she decides to play, in close interrelation with key business partners, in a sense moving from a Ptolomean to a Galilean view of real life.

- h) If this path is accepted, the corollary may be that one of the interventions with the highest pay-off in the LAC region, is to develop approaches and procedures for "rapid, participatory environmental priority setting" as a tool for environmental decision makers of the region.

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Table 1. Conservation priority ranking for the LAC region

| MAJOR HABITAT TYPES (MHTs) | | Biological | Conservation | Investment |
|--|--|--------------------------|---------------------------|------------------------|
| Regional Habitat Units (RHUs) | | Value¹ | Status² | Recommendations |
| (COUNTRIES WITHIN WHICH RHUs OCCUR) | | | | |
| 1. TROPICAL MOIST FOREST | | | | |
| 1-1 | Atlantic (BRAZIL, ARGENTINA, PARAGUAY) | R | Critical | 1 |
| 1-2 | Upper Amazon (BRAZIL, COLOMBIA, BOLIVIA, PERU, ECUADOR) | R | Stable | 2 |
| 1-3 | NE Amazon (BRAZIL, GUYANA) | S | Stable | 3 |
| 1-4 | SE Amazon (BRAZIL) | L | Vulnerable | 3 |
| 1-5 | Choco-Darien (COLOMBIA, PANAMA, ECUADOR) | S | Vulnerable | 3 |
| 1-6 | Central American Lowland (MEXICO to PANAMA) | L | Endangered | 3 |
| 2. TROPICAL MOIST MONTANE | | | | |
| 2-1 | Tropical Andes (VENEZUELA, COLOMBIA, ECU, PERU, BOL, ARG) | R | Endangered | 1 |
| 2-2 | Central Am. Montane (COSTA RICA, PAN, GUA, HON, SAL, MEX) | S | Vulnerable | 2 |
| 2-3 | Caribbean (GREATER & LESSER ANTILLES) | S | Vulnerable | 3 |
| 2-4 | Venezuelan Coastal (VENEZUELA) | L | Vulnerable | 3 |
| 2-5 | Guyana Montane (VENEZUELA, GUYANA, SURINAME, FR, GUI, BRZ) | S | Intact | 3 |
| 3. TROPICAL DRY FOREST | | | | |
| 3-1 | Northern South America Dry (COLOMBIA, VENEZUELA) | S | Critical | 3 |
| 3-2 | Western Andes (ECUADOR) | L | Endangered | 3 |
| 3-3 | Chaco (PARAGUAY, BOLIVIA, ARGENTINA) | R | Vulnerable | 2 |
| 3-4 | Central American Dry (COSTA RICA, PANAMA, EL SALV, NICAR) | L | Critical | 3 |
| 3-5 | Mexican Dry (MEXICO, GUATEMALA) | S | Endangered | 3 |
| 3-6 | Cerrado-Pantanal (BRAZIL, BOLIVIA, PARAGUAY) | R | Endangered | 1 |
| 4. XERIC FORMATIONS | | | | |
| 4-1 | Mexican Xerics (MEXICO, USA) | R | Vulnerable | 1 ³ |
| 4-2 | Caribbean Xerics (COLOMBIA, VENEZUELA, GRTR & LSSR ANTLLS) | S | Endangered | 3 |
| 4-3 | Caatinga (BRAZIL) | R | Vulnerable | 2 |
| 4-4 | Peru-Chile Deserts (PERU, CHILE) | L | Vulnerable | 3 |
| 4-5 | Chilean Winter Rainfall (CHILE) | S | Endangered | 3 |
| 4-6 | Argentine Monte (ARGENTINA) | L | Vulnerable | 3 |
| 5. HERBACEOUS LOWLAND GRASSLANDS | | | | |
| 5-1 | C.A. Pine Savannah (NICARAGUA, HONDURAS, BELIZE) | L | Stable | 3 |
| 5-2 | Llanos-Grande Savannah (VENEZUELA, COLOMBIA) | S | Vulnerable | 3 |
| 5-3 | Pampas (ARGENTINA, URUGUAY, BRAZIL) | L | Critical | 2 |
| 5-4 | Patagonian Steppe (ARGENTINA, CHILE) | R | Vulnerable | 1 |
| 5-5 | Amazonian Savannahs (BRAZIL, PERU, GUYANA, VENEZUELA) | L | Vulnerable | 3 |
| 6. HERBACEOUS MONTANE | | | | |
| 6-1 | Paramo (COLOMBIA, VENEZUELA, PERU, CR, MEX, GUATEM, ECU) | R | Vulnerable | 2 |
| 6-2 | Puna (PERU, BOLIVIA, ARGENTINA, CHILE) | R | Vulnerable | 1 ⁴ |
| 6-3 | Southern Andean Alpine (CHILE, ARGENTINA) | L | Vulnerable | 3 |
| 6-4 | Pantepui (VENEZUELA, GUYANA) | S | Intact | 3 |
| 7. TEMPERATE FORESTS | | | | |
| 7-1 | Southern Temperate Forests (CHILE, ARGENTINA) | R | Endangered | 2 |
| 7-2 | Brazilian Araucarian (BRAZIL, ARGENTINA) | S | Critical | 3 |
| 7-3 | Mexican Pine-Oak (MEXICO) | R | Endangered | 1 ⁵ |

* Biological Value, Conservation Status and Investment Recommendations are ranked within Major Habitat Types.

¹ R = Regionally Outstanding; S = Regionally Significant; L = Locally Important

² 1 = Highest Priority for Greater Investment; 2 = High Priority for Greater Investment; 3 = Appropriate for Regional and Local Investment

³ Distinguished from Caatinga on the basis of higher fish biodiversity

⁴ Distinguished from Paramo on the basis of higher utility ranking

⁵ Distinguished from Southern Temperate Forests on the basis of higher utility ranking

Table 2. Environmental problems by sector, Chile

| SECTOR | TOTAL ¹ | PERCENTAGE (%) |
|--------------------------------|--------------------|----------------|
| Urban Planning | 229 | 17.4 |
| Natural Resources Conservation | 207 | 15.8 |
| Urban Services | 195 | 14.9 |
| Industry | 99 | 7.5 |
| Transportation | 95 | 7.2 |
| Health | 74 | 5.6 |
| Agriculture | 67 | 5.1 |
| Mininig | 53 | 4.0 |
| Forestry | 47 | 3.6 |
| Road Engineering | 46 | 3.5 |
| Tourism | 38 | 2.9 |
| Irrigation | 31 | 2.4 |
| Fisheries | 24 | 1.8 |
| Sports | 23 | 1.8 |
| Energy | 23 | 1.8 |
| Culture | 21 | 1.6 |
| Animal Production | 19 | 1.4 |
| Trade | 11 | 0.8 |
| Education | 6 | 0.5 |
| Communications | 3 | 0.2 |
| Computer systems | 2 | 0.2 |
| TOTAL | 1,313 | 100.0 |

Source: Espinoza et al, 1994

¹ Total number of identified problems

Commentary
**"EXPERIENCES IN PRIORITY SETTING: LESSONS FOR
ENVIRONMENTAL RESEARCH IN LATIN AMERICA AND THE CARIBBEAN"**

by Stephen A. Vosti¹

Introduction

I have reviewed the paper prepared for this meeting by Carlos Seré, and I am in general agreement with his findings - particularly with his emphasis on the shortcomings associated with currently available methodologies for setting research priorities in the area of the environment and/or natural resource management. Therefore, I will not repeat the shortcomings of these methods, but rather will do two things in this review. First, I will propose an extension to the current methods deployed, and I will do so by employing a matrix that does not require a setting of priorities among environmental problems, but rather focuses on issues associated with actors, causation, and potential solutions to these problems. Second, I will highlight some of the background issues that eventually should be incorporated (both in terms of methods, and in terms of output) in a comprehensive priority setting exercise in the area of environment/natural resource management.²

An Extension of Current Methods

The general approach taken in identifying plans of action for environmental problems is to make a comprehensive list of environmental problems facing a particular region, and then make an exhaustive effort to try to rank these problems as regards their severity, with the idea that such a ranking can be translated into an allocation of resources available for resolving them. In my view, such prioritization exercises on the basis of environmental problems is not particularly useful. Primarily, although by no means exclusively, because there is no ranking or voting scheme capable of generating a single ranking of problems that will be satisfactory to all members of society.³

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² This version of my comments on Seré's paper benefitted from input from participants at the IDRC Priority Setting meeting, especially Hubert Zandstra, David Kaimowitz, Alejandro Nadal, and Manuel Glave.

³ Indeed, Arrow's "Impossibility Theorem" suggests that not even in theory, let alone in practice, can one expect to identify a voting scheme to be deployed in such priority setting exercises that all members of society will find acceptable. As Arrow points out, the only solution that emerges is a (hopefully, benevolent!) dictatorship.

Therefore, what I would suggest is generating a comprehensive list of environmental problems and then (without ranking them!) identifying the actors, causes, solutions, instruments, "saviors," political economy issues, and the time and resource dimensions associated with particular problems (see Table 1). By doing so, a series of research issues will emerge that are common to the solutions to many environmental problems — suggesting "economies of scale" in IDRC investments in research aimed at resolving environmental problems. Let me provide a couple of examples to make this clear.

Table 1. contains information regarding two generic (and highly simplified!) environmental problems - forest loss and water logging. In the case of forest loss, there are three principal sets of actors - small farmers, medium-sized farmers, and large farmers. The rationale for deforestation associated with each group is different — food security in the case of smallholders, expanded cattle ranching in case of medium-sized farmers, and land speculation for large farmers. In addition, in each case the solution to the forest conversion problem is quite different - improvements in infrastructure and markets for small farmers, more productive pastures for medium-sized farmers, and more secure land rights (not linked to forest conversion) for large farmers. The instruments and "saviors" associated with reducing deforestation in each case are also different. Municipios will have to take the initiative in building roads and improving markets in order to improve food security for smallholders. The national and international agricultural research communities, along with some private sector activities, must be relied upon to improve pasture yields. Finally, legislators may have to modify the laws associated with land tenure in order to reduce the need for forest conversion on land held for speculative purposes. The same sort of "problem/solution decomposition" can be undertaken for political economy and public finance, time, and resource issues.

A similar generic analysis of the causes of, and potential solutions to, waterlogging are examined in the second half of Table 1. Two groups of actors are identified with waterlogging — irrigation system managers and farmers. The causes of waterlogging are different for the different actors - incentive incompatibility at the institutional level may lead to inefficient water management, and distorted price incentives may lead to over-use of water at farm level. As regards solutions, institutional reform undertaken by legislators can improve efficiency at system-level, while the introduction of tradable water rights held by farmers may be sufficient to induce more efficient use of water at farm level.

The important point emerging from the matrix in Table 1. for priority setting at IDRC (and elsewhere) will be to identify patterns in the causes of, and solutions to, environmental problems, and identify research programs capable of contributing to their elimination. For example, and once again referring to Table 1, property rights (land rights and tradable water rights) emerge in the two examples proposed as important to resolving forest loss and waterlogging - suggesting that investments in understanding and improving property rights regimes may be pivotal to solving a myriad of environmental problems. Likewise, institutional reform (and the elimination of incentive incompatibilities within and across institutions) may emerge as a necessary condition for resolving many environmental problems. Research on the development and promotion of sustainable institutions that do not suffer from inherent incentive incompatibilities may be key to success in this area.

Working through such a matrix for many of the environmental problems in Latin America and the Caribbean might help focus future IDRC activities in this area.

Background Issues

The following issues need to be dealt with at one level or another, and at one time or another, in any priority setting exercise/document. I list them in no particular order.

- (1) Define environmental research - Environmental research is an extremely broad topic, encompassing purely biophysical as well as human behavioral relationships. I would encourage IDRC to focus on the "overlap" between the two - that is, focusing on biophysical issues that are directly related to human behavior, and vice-versa.
- (2) Research and action - There are many development projects being undertaken (or are in the project pipeline) in Latin America and the Caribbean that could serve as important case studies for IDRC-sponsored research. Therefore, I suggest that in setting research priorities IDRC attempt to link research to policy action whenever and wherever possible.
- (3) Look forward - IDRC should attempt to anticipate both environmental problems and policy change in LAC, and shift resources substantively and geographically in response to major expected changes. For example, it might be quite useful for IDRC to establish a research program/action agenda for the Rondonia/Acre/Peru corridor through which an all-weather highway will pass within the next 10 years.
- (4) Poverty/equity issues - It would seem to me to be essential for poverty and equity issues to be "on the table" when setting priorities for environmental research. At a minimum, IDRC might want to sponsor research in some of the more poverty-stricken geographic areas of LAC.
- (5) Overall game plan - Priorities set for the environment within LAC should be nested within the overall objectives of IDRC (international), regional objectives/priorities as established by IDRC (international and regional office), and on-going, non-environmental research activities.
- (6) Impact - The priority setting exercise should be sensitive to the need for a "portfolio" of pay-offs associated with IDRC-supported research. These pay-offs will have to pay close attention to issues, regions, and the timing of expected results.
- (7) Private versus public, local versus international - Explicit mention should be made of private research initiatives, public (but local) research activities, and internationally-sponsored research activities in the priority setting document. In

particular, the comparative advantage of IDRC vis-a-vis these other "actors" in funding research should be carefully considered and articulated.

- (8) Environmental policy - It might be useful to consider policy generally without making explicit reference to environmental policy, since we know environmental policy is not the only set of policies that affect natural resource management, and may indeed not even be the most important in many cases in LAC.
- (9) Participatory rural appraisal - In my view, participatory rural appraisal is an important and necessary "first step" in identifying research priorities. However, while this is a useful tool in "finding the right ballpark," I do not feel that it is particularly useful during the final phases of priority setting exercises - transaction costs rise exponentially, and few action-oriented suggestions tend to emerge.
- (10) Political economy issues - I feel political economy and public finance issues are perhaps among the most neglected in field environmental research, and therefore may merit special attention by IDRC - which may have a comparative advantage vis-a-vis other actors in sponsoring research on such issues

Table 1.

| PROBLEMS AND SUCCESSES | ACTORS | CAUSES | SOLUTIONS | INSTRUMENTS | SAVIORS | POLITICAL ECONOMY PUBLIC FINANCE | TIME | \$ |
|------------------------|--------------------|---------------------|-----------------------------|--------------------------------|----------------|---------------------------------------|------|----|
| FOREST LOSS | SMALL | FOOD SECURITY | ROADS/ MARKETS | INFRASTRUCTURE | MUNICIPIOS | RESPONSIBILITIES VERSUS TAX BASE | M | M |
| | MEDIUM | CATTLE | IMPROVED PASTURES | AGRICULTURAL RESEARCH | NARS/ IARCS | | S/M | \$ |
| | BIG | SPECULATION | LAND RIGHTS | PROPERTY RIGHTS LEGISLATION | LEGISLATORS | NATIONAL VERSUS STATE JURISDICTION | S/M | \$ |
| WATER- LOGGING | SYSTEM MANAGERS | INST. INCENTIVES | INST. REFORM | LEGISLATION | LEGISLATORS | POWER GROUPS | M | \$ |
| | FARMERS | PRICE INCENTIVES | TRADABLE WATER RIGHTS | WATER MARKET DEVELOPMENT | FARMERS | COLLECTIVE ACTION | S | \$ |

Session 2 - General Discussion

There were 4 presentations, 2 "official" discussion openers, and 2 groups of open discussion in this session.

It began with an introduction by Michael Jenkins of The MacArthur Foundation. He gave an overview of the manner in which the World Environment Program chose its priorities and its operational methods. They decided to use their annual budget of USD 16 m on biodiversity because of the irreversibility problem. Within biodiversity, they chose regions where there is a high concentration of (endemic) species, the threat to a large number of which is significant. In the end they decided to concentrate on ten geographical areas. They tend to give "package" grants, usually for three years, to institutes in the different regions. Each grant contains a range of actions; i.e. public education, political studies, training, scientific research, etc. They primarily work with NGO's, but the media, government agencies, universities, and community organizations are also involved. They have six professionals.

Five characteristics of most of their grants are: they respond to the priorities of beneficiaries, local institutions, promote dialogue and cooperation, flexibility of proposals, and multi-year. He also noted that while areas with high levels of biological diversity were the one constant criteria, such areas usually had high levels of cultural diversity and were physically and economically marginalized.

Jenkins stressed that they believed that too much donor control usually meant less influential projects. They choose projects and institutions which are on what they perceive to be the right track and do not act as advisors. He also criticized the circular leverage game in which one foundation leverages another and vice-versa. Leveraging should be aimed at the private sector.

Anthony Tillett of IDRC then presented his paper on "Strategic Imperatives for Latin America and the Caribbean". He began with an overview of the situation in Latin America. In particular, he stressed the importance of the social and economic dimensions, noting that environmental problems arising out of the macro structure can overwhelm little micro improvements. He saw the link between economic and environmental policy as crucial, stressing the problem of policy implementation.

He then asked a series of questions as to which are the most suitable targets; i.e. countries, methodological approaches, problem areas, tools, etc. He noted the issue of the grassroots and popular participation, the most difficult area in which to undertake research but perhaps the most essential. He ended with a query on the extent to which LAC countries can rely on market solutions and what is the proper interaction of the market, government and civil society.

Raúl O’Ryan of the University of Chile, followed with a summary of the Chilean case with respect to the environment. The environmental problem was left out of the development model of the Pinochet government. In fact, it was only when air pollution in Santiago became insufferable that there was any significant public attention to the problem. Brown issues -air, water, and solid waste pollution- have dominated the agenda. Many new laws have been put into place but it is too early to determine their effectiveness.

Command and control has been the dominant type of instrument as market based incentives have not worked. He noted that although Chile is more advanced on environmental issues than most LAC countries, brown issues continue to dominate and global concerns are not on the priority list. There is still the need to set an agenda as the costs and benefits of different problems (and their solutions) are not known. In particular, more research is needed on the implementation and use of different instruments. Other challenges include research on institutional strengthening for implementation at both the national and local levels as well as the introduction of long-term effects in short-term decision making. Finally, he thought that it would be useful to focus on the result of different instruments across a number of countries.

David Kaimowitz of IICA opened a lively discussion. He first emphasized that when you prioritize the problems, you are also prioritizing the different constituencies, such as urban, rural, middle-class, international, etc. In addition, prioritizing problems will prioritize the geographical region.

What should IDRC as a research funding organization focus on?

- i) It is necessary to merge environmental and economic policy-making to stop the domination of the latter. However, feasible alternatives to prevailing economic policies are necessary. It is essential to include issues of political economy in the research.
- ii) The institutional framework is crucial. Clearly, neither the existing state or market has the solutions. New institutions are necessary, both at the local and national level.
- iii) Information has a very important role to play. We are swimming in information, much of which is garbage. We have to get the right information to the right people at the right time. Before generating more information it is necessary to study the who, when, what, and why of the use of past information.

The main points coming out the general discussion were the following:

- It was important to understand the link between, macroeconomic and microeconomic policies, including the transmission mechanism. However, there was a wide range of opinion on the researchability of this complex issue.
- Political economy considerations were very important for policy design and implementation. More research is needed on why obvious "win-win" solutions were overlooked.

- There was widespread agreement on prioritizing à la Kaimowitz.
- Some participants believed that the neoliberal paradigm was one of the most important causes of environmental degradation, or at least that it should be put on trial and alternatives actively sought.
- Some participants did not think that trade or macroeconomic policies should be used as environmental instruments. The problems that they lead to should be identified and more precise instruments used.
- There was disagreement with the notion that there was enough information. Kaimowitz explained that he meant that there was too much general discussion and not enough hard data.
- It was becoming more and more difficult to devise strictly domestic responses to environmental problems. International entanglements are more and more common.
- Civil society is no replacement for the government; it is an additional pressure point. Moreover, it barely exists in some countries or regions.

Carlos Seré of IDRC continued the session with a summary of his paper on "Experiences in Priority Setting; Lessons for Environmental Research in Latin America and the Caribbean".

He began with a number of research priority setting approaches, such as peer reviews, delphi analysis, congruence analysis, economic surplus models, and scoring models. He discussed the environmental priority setting approach of comparative risk assessment used by the Environmental Protection Agency in the USA. This was followed by the IDB/UNDP regional initiative, "Our Own Agenda". Land use and the urban environment were at the top of the list with brown issues such as energy, mining and industry at the bottom. Similar lists have been made by USAid and the World Bank in conjunction with the World Wildlife Fund. Not surprisingly, green issues dominated brown issues. In a Chilean "Delphi" exercise, urban planning issues ranked first, although natural resource conservation was a close second.

His conclusions were:

- i) Priority setting is at an immature stage with respect to the environment.
- ii) Methodological issues limit the use of economic instruments for priority setting.
- iii) Participatory methods are needed due to the complexity of the matter.
- iv) There is a potential for rapid participatory environmental priority setting.

Stephen Vosti of IFPRI commented on Seré's presentation. He argued against ranking priorities. Then he presented a matrix approach which identified the problems, actors, causes, solutions,

"saviours", time frame, and resources. In the question period he expanded on the point, noting that problems which had similar causes could have increasing returns to scale in research.

This was followed by a number of background issues before prioritizing:

- The area of environmental research had to be defined. He suggested the biospheric/behavioural overlap or interface.
- Are there other ongoing activities on which the research could piggyback for mutual benefit.
- Research issues should be forward-looking.
- Poverty/equity issues
- The impact assessment should include a portfolio of payoffs, capturing the short-run, medium-run, and long-run.

Gary McMahon¹

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SECTION D

Cooperation and Support

The third session began with a discussion of the work of the Rockefeller Foundation in Mexico and its search for closer links by Ruben Puentes. It was followed by a commissioned paper on training and education for environmental studies in Latin America by members of the Faculty of the Universidad de los Andes (Sergio Ardila and Maria Dolores Espino); while the commentary by Gary Newkirk raised issues about the nature and direction of this training. The discussion showed there was a great demand for well trained staff but few opportunities in Latin America. There was a need to experiment.

FROM IDEA TO PROGRAM: A PARTICIPATORY PROCESS¹

by Ruben Puentes²

The Rockefeller Foundation has a long history in Mexico from the very beginning of its international programs in the area of health. In 1942 the Foundation opened an office to start a program in agriculture. This was the beginning of the "green revolution". The Foundation team stayed in Mexico for almost three decades and had more than 20 researchers tightly linked to the Mexican colleagues of the Secretary of Agriculture in the "Office of Special Affairs". After the creation of CIMMYT, many of those researchers integrated the staff of said international centre, and the Foundation office was definitely closed at the beginning of the seventies.

In 1991 we arrived in Mexico with the mandate to begin a program of support to research on the management of natural resources as part of a new initiative of the Agricultural Sciences Division. The Office had to be reopened too. We arrived with an open agenda and with the liberty to work during the first year on the program design.

As we were not very knowledgeable about the problems of Mexican agriculture, the first months were spent on research, reviewing documents, reading reports and books and initiating the first contacts with national experts. Starting from these initial steps, we reached the first decision which was to focus the program on the "campesino" agriculture. The decision was not based on the fact that this sector is more or less the responsible for the processes of resources degradation (something that can be argued and which was considered only tangible) than other sectors, but on the fact that it was a sector which had traditionally received very little support from scientific research and extension activities. Also, the sector had a great majority of small farmers occupying fragile ecosystems: tropical zones with very high or very low rainfalls, hillside zones, and in many cases on the border of tropical forests with a high biological diversity. This was the first approach of the future program and perhaps the only one which was decided in a unilateral way.

The most important process during the first two or three months was the establishment of personal contacts with representatives of the main sectors related to the "campesino" agriculture in Mexico: researchers of the principal universities (Chapingo and Colegio de Postgraduados), provinces universities, governmental organisations, "campesinistas" scholars, representatives of the entrepreneurial sectors interested on the subject (a cement industry, located in the middle of

¹ Program Design "Management of Natural Resources" of the Rockefeller Foundation in Mexico

² Rockefeller Foundation, México

a farming area, promoting a training centre), ecology groups, the church (with much influence on some parts of the country) and of course, the farmers or their organisations or representatives. From these first contacts with tens of persons directly or indirectly related to the problem, I gradually designed a model of the situation, or a "conceptual map", placing the different interests which not always matched with one another. Some key individuals came up to continue the work in the subsequent stages of the design.

The second phase entailed the establishment of a task force with representatives of some of those sectors, with the specific objective to design the general guidelines of the future program. The expression "some sectors" responds to the fact that with the available resources and the set timetable, it was practically impossible to gather a working group integrated by all of the sectors involved.

Perhaps one of the key issues for this second phase was the decision taken concerning the representatives of the farmers sector. I chose to invite representatives of a couple of NGOs which had a recognised background of work with the campesino communities and presumably, legitimate representatives of their interests (today, having spent three years in the country, I consider the election as correct; however, I have met farmers who could have formed part of the group and enriched the process).

The meetings of the task force which took place at the Foundation premises, were held for two months (8 meetings). Our initial proposal was:

"There are natural resources degradation processes which are, in some way, connected with the "campesino" agriculture in Mexico. The Foundation is interested in initiating a program to support the research on natural resources management in said areas so as to delay such degradation processes. There are certain limits in our budget which demand us to be very selective. With the exception of the focus on campesino agriculture, the Foundation has an open agenda. This is an opportunity for all of you, who are experts on the subject, to contribute on the design of this program".

The initial discussions were very general, with frequent conflicting points of view. Many of the participants had never worked together before and many did not know each other. Even the decision to do "research work" was questioned. But gradually they gained confidence, understanding and even accepting the different points of view and some basic agreements were concluded.

The first agreement dealt with the benefit of working directly at the community level. Consensus was reached to carry out activities basing them on successful experiences and not on the more frequent and known failures. However, the question was on the existence of truly successful experiences which could be tried out in Mexico, with farmers who were rationally managing the natural resources.

In conclusion:

"The Foundation program should not disregard the farmers' real interests and problems and therefore, their projects should be anchored on the problems of a community or a group of communities. Mexico could surely have many apparently successful experiences upon which the basic structure of the program could be built. No new projects would be started; the identification of on-going experiences would be advisable. However, very few of those experiences had been evaluated and documented in a systematic way so as to make good use of the positive aspects in order to reproduce them."

There was a lot of discussion on these issues. Many specific projects which were considered as examples by some members of the group were mentioned. Many of them had NGOs backing them. Cases of farmers organizations as examples of self-management were discussed. But, in the vast majority of the cases there was a lack of systematization of information on which to base definite judgements on the initiatives' "sustainability". This was specially noted in the case of NGOs projects. Some of them had evidenced an interesting continuity which could be simply explained by the existence of an effective strategy in the access to external funding. On the other hand, some unknown experiences to most of the representatives began to appear.

In conclusion:

"The program had to be structured on the basis of a series of supposedly successful case studies which could arise from research groups, NGOs or "campesino" organizations. Allegiances among the groups could be of interest. One of the project components should be the evaluation of the so-called rationality and sustainability of the proposals put forward in relation to natural resources management. In order to comply with this condition, the groups would have to be supported during relatively long periods (finally the Foundation approved a five-year period). The program should integrate a sufficient number of projects so as to be able to make comparisons, anticipate loss of projects due to failures and should reach general conclusions as well. However, the number of projects should be limited to a manageable number (the possibility of including from 10 to 20 projects was considered)".

A program focussed on the analysis of a series of case studies was attractive to the scholars of the working group. However, the representatives of those sectors linked to the action-oriented activities pointed out that with this restricted focus, they would be losing the opportunity to carry out other kind of activities which required very few additional resources, but which could become beneficial in the improvement of the systems under analysis. Therefore another consensus was reached:

"The program should try to integrate the selected projects in some kind of network which should serve as an instrument for the exchange of information and experiences and for a better use of the human resources of individual projects."

On the other hand, these same representatives raised the issue of exclusive support to research activities again, when it is a fact, that in many promising experiences, research is a complementary activity, in some cases of very little weight and in others almost non existent. The validity of the "campesino" knowledge was also discussed. Taking into account the relevance of these observations, I insisted that the "research support" was one of the basic premises of the program, so as to insert it into the Foundation "tradition". What could be considered was a global support to projects which entailed specific research activities on the one hand and, on the other, to adopt a broad definition of the term so as to include the recovery and study of the "campesino" knowledge. Finally, we reached the point of suggesting a strategy to "locate" those supposedly successful experiences. Different alternatives were considered and the group proposed an open competition:

"The projects selection to integrate the program should be an open and competitive process. An important criteria for the projects evaluation would be the evidence of clear cut strategies which link the researchers with the end users of the technologies (the farmers). The program requirements should be advertised in the press, including local or provinces newspapers. The projects evaluations should be carried out by a selection committee integrated by specialists in different fields of study and should include visits to the field before reaching a final decision."

The notice was advertised by mid-1992. It did not indicate limits for support to individual projects and many questions were put forward by the interested parties. Our answer was that we were tentatively considering amounts ranking from \$20,000 to \$100,000 by project and year but the maximum values would be allocated only to those projects considered exceptional by the evaluators. Projects with smaller financial requirements could have more possibilities of being selected. One hundred and thirty proposals were received. The selection process took several months. An initial rejection process was carried out which included those projects which did not meet the program goals and basic guidelines. Each one of the 100 proposals which came through the first selection was reviewed by three specialists. After several working sessions, the selection committee arrived to a "short list" of 20 proposals. Visits to the field were carried out and, at the end, 13 proposals were chosen for the launching of the program (individual budgets ran from \$35,000 to \$100,000). In some cases budgets were negotiated because they surpassed the maximum amounts established. The commitment is for 5 years but projects are evaluated and renewed yearly.

The program "Natural Resources Management" has been going on for two years. Some aspects of the program do not follow the traditional lines of action of the Foundation, such as to consider NGOs as institutions capable of carrying out relevant scientific research or to consider "campesino" organisations as possible recipients. The network has gradually consolidated during the last two years. Annual meetings are held yearly with representatives of the projects to discuss the progress of activities and future plans. These meetings are useful for visiting the field. Thematic meetings are also held when there are themes of common interest (for example, technical meetings were held on the subject of participative research, evaluation of sustainability of resources management systems, geographic information systems and maize campesino

production systems). There is an evaluation and follow-up technical committee (integrated by three experts who participated in the selection committee). A directory of human resources of the program was prepared. The directory lists 99 professionals in different disciplines who are directly or indirectly related to the projects. A quarterly "newsletter" is delivered. There is an important component for the strengthening of human resources and the program funds several graduate programs (Master's and PhD programs). Three of the initial projects have been discontinued for several reasons and were replaced by projects selected from the "short list".

It is still early to talk about the program success. However, even if this is not an explicit objective for the initial stages, the activities have been gaining visibility in Mexico and at the international level as well. For example, three projects will be considered as case studies for the validation of FESLM (Framework for Evaluation of Sustainable Land Management). FESLM is an interinstitutional project of IBSRAM, FAO, USDA and the World Bank. But perhaps what is more relevant is the fact that during these two years, very interesting links among the different projects have been established; also, among groups of researchers of action oriented institutions, including campesino organisations, with different perspectives in their ways of facing problems, but which have recognized the advantages of cooperative work and the value of research.

HUMAN RESOURCES DEMAND FOR THE MANAGEMENT OF NATURAL RESOURCES AND THE ENVIRONMENT IN LATIN AMERICA AND THE CARIBBEAN

by Sergio Ardila¹ and Maria Dolores Espino²

Introduction

The study of the demand of human resources in the different areas of knowledge is one of the least investigated fields in the economics literature. This article entails different purposes: to review some of the most important pieces of work done in this field, identify their potential applicability in the environmental area; to formulate a general simplified model of demand which allows the identification of the principal variables which affect it and finally, to present and comment on some of the preliminary results of the supply of human resources in the field of the environment in the United States of America and Mexico.

Literature Review on the Subject

A. Occupational Demand

There are numerous studies on the topic of labour demand by occupation. Most of these studies start from the idea that structural changes in the economy affect the labour demand. We can assume that different industries make a different use of trained personnel and that a change in the industrial restructuring will have an impact on the demand for trained workers.

In order to analyze the link between structural change and the demand, these studies have used input-output models with fixed coefficients. These models begin with the following equation (Freeman, 1986):

$$E_i = a_{ij}l_jX_j$$

where E_i = labour demand for the occupational group i , a_{ij} = fixed coefficient related to the number of workers in the occupational category i , to total employment in the industry (E_j), l_j = labour coefficient in industry j , X_j = total product in industry j , with $l_j = E_j/X_j$.

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These models tend to ignore the price effect on labour demand. According to Freeman, the necessary conditions to use this model as a valid tool to project the occupational demand are the following:

- 1) the coefficient for occupational categories, a_{ij} , must differ substantially among industries;
- 2) employment growth rate in industries must differ substantially;
- 3) the possibility of substitution among occupational groups must be sufficiently negligible so as to maintain the assumption of fixed coefficients as a reasonable initial approximation.

Even if the first two conditions are accepted in the literature, the assumption of fixed occupational coefficients has created great controversy. The review of the studies which estimate disaggregated labour demand by larger occupational groups (productive workers and non productive workers) shows the following observations (Hamermesh, 1986):

- 1) substitution coefficients (among occupational groups) vary between -0.05 and 3.70 when the specification of the models is based on costs function and between 2.0 and 6.0 when they are based on production functions;
- 2) substitution coefficients between administrative workers and capital tend to be lower than substitution coefficients between non administrative workers and capital. In some cases, studies exhibit a complementary relationship between administrative workers and capital. If one assumes that administrative workers tend to be trained workers, one can interpret these results as evidence of the complementarity between training or education and capital;
- 3) in the majority of the studies, the elasticity of the demand for administrative workers, tends to be less than that for non-administrative workers. In spite of the evidence that in the labour market substitution exists among occupational groups, models with fixed occupational coefficients are still used to project conditions in the labour market. For example, the United States Bureau of Labor Statistics, projects the nation's occupational requirements using input/output models of the national economy with fixed coefficients. The use of these models is partly justified because of the ease of application. There is also evidence that to a large extent, changes in occupational demand are due to changes in the industrial structure (Freeman, 1977;1980). However, the lack of substitution effects on these models due to omission of relative prices tends to bias the results and to overestimate the occupational requirements.

B. Occupational Supply

In a labour market study not only the demand has to be analyzed but also the supply.

A great number of studies have opted for simple models, where historical tendencies are analyzed and projected to the future. Recent studies carried out in the United States, predict a shortage of occupational groups which require high training levels (Bowen and Sosa, 1989; National Research Council, 1990; National Science Foundation, 1989). In spite of the generalized use of these models for the projection of occupational supply, the great influence that economic and political factors have on supply is recognized in the literature. The impact of these factors tends to be greater when referred to occupations which require long-term training.

The incorporation of economic factors and the recognition of the amount of time required for training suggests the use of a recursive model to specify the occupational supply. Freeman (1975) states the following model in a study on labour adjustment in the market for physicists:

- (1) $O = aS_{-1}$ (supply equation)
 - (2) $S = b_0 + cZ$ (wage equation)
- where O = the supply, S = wage, and Z the level of demand.

By substitution we have,

- (3) $O = abO_{-1} + acZ_{-1}$ (Cobweb equation)

In this model, the supply equation associates the number of students who begin a career to wages and other financial incentives for the profession. En the equation (2), the dependent variable is the wage and it is determined by the supply and the level of the demand. This specification gives a recursive model -equation (3)- which generates endogenous cyclic fluctuations.

The results obtained by Freeman when using this model differ substantially from the projections which predominated at the moment with relation to the surplus of physicists. Freeman states the following:

- 1) the number of students who choose to begin a career, responds to changes of conditions in the market, wages and job opportunities. Elasticity in the supply (with relation to wages) is estimated around 1 in the short term and between 3 and 4 in the long term, for graduate students; and, between 2 in the short term and 4 in the long term for undergraduates;
- 2) a great part of the fluctuation in wages of physicists in the USA between 1948 and 1973 can be ascribed to public expenditures to promote R&D. The supply has a smaller impact in wages even though the impact is significant; and
- 3) adjustments in the supply and demand which reflect the market conditions decrease significantly the impact of demographic shocks in the labour market for scientists and other professionals.

Recent studies tend to verify the results obtained by Freeman in the sense that the market variables have a significant impact on the supply of occupations which require a high training

level (Scott, 1979; Hansen et al., 1980; Hoffman & Low, 1983; Huffman & Orazee, 1985). Additionally, these studies identify another series of factors which affect the supply in these occupations. We can mention among them cost of opportunity, financial support and duration of studies.

A Simplified Model of the Demand of Human Resources Specialized in Environment

As mentioned above, the vast majority of papers prepared on the demand of human resources are based on models of fixed coefficients. By applying the basic microeconomic principles of the producer's theory to the solution of environmental problems, it is possible to see that these supply models have their theoretical basis on the production function, Leontieff type, which can be represented without losing its generality, for the simple case of two inputs as follows:

$Y = F(X_1, X_2) = \text{Min}(aX_1, bX_2)$, where X_1 and X_2 are factors used for the production of good Y . The previous expression indicates that the inputs are used in fixed proportions, in such a way that to obtain each Y unit, " a " units of X_1 and " b " units of X_2 are demanded. If these inputs or factors have " w_1 " and " w_2 " costs, the costs function of Y for a producer who minimizes costs (e.g. $C(Y; w_1, w_2)$) will be given by:

$$C(Y; w_1, w_2) = w_1.X_1 + w_2.X_2.$$

with $X_1 = Y/a$ and $X_2 = Y/b$. As in all cases in economics, it is assumed that the units of Y , X_1 and X_2 are appropriately defined.

It can be considered that the Leontieff production function is applicable in two more or less extreme cases: i) when the final product is defined in a very precise manner and consequently one can consider that a fixed technology of production exists, or ii) when the Y product and the inputs correspond to large aggregates as, when defining large categories for inputs, the possibilities of substitution among them decrease. For example, the demand of professionals of different subjects for a highway design is more or less a fixed function of it and of some properties of the pieces of land of the area. On the other hand, if one considers a project to build a highway system for an area of considerable size, one can think that the possibilities of substitution of different types of professionals increase (topographic studies can be carried out having as starting point photographs, satellite images or by use of field equipment), and that the specific demands can no longer be considered as a function of fixed coefficients. At the same time, if one considers a project to solve transport needs in general, the possibilities of substitution among professionals will be greater (eg. among highway engineers, railroads, planning, etc.) except if these are grouped in large categories.

Besides the previous requisites that have to be taken into account so that the Leontieff production function can be applicable, the use of demand models of fixed coefficients require the fulfilment of an important additional assumption. That is, its use in the case of the demand of human resources in the environmental subject will require the analysis of a single final product, which is very different to the real situation. It is well-known that studies on the environment differ

remarkably and it can be considered as one of the fields of study with a greater number of areas within. For example, it is usual to divide environmental problems into two big areas: "green" and the "brown" issues; each one of them demands professionals and technicians with different backgrounds.

Taking into account what was stated before, a basic model of demand of human resources must consider two basic aspects: i) the one referred to the properties of the production function, which is related to the final product (eg. solution of "green or brown" problems) with inputs requirements and ii) aspects related to social priorities for the solution of different types of problems. These aspects can be conceptually understood in the model which follows.

By following the classical reasoning of this type of problems, it is possible to assume that the objective function of society in the environmental field is to maximize the benefits to be obtained when solving two basic types of problems (Y1 and Y2). Each one of them is assigned a priority derived from the relative benefits they obtain in the solution of the problems, expressed in coefficients b1 and b2. At the same time, the solution of each one of these problems demands an input Z and two types of human resources X1 and X2. The production function which relates the amount of problems X1 and X2 solved and the inputs used, can be summarized into some cost functions: $C1(Y1;w1,w2,w3)$, $C2(Y2,w1,w2,w3)$, with w1,w2,w3 the unitary price of human resources of type X1 and X2 and the input Z. Besides, if one assumes that the vast majority of the environmental problems are of the common good type and therefore, the solution is financed by means of the State's general budget, the problem of society can be mathematically expressed as:

$$\text{MAX } V = b1.Y1 + b2.Y2$$

$$Y1, Y2$$

Subject to: $C1(Y1,w1,w2,w3) + C2(Y2,w1,w2,w3) = B$ where B represents the exogenous budget restriction for these two environmental problems. In this formulation it is assumed that the marginal benefit of solving problems of type 1 and 2 is constant, while production functions which describe the solving technology are non-linear. Alternately, one could state a formulation in which the fringe benefits of the solution of the problem are not constant, in which case, it would be necessary to consider benefit functions B1(Y1) and B2(Y2) in the objective function. This last formulation can be simplified by assuming that the production functions are Leontieff or Linear and therefore relatively simple cost of production functions are obtained, which can replace the general functions C1(.) and C2() in the restriction.

The solution of the precedent problem confers some optimum values to the variables Y1 and Y2 (eg. the optimum amount of environmental problems of type 1 and 2 which society must solve), from which demand functions of each input can be obtained, and as indicated below for X1:

$$X1 = dC1(Y1;w1,w2,w3)/dw1 + dC2(Y2; w1,w2,w3)/dw1$$

where $dC1()/dw1$ and $dC2()/dw1$ represent the partial derivatives of the cost functions C1 and C2 with respect to the price of input X1, assessed at the optimum point of Y1 and Y2

respectively. Given that the optimum values of Y_1 and Y_2 will be at the same time functions of the parameters of the problem, it is clear that these derivatives will be too and therefore, the demand of X_1 will be function of:

$$X_1 = X_1(b_1, b_2, w_1, w_2, w_3, B)$$

The properties of this function will depend on the properties of the benefit functions of the problems solution; the prices of all inputs and factors used, and the properties of the production function. The properties of these demand functions for different types of benefit functions (eg. with constant or decreasing marginal benefits) and the cost functions, can be derived by using conventional procedures of microeconomic analysis.

The above-mentioned analysis shows that the utilization of demand functions of fixed coefficients can be a very crude approach to reality. On the other hand, an approach which allows to identify the influence of other factors, can result in a better model of the reality, which, at the same time, will require more information. The basic factors identified for a more complete analysis would be the following: i) factors which affect the relative social valuation of the different types of problems to be solved; ii) the cost of the different types of human resources and of other inputs or factors needed for the solution of these problems; iii) the properties of the production function which describe the way in which to solve these problems, and in particular, the levels of substitution among the different types of human resources, and between them and other production factors used, such as capital and iv) the levels of public investment assigned to the solution of these problems.

Composition of the Supply of Human Resources to Work in the Subject of the Environment

The correct estimation of human resources demand models requires a considerable amount of information to capture the influence of key variables which affect it, and which does not exist in Latin America. In this paper, we have considered that although the theoretic discussion on the subject has great importance, it has to be supported by information, -even partial information- on the composition of the supply, from which one can acquire a pretty good idea on the magnitude of the demand and its composition at a certain point in time.

Although the work on environment requires human resources with different training levels, we consider in this article, that it is equally important to obtain information on specialties, and that in particular, the analysis of the supply of professionals at the Master's and Doctorate levels gives a good idea on the composition of the demand, specially in the case of the United States of America, for the following reasons: i) the decision to obtain Master's and PhD degrees is generally taken based on an excellent level of information, possibly higher than for any other learning decision. Therefore, it is much more lasting and informative on the conditions of the demands; ii) the United States of America has a long history of work on environmental issues and therefore, one can assume that the annual production of professionals in this field is not affected by phenomena of stock building or poor information, except those which are expected for a dynamic problem of this type; iii) in the United States of America exists an important

institutional development which guarantees a more or less stable demand, with the fluctuations that can be expected as a result of the changes in the variables identified in the above-mentioned section. We must add that the analysis of the demand of human resources by scientific field, considering the supply of professionals at the graduate levels, entails an important assumption, which is difficult to test, that is: the existence of a similar relationship among the professionals with this training level and the total of professionals demanded for a job in each one of the areas which will be described below.

For the following analysis it was necessary to identify areas of knowledge whose professionals can be classified as specialists on the environment. A great number of definitions exists with reference to work on the environment, all of which have a great deal of ambiguity.

It was decided to leave out of this paper, specialties in hard sciences such as physics or chemistry, although they could have been taken into account. Also, some other specialties with specific dynamics such as certain areas of agronomy have not been included. Five types of specialties have been considered:

1. Engineering Sciences: environment and sanitary engineering
2. Social Sciences: includes environmental and natural resources economics (25% of the students of agricultural economics), and multidisciplinary social sciences programs on the environment.
3. Agricultural Sciences: includes forestry studies, management of renewable natural resources and wild life, ecology studies and some studies of agricultural sciences.
4. Biological Sciences: includes studies in ecology, biology, environmental sciences, natural sciences.
5. Earth Sciences: includes atmospheric sciences such as geology, hydrology, geomorphology, meteorology and ocean sciences.

Before presenting the results obtained for these five environmental areas, it is worth having an idea of the total production of PhDs in 364 American universities. Information was obtained from the "Survey of Earned Doctorates" for 1992, prepared by the National Research Council, on the total of graduates and their distribution in the large areas of knowledge.

PhD GRADUATES IN THE UNITED STATES OF AMERICA IN 1992

| Specialty | PhD Graduates | Percentage |
|--------------------------------|---------------|------------|
| Physics | 6498 | 16.7 |
| Engineering | 5437 | 14 |
| Biological and Health Sciences | 7108 | 18.3 |
| Social Sciences and Psychology | 6205 | 16 |
| Humanities | 4444 | 11.4 |
| Education | 6622 | 17.1 |
| Business & Other Professions | 2500 | 6.5 |
| TOTAL | 38814 | 100 |

It can be observed how the total number of graduates is divided more or less equally among the different categories, with the exception of the humanities and business sciences.

In accordance with the definition of environmental areas adopted, not all fields of study of the biological sciences could be accepted as environmental sciences and therefore, it is not easy to move from this classification to the adopted one. It is interesting to observe that these statistics indicate that the engineering sciences lost participation during the 70' and 80's but, towards the end of the 80's, they began to regain the lost space. Of the total of graduates in 1992, 32 % were foreign students. This percentage shows an important increase compared to the 13% of foreign students registered in 1962.

To obtain the composition of supply of professionals at the graduate levels, data of number of students in definite programs was tabulated, using information of 77 universities. (Please find list in annex).

It must be pointed out that this procedure underestimates the total supply as in many areas there are no specialties in environment as such, but students can set up study programs by combining courses of other faculties and therefore they build up a program with a major in environment, even if the specialty does not allow it to be earmarked as such. For example, in the case of economics, some faculties have only recently recognized explicitly the specialty in the name of the degree given, even though graduates have specialized in the economic analysis of environmental problems for many years.

The figures obtained do not exactly correspond to a single year but the vast majority describe the situation of the year 1990.

MASTER'S AND PhD STUDENTS IN M.A. IN USA

| Specialty | # of Students | Percentage |
|------------------------|---------------|------------|
| Engineering & Design | 2674 | 25.1 |
| Agricultural Sciences | 2265 | 21.3 |
| Biological Sciences | 1984 | 18.6 |
| Social Sciences | 471 | 4.4 |
| Water & Earth Sciences | 3254 | 30.6 |
| TOTAL | 10648 | 100 |

It is useful to point out some of the results obtained even if this information is preliminary due to difficulties in its compilation:

- i) the so-called water and earth sciences (geology, hydrology, meteorology, etc.) play an important role as the largest individual group. However, it must be noted that an important portion of this group, which is difficult to identify based on the data analyzed, must probably work with problems of non-renewable natural resources and not necessarily be associated with what is known as environmental work;
- ii) the social sciences have the smallest participation, even if it is known beforehand that this is the group with the highest level of underestimation. It has not been possible to identify students specializing in environmental law, even if it is well-known that there are many professionals which have a full-time dedication to this type of problems;
- iii) the engineering sciences maintain an important participation and in fact they conform the largest group compared to any of the two "green" groups, in spite of the long-time efforts done in the United States in relation to water decontamination and that a considerable part of this infrastructure has already been built. However, it must be noted that this is an area where a lot of foreign students participate, compared with the total of graduate students in the USA (around 50% or more at the PhD level);
- iv) students of these specialties represent approximately the 4 % of the total of graduate students at the universities under study. It is most probable that this percentage is underestimated due to difficulties in identifying all the programs which correspond to the environmental group and, besides, because many students who are specializing in environment, are formally registered in programs which are not considered as such.

It is interesting to compare this information with the one obtained from the National Institute of Ecology which tabulated the supply in environmental studies in institutions of higher education, in 1993.

However, it must be taken into account that these two sets of information differ as follows:

- i) classification criteria is not exactly comparable, as this information encompasses certain agricultural specialties and hard sciences specialties such as chemical engineering, food sciences, rural development, etc., and;
- ii) the information for Mexico includes all the university supply and not only the supply corresponding to graduate levels (Master's and Doctorates).

| Specialty | Percentage |
|-------------------------------|------------|
| Engineering & Design | 22.8 |
| Agricultural Sciences | 14.1 |
| Biological & Natural Sciences | 46.6 |
| Social Sciences | 11.7 |
| Health Sciences | 4.8 |
| TOTAL | 100.0 |

When comparing both distributions, at least three clear differences can be found:

- i) the group of biological sciences in Mexico doubles in percentage when compared to the one in the USA;
- ii) the participation of the agricultural sciences in Mexico is approximately 2/3 of the participation in the USA and,
- iii) the participation of the social sciences group in Mexico is more than twice the participation of this same group in the USA.

Naturally, participation in the different areas of knowledge does not have to be similar in countries which have different problems and priorities. In fact, based on the existing information, it is not possible to assert if the distribution of supply of human resources in one country is biased in relation to the composition it should have. Due to the former, and with the existing level of information, it is not possible to go further than the identification of differences. If there were enough information to estimate models of supply of human resources as a function

of the aggregate amounts of investments and to their discrimination by types of problems (eg. assuming that this discrimination reflects the aggregated priorities of solutions to different types of problems), it would be possible to make a better judgement on the composition of the supply.

However, it is possible to try to explain the cause of these differences which will aid in a better understanding of the problem.

It is possible to point out at least four hypotheses which can explain the differences found in the composition:

- i) although a great number of tasks are performed in Mexico to improve the quality of the environment, it must be understood that the period of experience and the amount of cumulative work are greater in the United States than in Mexico. Hence, there is a greater institutional development in almost all areas, which leads to a greater stability in the labour demands and, consequently in the answer of professionals when deciding about their academic studies;
- ii) the composition of the gross product of these countries is quite different (eg. participation in the manufacturing sector and in the agricultural sector). This composition naturally creates different types of environmental problems and differences in management of natural resources. However, this point of view must be reconsidered as the levels of infrastructure in sanitation are very different and therefore important changes can occur in the composition of the demand in Mexico in the future;
- iii) human resources have to be combined with other inputs in the solution of environmental problems. These possibilities of substitution are important if the relative cost of capital and of human resources is considered as not being the same in all countries (eg. it is expected that capital costs related to the costs of human resources will be higher in developed countries) which must undoubtedly lead to different combinations of resources;
- iv) in Latin America, it is usual that an important percentage of professionals carry out graduate studies at a foreign country. Therefore, training statistics of those countries show a poor composition of the supply.

In spite of the information restrictions and the lack of additional elements for its analysis, said information still has great value to international agencies interested in the training of human resources specialized in the environment in Latin America.

Conclusions

The study of the demand of human resources is one of the least explored areas in the literature of economics. However, this article has tried to review the main documents written on the subject and to develop a model which can help identify the principle variables which affect the

demand and its composition, and to present some figures on the supply of human resources in the United States and Latin America as well.

The following conclusions can be listed:

- 1) Figures of supply of human resources in the USA and Mexico help us have a reasonable idea on the composition of the demand on two countries with different development levels; different economic structures and possibly, different priorities when facing environmental problems. On the other hand, the global information on the USA leads us to infer that the total demand of human resources in this field can approximately represent 5% of the training needs of a country with a developed structure of environmental control.
- 2) The former figures should serve the international agencies which work with environmental problems, to coordinate their efforts. It is frequent to find that the aid for human resources training generally obeys to the existing resources of donor countries, paying little attention to the needs and demands of the recipient countries.
- 3) It is important to carry out studies on the demand of resources by specialties, relating them with observable economic variables such as budgets allocated to environmental studies; cost of human resources and other important inputs to the solution of environmental problems. It would be ideal to start with cross-section information for different countries with different development levels and different economic structures.

The figures presented are preliminary and it would be advisable to carry out similar studies for a group of Latin American countries, paying special attention to professionals trained in foreign countries. These studies should also take into account the role of incentives (such as awards, fellowships, partial financing of studies, labour conditions of countries of origin of students, etc.) in the decisions concerning the training of professionals in Latin America. Although these are choices which concern individuals, it is very important to understand the variables which affect this type of decisions.

Lastly, it would be convenient to carry out further studies on the relationships of the demands of personnel with different levels of training (eg. PhD, Master's, technicians), trying to verify if there are more or less stable relationships which could help in the planning of the supply of training at the professional and technical levels, which in most cases is provided by their own countries.

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Commentary
**"HUMAN RESOURCES DEMAND FOR THE MANAGEMENT OF
NATURAL RESOURCES AND THE ENVIRONMENT
IN LATIN AMERICA AND THE CARIBBEAN"**

by Gary Newkirk¹

My comments following the paper of Ardila and Espino are a result of consideration of the paper itself, which is a valiant effort to identify demand in an evolving field for which there are few relevant statistics, and the discussions of the preceding day. Together these remind me of the story of the drunk looking for his keys late one night at the side of the road under a street light. A passerby stopped and asked what he was doing. The drunk responded: "I'm looking for my keys". The passerby then offered to help but the drunk declined the offer explaining that it was no use to help him look for the keys here because they were lost somewhere farther back on the road. "Then why are you looking for them here?" was the natural response of the passerby. The explanation was simple: "I would never find them back there in the dark so I'm looking for them here where the light is better."

I have been convinced by the discussion so far in this meeting as well as by the paper that we are also looking for some keys - the keys to sustainable development. I don't think we know exactly what we are looking for and perhaps we don't know where we should look. However, we must be very careful not to be fooled by an artificial light.

One false light may be our universities. I know, I work in one. These institutions are well designed and organized - but for the 19th century. Yet we are expecting them to produce products for the 21st century.

The task set out in the paper was to identify demand for a product called human resources in natural resource management and environment. But what is this product for which we are trying to identify demand? Yesterday there were calls for new approaches to the management of natural resources and "new scientists". There was consensus on the need for work at the intersection of what was referred to as the biophysical and behavioral aspects of natural resource management and a need to combine knowledge bases. Are we not looking for a new key, a different product in the field of human resource development! But we seem to be looking at an old system, the universities, to produce this new product.

As a qualification, we must recognize the continuing need for specialists in the various disciplines that our institutions currently produce. The call for "new scientists" does not reject

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the need for "old" scientists. There is a need for people who have a broad training and are able to synthesize a variety of disciplines in order to examine situations and problems from a different, holistic, perspective. Yet the traditional scientists are still necessary but with the ability to work with interdisciplinary groups and to understand problems from a perspective different from those conventionally taught within disciplines.

Knowledge is power and most of us were brought up to believe that education is the key to knowledge. In fact, education is really learning how to learn. The Latin root of education is "e duce", or "to draw out", not a filling up of facts and figures. We must take on a new and broader interpretation of "education" and set aside, if not throw away, our old models of education. The technological and social changes now upon us are changing the face of education. The tools are available to make education electronic, globally interactive and able to reach both plumber and president. Public education in its broadest sense is rapidly developing. We must learn to use these new tools to produce our new scientist.

I am not very worried about the technical aspects of the new tools - children have no problem with these, even if their parents are slow to adapt. The biggest challenge is the conceptual frameworks that we use. We speak of multidisciplinary or interdisciplinary approaches and participatory involvement. All this is very current jargon which reminds me of the exchange between Maria and the children in the Sound of Music. Maria was teaching them their musical notes (do, re me, fa, so, la, ti, do) but the children protested that "It doesn't mean anything!" So Maria put words to the music and was not everybody happy! We may have words to our sustainable development ideas but this is not music and we need much more than words: we need action. The words which call for multiple players and actors are for the most part still just words. We have few key examples of how these might work in real life situations to the benefit of poor communities. Indeed putting these ideas into practice is not easy and there are few appropriate case studies which can be used in our educational systems. The key to understanding how to implement sustainable development will come through praxis: learning by doing.

The reference to "actors" and "players" should mean more than actors like Maria von Trapp and the children! I presume that most of us are referring to what are called the "stakeholders" in any particular problem, resource or environment. This should involve a broad array of people from those directly impacted or the resource users to those responsible for management, regulation, training and research. Furthermore, there is a need to involve new partners in many situations. The role of community or peoples' organizations, NGOs and civil society is now recognized as key in guiding research projects to be better focused on, and be more appropriate to, local problems as well as being instrumental in facilitating the users to be part of the research process.

My experience in Latin America is limited while I have considerable experience in parts of the Caribbean. Based on this experience I would say that of the traditionally major partners, governments and international research centers and donors, are well known. They have certain strengths and responsibilities and, unfortunately, usually too much inertia to lead in discovering and disseminating new ideas. The universities have a history of being somewhat aloof from development activities, good on rhetoric but often weak on praxis. NGOs in the region tend to be generally weak except in the area of conservation. Their most relevant weakness is in

community mobilization. (These are my impressions which are likely to be, and hopefully are, incorrect as a generalization for the region).

The important point is the weakness in the ability of these potential partners to work together. There is a great need for innovative mechanisms to facilitate the collaboration of different kinds of partners in development research. It is only in the praxis of collaborative research and development that we will truly understand qualitatively the needs of human resource development. Smart people sitting around a table will never go far enough beyond disciplinary boundaries. Models produced by only intellectual enquiry will always be limited. Enquiry in action and genuine collaboration in practice will be key not only to forging innovative groupings but in new problem definition which will lead to new solutions for old problems.

If groups of diverse partners could be brought together in genuine working relationships, innovative research approaches would emerge. This will result in learning and training at the same time. It is highly likely that the funds to support their efforts would then be available. More importantly, one key to sustainable efforts in this field is to form working alliances based on local people and institutions that do not need external funding. Many of the problems must be solved with local resources if the efforts are to be sustainable but our traditional approach has been to rely on external resources. The cost of the new technology for, and of new forms of, education is declining and they will be widely available. Probably the most important key to "development" is access to information. The capital cost of access can probably be provided for the equivalent of a few pieces of agricultural equipment and a village pump; equipment a community can probably do without once they have access to information and can solve their own problems.

The research agenda should include efforts that can document any efforts that involve multi-partner groups in development research. In particular for the present discussion, we need documentation of the approaches and methods used by interdisciplinary teams that involve community organizations and/or NGOs in research dealing with environmental resource management. There are some cases in Asia of such efforts but they have not been active for very long. It will be worthwhile to identify such cases and understand the critical factors for success and the effect of variable such as resource type, ecoregion, national or cultural environments.

There has been considerable mention in the meeting of the need for methodology, but without being specific as to what kind of methodology. The methods needed are the keys one uses in practice to discover new knowledge. They probably range from definition of approaches to particular problems, to facilitation mechanisms for complex, interdisciplinary team work, to specific tools to measure impacts or to promote community and researcher collaboration.

An argument could be made that before one starts working on the tools, in this case the methodologies, one should first identify the workers, those who will use the tools and before the workers are identified, the problem must be identified. In a field where the problem definition is not clear the identification of problem and workers is of necessity a co-evolving process.

My feeling is that IDRC should concentrate on identifying new approaches to research collaboration. Build human resource capacity by supporting focused projects that will develop innovative approaches. Part of this will be the continuation of networks. The form of the networks must evolve during the meeting. From innovative networks new methodologies will emerge and, in the process, there will be action to solve a few of the pressing environmental problems in the region. The small practical impact of any particular project will be multiplicative in providing keys for others.

Do we know what we are looking for and are we in the dark? We have some idea of the doors we must unlock and this gives us some idea of the keys needed. We also know that keys used in the past have had limited success. With an effort to reach out to new partnerships put to work in critical areas will shed light on the problem and help us find the right keys.

Session 3 - General Discussion

The session paper dealt with supply and demand functions for students, at undergraduate and graduate levels, undertaking environment or environment related studies. Measurements were more difficult to make in Latin America and the Caribbean than the United States; in Mexico, for example, a data set of the Instituto Nacional de Ecología, did not distinguish between graduate and post graduate levels. In most cases estimations had to be made regarding the possible environmental component of different degrees. This data showed that, for the United States, environmental training appeared to be dominated by scientists with few social science based degrees; in Latin America, social sciences played a greater role.

The observations regarding the paper were:

- (a) agricultural based degrees, particularly in the USA, should be examined more closely as there was a stronger push to study environmental issues, within natural resources, than the paper seemed to suppose.
- (b) in Brazil, there were differences by region and in the North East universities teaching environment and sustainable development had combined to permit economies of scale.
- (c) in Chile, demand and supply appeared to be working, with the emergence of economists specializing in the economics of the environment. There were few environmentalists looking at the economics of the environment and most of the work is based on desk research. However the World Bank, for example, encourages greater interdisciplinarity because of the problems it has to resolve.

The commentary framed part of the subsequent discussion and raised questions about: the inability of universities to respond to changing knowledge and other demands; the overconcentration on academic specializations; the relationship of the university to the community; the changing role of knowledge and the value of including governments, NGO's, donors and others within a framework which intends to be effective.

(a) **universities**

Most commentators saw universities as rigid and unable to provide a sufficient contribution for the required generation of knowledge. Nevertheless, there are some encouraging examples provided from the group of institutions working in the Amazon where the universities work in co-operative and interdisciplinary teams and have created

a special and responsive role. Consortia, with which IDRC has experience, could be an important way to encourage flexibility.

(b) academic specialization

The generation of knowledge in the universities appears to be dominated by a professional career structure which does not provide incentives for experimentation or exploration. One commentator provided the example of medical field where research was dominated by new laboratory techniques and sophisticated machines and field research was discouraged. Field experience was key to understanding the problems of developing countries and the decline in opportunities and motivation was seen as an undesirable weakness for future research. However, in some Brazilian universities doctorates could be earned in specialized or general fields and the GTZ offered German students the possibility of working in developing countries.

(c) relationship of the university to the community

There are few examples of effective university or higher education commitments to the local community in both developed and developing countries. One attempt, although not specifically directed to the Leadership for Environment and Development (LEAD) project which attempts to build long term environmental leadership. And examples from Brazil were given where a number of universities are associated with long term regional needs.

(d) changing role of knowledge

There were several strong pleas not to confine knowledge to that taught in formal institutions. One commentator considered that academic disciplines are a way of monopolizing knowledge at the expense of weaker and less well off groups - *campesinos*, indigenous groups - and whose knowledge is equally valid. Knowledge is power and many elite groups are unwilling to share information. For this reason, new electronic systems democratize knowledge and may be able to break through cultural barriers.

Constraints and opportunities

There was agreement that external agencies could be helpful in changing attitudes and the difficulties and opportunities are were illustrated by two examples:

- (a) Rockefeller: The Rockefeller Foundation has undertaken a program under resource constraints in Mexico and where, as a new activity, they have had to identify the most appropriate groups capable of changing environmental behaviour. For this, they established reference groups of both researchers and social representatives and discussed particular problems and approaches with them. The experience showed that the sustainability of the groups themselves was as important an element as the methods; and the capacity to lead as important as

the problem. A disadvantage is that there is rarely useful public information partly because, for professionals and academics, the incentive system is not built that way.

- (b) MacArthur: It supported a three year international competition to encourage collaborative interdisciplinary research with demonstrated impact. Although the first year showed a great dispersion of themes, the program was a success because it was transparent; it was open and competitive; and emphasized empowerment which was useful to stakeholders and which had a multiplier effect on the institutions involved.

Agencies could be helpful in,

- (a) building consortia;
- (b) providing opportunities for field research and assignments;
- (c) providing both the means and the tranquility to undertake research given the uncertainty of national funding.

Moreover, several commentators saw benefits from closer co-operation between agencies in an era of diminishing resources; and which could include staff exchanges, joint projects, development and exchange of information.

There were several proposals about methods and approaches which could assist in breaking down the barriers inherited from educational experience:

- (a) participatory planning;
- (b) greater sense of priorities which itself is sometimes due to the lack of agreed definitions. One speaker thought that the distinction between conservation and productive resources would be useful as a first cut. Another, that sustainable livelihoods was a useful practical objective;
- (c) in addition, there was agreement that research was not an end in itself and too little time was spent on diffusing the results.

The key is to build projects that ensure a change of attitude and build teamwork.

Throughout, the discussion emphasized the importance of education and training. It was pointed out that there was a shifting of issues in both time and space; training and research rarely provided skills which permitted synthesis; rather graduates were taught to take things apart. Further, it was not easy to work in teams unless there was an agreed common framework. Research was a process that depended on a dialectic between disciplines and their social

relevance. Any new approaches depended on stable funding and hopefully joint ventures with the government.

Conclusions

These appeared to be:

- (a) research teams, in projects or universities, could only make a limited number of choices. They had to examine (and build) their optimum skill mix, depending on the problem in hand, and ensure that their choice(s) had institutional payoffs. One helpful analogy that of linking two sides of a river - research on the one side, impact on another - and deciding on where to build the bridge. There are high transaction costs and so choices have to be carefully weighed.
- (b) priorities are an important element for institutions, research teams and projects. Although bottom up priority setting is a key building block, it is unlikely that top down planning can be abandoned in an era of resource constraints.
- (c) research teams benefit from undertaking comparative studies which assist transdisciplinarity and team building. Regional studies can make a useful contribution to these goals not least because it is often easier to measure impact.
- (d) training and research opportunities must continue and provide opportunities for researchers to generate knowledge. These must take account of the need for experimentation and scale - small amounts of money can go quite a long way and could well protect institutions from losing staff due to the brain drain.

In general, the session believed that it was important to continue to support research and training because sustainable development remained an important - and long term - goal for Latin America and the Caribbean.

A.D. Tillett

SECTION E

Four Working Groups

In this section four small working groups were set up on the following broad themes: Greening of Development Policy, Macro-Micro Linkages, Poverty-Environment Links, and New Institutional Forms for the Environment. Rapporteurs reports and presentations are included in this section.

TOWARDS A FOCUSED AGENDA FOR ENVIRONMENT: SMALL WORKING GROUP DISCUSSIONS

In order to tap the creativity of the participants small group discussions were set up. Each of the groups was charged with the responsibility of developing a research agenda centred around a broad theme emerging from the previous days' discussions. Groups were given the responsibility of advising IDRC management on a consistent IDRC program in environmental and natural resource management for the LAC region. A hypothetical budget of US \$ 2.5 million p.a. over a five year period was allocated to each of the groups. Groups were given a short introduction on IDRC's mandate and culture as a further element to be considered in the design of the strategy.

To encourage the development of fresh perspectives IDRC staff were requested not to participate in the discussions. IDRC program assistants gave logistic support to individual groups.

The broad themes were:

- Greening of development policy
- Macro-micro linkages
- Poverty-environment links
- New institutional forms for the environment

Workshop organizers nominated chairpersons and participants chose the group they wished to join. To achieve a certain degree of comparability, groups were asked to cover a series of topics related to the proposed strategy:

a) Priority issues that need to be addressed within the broad theme:

The groups were charged with the task of identifying the entry points to the complex problem of environmental management of the LAC region, from the perspective of small donor interventions. Each issue could be tackled along many dimensions:

- level of issue: global, transboundary, national, local
- type of issue: green versus brown, rural versus urban
- ecoregion affected: rainforest, highlands, coastal regions, urban
- resource affected: soils, water, forests, biodiversity, non-renewable resources

Formulation of a focused mission statement was suggested as a way to direct group discussions.

b) Recipients:

Who should environmental projects aim at? Strengthen research institutions, educate policy makers, strengthen environmental NGOs, support specific communities?

c) Delivery mechanisms:

Which are the preferred delivery mechanisms? Training, at what level, information, for whom, research grant funding, networking, etc. What is the appropriate mix? Are there emerging new options in the era of the information highway?

d) Partners and partnerships:

Who are the main players, what are their roles, how do they link. What are the most effective mechanisms of involving donors in a scenario of declining funding? Are there practical opportunities for donor coordination?

This chapter includes the reports of each of the four groups and in some cases additional comments provided by individual participants after the event.

REPORT ON GREENING OF DEVELOPMENT POLICY¹

by Stephen A. Vosti

Working Group Members: Peter Ellehøj
Manuel Glave
David Kaimowitz
Amitav Rath
Gerhard Stöhr
Stephen A. Vosti

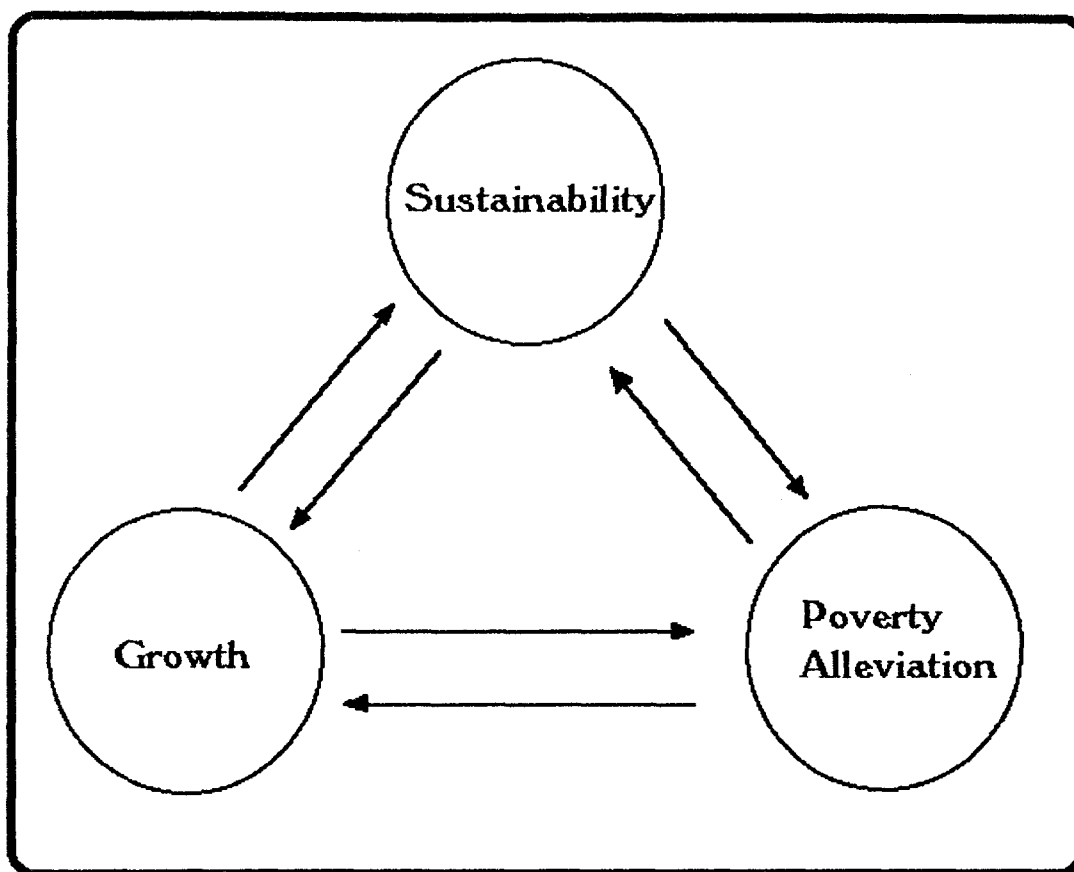
The working group focusing on "Greening of Development Policy" discussed issues associated with the environmental consequences of development policy generally, and suggested a two-part research strategy that could be supported by IDRC to better understand the impact of policy change on the natural resource base, and improve the stock of knowledge available to policy researchers and policymakers charged with achieving sustainable development in Latin America and the Caribbean.

I will summarize the group's conclusions by focusing on thirteen key points.

- (1) The group emphasized the need to pay close attention to all development objectives - growth, poverty alleviation, and the sustainable use of the natural resource base (see Diagram 1) - and the links among them. It was brought out in discussion that growth and poverty alleviation (and related employment generation issues) are currently top priorities in developing countries, and will continue to occupy those positions in the foreseeable future. Neglecting this hierarchy of development objectives would be counterproductive.
- (2) The basic objective of IDRC-sponsored research in the area of development policy should be two-fold. First, research should assess the impact of macroeconomic and other policies on the natural resource base. Second, and perhaps more importantly, research should suggest ways of changing macroeconomic and/or other policies (especially complementary policies) to make natural resource conservation more compatible with growth and poverty alleviation objectives.

¹ This brief note summarizes the conclusions of discussions undertaken in the working group session, but most participants have not had the opportunity to review this draft. Therefore, I assume full responsibility for its correctness and completeness. All errors and omissions are mine.

Diagram 1²



- (3) Questions arose as to the definition of development policies. An (admittedly incomplete) list of policies was prepared (see Diagram 2). Policies were divided into four categories: fiscal policies, which include tax and expenditure policies; monetary policies, which include exchange rate and money supply policies; trade policies, that focus on tariffs, subsidies, quotas, and influence international capital flows; and national price policies, such as subsidies and price controls.

Two important caveats merit mention. First, a clear distinction must be made between development objectives (often referred to as development policies), and policy instruments (that is, the policy "levers" used by policymakers to influence economic activity).

² Diagram prepared by Stephen A. Vosti for presentation at the IDRC/LAC Priority Setting Meeting, June, 1995.

Throughout this note, when we referred to development policies, we are referring to policy instruments rather than policymakers' ultimate objectives.

Second, there was substantial discussion about the level at which policy should be discussed (international, macroeconomic, sectoral, sub-sectoral, etc.), both for the purposes of clarity in thinking within the working group, as well as clarity in articulating a framework for IDRC-sponsored research in this area. It was agreed that some types of policies were inherently "macro" (for example, monetary policies that influence money supply), while other types of policy instruments could be implemented at the national, state, regional, or even local levels. Rather than extend working group discussions to treat all possible combinations of such policies, it was suggested that case study research (to be dealt with later in this note) would provide guidance regarding both the types of development policies and the levels of development policies to be examined.

- (4) Alongside these "macroeconomic" policies were a set of "complementary policies" that had the potential to condition the impact of macro policy changes on human behavior, and therefore on the natural resource base. Such complementary policies included property rights, research and technology generation, agricultural extension, local infrastructure, environmental regulations, environmental subsidies, mass communication, and training activities, to mention a few. (See Diagram 3.)

Two important points merit mention as regards complementary policies. First, we distinguished complementary policies from "macroeconomic policies" because the latter are often regarded as too "blunt" for fine tuning human behavior that may have negative impacts on the natural resource base. For example, one could argue that manipulating monetary policy in an effort to bring about more sustainable natural resource management would be a very clumsy process, with highly uncertain impacts on the natural resource base as well as other development objectives. Rather, it might be more appropriate (effective and efficient) to use property rights legislation to address some natural resource management concerns, and let monetary policies be guided by other sets of national priorities.

Second, the definition of complementary policies often became blurred in working group discussions. It seemed that whenever policies generally labelled "complementary" became effective, they tended to "graduate" from being considered "macro" policies. Therefore, while there may not be a clear distinction between the development policies identified in Diagram 2 and the complementary policies identified in Diagram 3, the group found this distinction useful for guiding discussions, as well as for delineating the types of policy research IDRC might support.

DEVELOPMENT POLICIES

FISCAL POLICIES

- ✓ **Tax**
 - **Structure**
 - **Rate**
 - **Collection**
- ✓ **Expenditure**
 - **Infrastructure**
 - **Health**
 - **Education**

MONETARY POLICIES

- ✓ **Exchange Rate**
- ✓ **Money Supply**
 - **Interest Rate**
 - **Credit**

TRADE POLICIES

- ✓ **Tariffs / Subsidies / Quotas**
- ✓ **International Capital Flows**

NATIONAL PRICE POLICIES

- ✓ **Subsidies**
- ✓ **Price Controls**

Diagram 3

| |
|-------------------------------|
| COMPLEMENTARY POLICIES |
|-------------------------------|

- ✓ **PROPERTY RIGHTS**
- ✓ **RESEARCH/TECHNOLOGY GENERATION**
- ✓ **EXTENSION / INFORMATION TRANSFER**
- ✓ **LOCAL INFRASTRUCTURE**
- ✓ **ENVIRONMENTAL REGULATIONS**
 - **FINES**
- ✓ **ENVIRONMENTAL SUBSIDIES**
- ✓ **COMMUNICATION**
- ✓ **TRAINING**

- (5) Questions arose regarding the components of the natural resource base that should be emphasized in IDRC-sponsored policy research. The working group did not spend a lot of time differentiating types of natural resources, but suggested four classes of natural resources that might be useful for guiding policy research. These four classes appear in Diagram 4 - renewable, non-renewable, soil/water, and ecosystems. The group emphasized the need to include a non-renewable resources, such as mining, hydrocarbons, etc., - natural resources that are often overlooked in current environmental debates.

The group noted that the selection of case study and modelling research activities (both to be addressed in the next section) would help narrow down the components of the natural resource base that merited attention in policy research.

- (6) The working group suggested two types of policy research that IDRC might consider supporting in the context of environmental change.

A. Case Studies. A series of case studies could be undertaken to identify the impact of macroeconomic and (other) policies on the environment. These case studies would be selected according to the following criteria.

- Scientific Criteria - That is, the need for large changes in the stocks and/or qualities of natural resources, and emphasis on policy successes and failures related to these large environmental changes;
- Audiences - That is, selecting case studies for which there is an existing audience, thereby increasing the potential for policy research impact. Focusing on "extreme events" as regards natural resource change (or its consequences as regards growth and/or human welfare) will be particularly useful.
- Macroeconomic or Other Policy Links - That is, selecting case studies where *a priori* assessments of an environmental problems suggest that there are direct links to policies or policy changes;
- Available Information - That is, selecting case studies where information is available to perform the required analyses in a reasonable period of time.

The working group suggested using the environmental problem/solution "matrix" as a tool for selecting case studies (Diagram 5).³

³ Comments by Gerhard Stöhr - GTZ, Asunción, Paraguay: As a first approach the working group proposed to focus the attention on three priority issues which cover recent problems in certain Latinamerican countries, where the impact of macroeconomic policies on environment could be

Diagram 4

NATURAL RESOURCES

RENEWABLE:

✓ Fisheries

✓ Forests

NON-RENEWABLE:

✓ Mining

✓ Hydrocarbons

✓ Oil

SOILS / WATER

"ECOSYSTEMS"

✓ Genetic Resources

✓ Biodiversity

analyzed in an easier way, since these cases reflect extreme situations of environmental changes due to certain development policies: 1) Forestry (Chile and Paraguay), 2) Water (El Salvador and Costa Rica) and 3) Mining (Peru and Chile).

- B. Quantitative Modelling. The second avenue of research the working group suggested for IDRC support was in the area of quantitative modelling. It was highly recommended that this research activity be parallel to the case studies, and that it be undertaken at the appropriate level - national, sectoral, regional, etc. - since full-blown macroeconomic models might not be the appropriate quantitative tool for assessing all environmental problems.
- (7) The following sequence of activities was suggested by the working group.
- A. Pre-case Study Workshop (at the national and perhaps the regional levels) to help define the types of case studies that might be pursued.
- B. Literature Reviews regarding both case studies of the impact of policy and policy change on the environment, as well as modelling exercises aimed at examining these interrelationships.
- C. Parallel Research efforts focusing on case studies and quantitative modelling.
- D. Outreach activities focusing at the regional and national levels.
- (8) The working group envisioned several types of outputs associated with the case study and quantitative modelling research efforts. Written output associated with the case studies would identify the impact of policy on the environmental, as well as (and perhaps more importantly) the impact of IDRC-sponsored research on identifying these links. Second, the methods deployed (perhaps viewed as templates for undertaking this sort of research) would be available for replication elsewhere. As regards the quantitative modelling exercises, methods for formally identifying interregional and inter-sectoral linkages would be developed, and the models would be available to simulate the impact on the natural resource base of possible policy changes.
- (9) Several potential recipients or clients of IDRC-sponsored research were identified:
- policymakers
 - policy analysts
 - lobby groups
 - NGOs - national and international
 - academic community
 - private sector
- (10) As regards delivery mechanisms, the group suggested that the most appropriate delivery mechanisms would probably be client-specific - policymakers perhaps preferring policy briefs, policy analysts being a more suitable audience for formal research reports, etc. In all cases, the mass media should be looked towards as a source of input, as well as a vehicle for outreach.

- (11) As regards research partners, the working group identified four - the international community (both the research community and the "action" community), academia, NGOs (once again, both research- and action-oriented), and the private sector (both as a source of guidance for research activities, as well as a source of funding and active research collaboration).
- (12) In both the case study and modelling efforts, focus on generating and measuring impact should be high-priority items. As regards case studies, high priority should be placed on selecting cases studies that focus on key issues (or issues likely to be key in the not-too-distant future), and on case studies that generate (as research output) suggestions for policy change that would increase the compatibility among sustainability, growth, and poverty alleviation objectives.

As regards quantitative modelling, the focus should be on assessing the impact of alternative policy changes in ways that capture inter-sectoral and interregional links, and likely responses of producers and consumers to policy change. Equally important, these models should be able to assess the impact of environmental change (both positive and negative) on other development objectives - particularly growth and poverty alleviation.

- (13) Finally, but by no means least importantly, the working group felt quite strongly that political economy and public finance issues deserved special attention, since they can be both obstacles to, as well as facilitators of, policy change, and can therefore have important environmental effects - both negative and positive.

Diagram 5

| Problems and Successes | Actors | Causes | Solutions | Instruments | Saviors | Political Economy/ Public Finance | Time | \$ |
|------------------------|-----------------|--------------------------|-----------------------|-----------------------------|-------------|------------------------------------|------|----|
| Forest Loss | Small farmers | Food Security | Roads/ Markets | Infrastructure | Municipios | Responsibilities Versus Tax Base | M | M |
| | Medium farmers | Cattle | Improved Pastures | Agricultural Research | NARs/IARCs | | S/M | S |
| | Big farmers | Speculation | Land Rights | Property Rights Legislation | Legislators | National Versus State Jurisdiction | S/M | S |
| Waterlogging | System Managers | Institutional Incentives | Institutional Reform | Legislation | Legislators | Power Groups | M | S |
| | Farmers | Price Incentives | Tradable Water Rights | Water Market Development | Farmers | Collective Action | S | S |

REPORT ON MACRO-MICRO LINKAGES

by Raúl O’Ryan

Working Group Members: Walter Couto
Ruben Darío Estrada
Raúl O’Ryan
Martín Piñeiro

Chair: Hubert Zandstra

Natural resource depletion ("green" issues) and environmental quality deterioration ("brown" issues) are the result of choices made by a multitude of actors. On the one hand, producers choose how much to produce; technologies to be used; type, quantity and quality of inputs; factor and land use; etc. Consumers choose the types (quality, environmental friendliness, imported, etc) and amounts of goods and services to be consumed. These decisions are taken at the microeconomic level, i.e. by consideration by each actor of the costs and benefits of the specific choice.

However, these choices are strongly influenced by macroeconomic policies, sectorial policies and public investments, i.e. macro-level policies¹ (See Figure 1.). Macroeconomic policies include monetary and fiscal policies as well as structural adjustment programs, oriented towards high growth rates and low inflation. The success of such programs affects income, poverty and exports, which in turn affect the choices made by both producers and consumers.

Commercial policies such as the use of the exchange rate, tariffs, quotas and trade agreements are strongly related to overall economic as well as sectorial growth. For example a commercial policy oriented towards export promotion, say through the use of a high exchange rate, will result in high growth of specific natural resource based export sectors (fisheries, forestry, mining, etc.). This may also result in a significant increase in the country's growth rate and income. Income distribution may improve or deteriorate, depending on the specific actors that benefit from growth.

¹ Macro-level policies and macroeconomic policies are not the same thing! They refer to policies that are not in the decision sphere of the environmental regulator.

Figure 1.

MACRO LEVEL POLICIES

- **MACRO-ECONOMIC POLICIES**

- EXCHANGE RATE
- MONETARY / FISCAL
- COMMERCIAL: Tariffs
Quotas
Trade Agreements

- **SECTORIAL POLICIES**

- SUBSIDIES
- PRICE BANDS
- TAXES
- CREDITS
- LAND TENURE
- URBAN DEVELOPMENT

- **PUBLIC INVESTMENTS**

- COMMUNICATIONS
- TRANSPORT
- ENERGY
- TECHNOLOGY

Specific sectorial policies such as subsidies and credits may be used to accelerate this growth process. On the other hand, the lack of urban development policies may result in the concentration of population and economic activities in ever larger cities. In this latter case environmental quality deterioration for a significant part of the country's population will ensue.

Finally public investments in communications, transport, energy and technology directly influence the environment. Investments in hydroelectric power plants disrupt natural habitats. Opening up new roads in previously inaccessible lands may result in deforestation.

In conclusion, macro level policies affect activities at the micro level and as a result affect sustainability (Figure 2). To reduce these impacts it is necessary to understand how these policies are related to sustainability. This is a first important research line.

A second related research line relates to the specific instruments available to protect the environment. The institutions in charge of protecting the environment can use a wide array of instruments. The basic issue is to choose the instrument(s) appropriate for the problem at hand. Five types of instruments can be identified: command and control, market based incentives, negotiation, public environmental investments and social contracts. Examples are given in Figure 3 of each type of instrument. Which one to choose, what is required for their implementation, and the expected results of each must be examined for different cases both for "brown" and "green" issues in Latin America and the Caribbean.

Figure 2

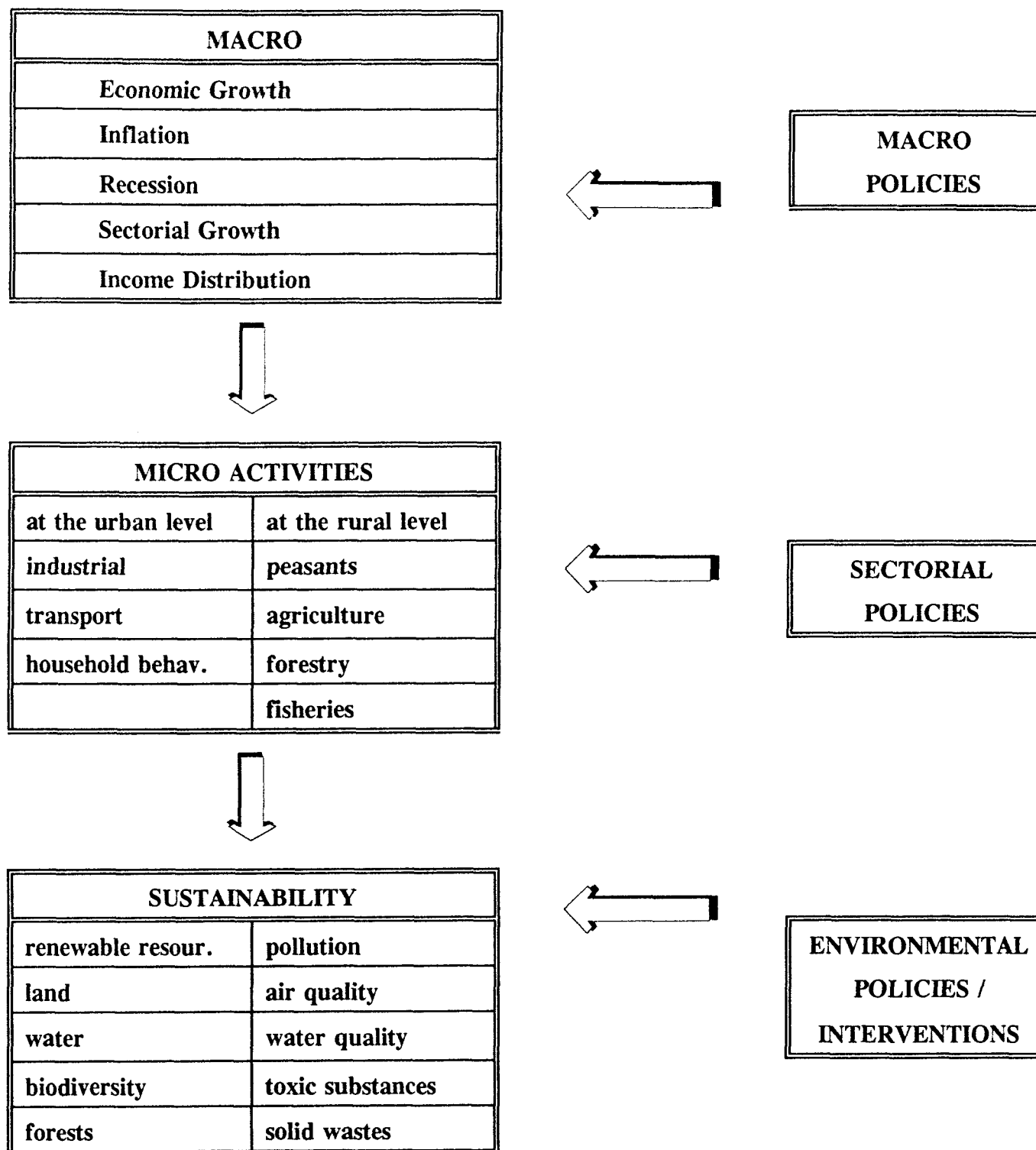


Figure 3.

SPECIFIC INSTRUMENTS OF ENVIRONMENTAL POLICIES

- **COMMAND AND CONTROL**
 - STANDARDS (emission and quality standards)
 - PROHIBITIONS
 - ZONING

- **MARKET BASED INCENTIVES**
 - DEFINE PROPERTY RIGHTS
 - TRADABLE PERMITS
 - TAXES, CHARGES

- **NEGOTIATION**

- **PUBLIC INVESTMENTS**
 - CLEAN TECHNOLOGIES
 - PAVING ROADS
 - BUILDING SUBWAY SYSTEMS

- **SOCIAL CONTRACTS**
 - COMMON PROPERTY MANAGEMENT
 - FAVORS / AGREEMENTS / TRADITIONS
 - ACCESS TO MARKETING AND FACTORS OF PRODUCTION
 - WATER RIGHTS

1) PRIORITY ISSUES THAT NEED TO BE ADDRESSED WITHIN THE BROAD THEME:

a) Causality studies (to predict)

We must understand this to give decision makers a good idea of consequences of policies and possible corrective interventions.

Questions: ¿What relation is there between macro policies and behavior of consumers and producers?

¿What environmental policies/interventions would achieve productivity and sustainability objectives?

b) Level of issue

Both national and local levels should be addressed. The relation between macro policies and affected parties at the local level should be established together with possible interventions.

c) Type of issue

The dominant theme should be rural issues. However, in some cases, projects related to the impact between macro-variables and the urban poor should also be considered. We do not recommend an a-priori choice between brown and green issues, as this should result from the situation at hand.

Another issue could be examining the impact of specific policy or public investments on productivity and environmental issues across different ecologies covering several countries.

d) Ecoregion affected

When considering projects oriented towards rural problems, if forced to choose an ecoregion, we suggest to concentrate in highlands but it is also possible to consider rainforest with high population density.

Example: the impact of the Bogota-coast highway on highland production as new lowlands come into production.

e) Resource affected

Soil, water, forests, biodiversity.

2) RECIPIENTS:

The main objective of each project is to generate knowledge. In consequence, recipients should be:

- research institutions (including NGOs)
- policy makers

We suggest that communities not be direct recipients but be intimately associated with the research activities undertaken.

3) DELIVERY MECHANISMS:

The preferred delivery mechanisms are:

- research grant funding
- networking
- targeted training (teamwork, synthesis vs. analysis, systems analysis and modeling)

We agree that the information super-highway offers great opportunities for information support to networks. For example, to coordinate team in different countries.

4) PARTNERS AND PARTNERSHIPS:

We distinguished between main players and donor partners.

Main players include:

- a) the research institutions with an adequate mix between institutions specialized in resource management and those specializing in macro and sectorial policies.
- b) stake-holders (peasants, Municipal Council).

Donor partners:

- a) like-minded donors: World Bank, GTZ, IDB, CIDA, COTESU and others
- b) locally generated funds: we suggest to look for and mobilize local financing capacity.

We think there are practical opportunities for coordination among donors and between donors and local authorities.

REPORT ON POVERTY AND ENVIRONMENT (P&E)

by Gary Newkirk

Working Group Members: André Deschenes
Michael Jenkins
Alejandro Nadal
Ruben Puentes
Helen Raij

Chair: María Dolores Espino

Mission Statement

To support research leading to understanding the interrelationship of poverty and environment through analysis of successful experiences of community empowerment resulting in improved natural resource management and environment with the objective of 1) affecting policy decisions at local and national levels and 2) identifying strategies to alleviate poverty through improved natural resource management.

Issues

The group identified several key issues which should have priority in choosing projects and activities in this program (there is no priority among the 6):

1. Resource access and tenure arrangements in relation to poverty and environment.
2. Relationship of different resource types to the generation of poverty, degree of environmental degradation and evolution of survival strategies.
3. The impact of rural-urban migration.
4. The blending of scientific and traditional knowledge and the role of traditional management schemes in community empowerment leading to improved environmental management.
5. Equity of resource access, management and benefits in relation to successful environmental management.

6. The impact of institutional and legal frameworks on the interaction of poverty and environment.

Criteria

Criteria that should be used in funding projects were identified. These should be used in evaluating projects but every successful proposal will not necessarily meet all criteria, however, the array of projects funded in the program should cover the criteria listed.

Projects should:

1. Be replicable.
2. Promote genuine collaboration of research institutions, community or peoples' organizations, NGOs and government organizations.
3. Result in practical research with impact on identifiable communities or on policy.
4. Cover a mixture of brown and green issues.
5. Identify strategies for policy implementation.
6. Use innovative approaches in research and in collaborative arrangements.
7. Contribute to common lessons.
8. Contribute to capacity building of local partners.

Delivery Mechanisms

In order to encourage innovative approaches and imaginative partnerships and identify new research issues, most of the funding (perhaps 2/3) of the P&E program should be allocated to a competitive grants program. There would be a call for proposals widely circulated in the region. The competition could be held annually or at a longer interval but at each competition there would be a fixed submission date. Proposals submitted would be reviewed by a panel which has credibility in the international community and is open minded to new problems and innovative approaches and understands the IDRC philosophy. (Other details of the competitive grants program were not identified.)

It is anticipated that a competitive grants program can attract funds from other donors who do not have the presence and network of connections in the region that IDRC possesses. IDRC funds could be flexible to provide the support for the functioning of the process or actual grants.

Attraction of other donors will be based on IDRC's credibility in the field of development research support.

The remaining P&E program funds would be used to provide support for a network and several projects through the usual IDRC mechanism. The network will facilitate interaction of projects funded in the program under both the competitive and standard mechanisms, assist in providing technical assistance and exchange among projects, arrange training sessions and identify graduate training needs, and arrange workshops and symposia. Projects funded through the usual IDRC mechanism will be targeted to satisfy program criteria and cover issues that are not sufficiently addressed in the projects funded through the competitive process.

REPORT ON NEW INSTITUTIONAL FORMS FOR THE ENVIRONMENT

by Craig Ferguson¹

Working group members: Luis Aragón
Craig Ferguson
Javier Gatica Pardo
Carlos Landin
Enrique Leff
Alfredo Recalde
Pedro Ribeiro Soares
Günter Riethmacher

Chair: Pedro Ribeiro Soares

The group's assumptions

The group agreed that the discussion should be focussed on developing a work program of projects, to run over a five year period to be funded at an amount of U.S. \$2.5 million per year. Projects would be focussed on the needs of developing countries and would be research oriented.

The goal of the exercise

The purpose of the research program would be to support and enable research into new forms of institutional arrangements that would support the achievement or implementation of sustainable development.

What is an institution

It was agreed that institutions should be defined as broadly as possible, to include the traditional or formal understanding of institutions (e.g. bricks and mortar; traditional form and operation) innovative arrangements (open decision-making; multisectoral approaches; fluid structure; flexible operation) and technology-based arrangements (e.g knowledge and information sharing; electronic communication).

¹ Manager, International Policy, Environment Canada, Hull, Quebec, Canada

What is research

It was also agreed that research could include baseline research which would focus on state of the art of institutional arrangements in specific countries or regions; academic assessment of institutional form and evolution. Research could also be practical through support for existing or proposed specific institutional initiatives as demonstration projects or case studies (learning by doing); research could also be oriented towards specific priority issues of sustainable development to bring together the institutional, technical and political factors to address an environmental issue.

Desirable Institutional Form

The Group discussed some of the characteristics of institutional arrangements that would be desirable in promoting development. In general, institutions should be more de-centralized rather than centralized; more open and participatory rather than closed; have clear mission and goals; be accountable; build and maintain partnerships with a board community, including civil society, business, government and academia; focus on building on local capabilities and in sharing information and knowledge.

ASSUMPTIONS

- Identify projects
- South focused
- Research oriented
- Five year program (2.5 millions per year)
- Institutions required for sustainable development

GOAL

- To enable research in new forms of institutional arrangements to support the achievement of sustainable development
 - Institutions are broadly defined (e.g. formal traditional; innovative, technological)

- Research could include:
 - * Baseline research
 - * Reinforcing existing initiatives (demonstration projects)
 - * Issue oriented

KEY ISSUES

- IDRC role in program delivery
- Importance of institutions

DESIRABLE CHARACTERISTICS OF NEW ORGANIZATIONAL FORMS

- Participation/integration
- More flexible
- Goals oriented
- Interface with private sector
- Networking & Consortia
- Demand driven/Client oriented
- Local & regionally oriented
- Inter-institutional linkages
- Eco-regional oriented
- Decentralized decision-making
- Accountability
- Linkage universities/communities
- Democratization of information knowledge
- Strength of local capabilities

CRITERIA FOR SELECTION OF PROJECTS

- Demonstrates innovative partnerships
 - Addresses need for transfer of knowledge
 - Deal with local, national, regional, global aspects
 - Joint ventures
 - Assessment of sustainable development impacts (social, economic, environmental)
 - Represent an investment
 - Build on existing research (value-added)
-

SUGGESTED INITIAL PROJECTS/PROGRAM

Baseline research on institutional form

- ✓ general needs assessment
- ✓ state of the art (successful/unsuccessful examples)
- ✓ interface with non government sectors
- ✓ the effects of state reform programs on sustainability

Reinforcing existing initiatives

- ✓ Multisectoral councils for sustainable development at the national/local level (e.g. The National Council of Costa Rica)
 - ✓ Environmental capacity-building networks (e.g. UNEP, UNAMAZ, RAU, RIAD)
-

- ✓ Sustainable development management at the local level (e.g. Cajamarca, some ECLAC projects in Bolivia, Rubber Tapper cooperative in Brazil)
- ✓ Public/private joint ventures (INBIO, Costa Rica; Body Shop model)

Issue based institutional research

- ✓ Conservation and use of biodiversity - *national* (e.g. public and private sectors and NGOs at national and international levels)
- ✓ Environmental issues in regional trade arrangements - *regional* (e.g. NAFTA, MERCOSUR)
- ✓ Urban Environment Management - *local* (e.g. Sao Paulo; public and private agencies)
- ✓ Transfer of science and technology - *global* (e.g. Ministries in Science and Technology; and private sector)

INDICATORS OF SUCCESS

- increased awareness of importance of institutional arrangements
- implementation of global/regional agreements
- equitable access to decision-making
- accountable institutions
- improved flow of knowledge, information, science and technology
- improved decision-making

| (\$US millions) | | | | | | |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| YEAR | | | | | | |
| PROJECT | 1 | 2 | 3 | 4 | 5 | TOTAL |
| I. BASELINE | | | | | | |
| needs | 0.40 | -- | -- | -- | -- | 0.40 |
| state of the art | 0.40 | -- | -- | -- | -- | 0.40 |
| interface | 0.10 | 0.40 | 0.30 | -- | -- | 0.80 |
| societal reform | 0.10 | 0.40 | 0.20 | -- | -- | 0.70 |
| SUB-TOTAL | 1.00 | 0.80 | 0.50 | -- | -- | 2.30 |
| II. EXISTING INITIATIVES | | | | | | |
| multisectoral approaches | 0.25 | 0.25 | 0.30 | 0.35 | 0.35 | 1.50 |
| networks | 0.20 | 0.20 | 0.20 | 0.30 | 0.25 | 1.15 |
| local management | 0.20 | 0.20 | 0.25 | 0.30 | 0.35 | 1.30 |
| joint ventures | 0.10 | 0.20 | 0.25 | 0.30 | 0.30 | 1.15 |
| SUB-TOTAL | 0.75 | 0.85 | 1.00 | 1.25 | 1.25 | 5.10 |
| III. ISSUES | | | | | | |
| Biodiversity | 0.25 | 0.25 | 0.25 | 0.40 | 0.45 | 1.60 |
| Trade | 0.10 | 0.15 | 0.25 | 0.25 | 0.15 | 0.90 |
| Urban | 0.25 | 0.25 | 0.25 | 0.35 | 0.45 | 1.55 |
| S&T | 0.15 | 0.20 | 0.25 | 0.25 | 0.20 | 1.05 |
| SUB-TOTAL | 0.75 | 0.85 | 1.00 | 1.25 | 1.25 | 5.10 |
| TOTAL | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 12.50 |

COMMENTS

by Pedro Ribeiro Soares²

To my understanding, it is not possible to make suggestions on new institutional forms before justifying those recommendations based on an examination, even a brief one, of the changes presently occurring in our societies. Also, the identification must be made of national policies attending those changes that enable a sustainable development of the economy, which even in most developed countries, pay the price of increasing social deficiencies.

The maintenance of sustainability, for a given equity level, can be achieved through a process that establishes a permanent trade off between:

- minimizing the use of non renewable resources
- maximizing social indicators, mainly when they are under the minimum required to maintain life dignity
- assure stability for national or private programs and projects.

The institutions in the three fields connected with our problems - research and training, management of natural resources and sectorial or regional development coordination- have, all of them, direct or indirect links with environmental issues.

On the other hand, I also think that, in order to propose new institutional forms priorities for the issues described above must be found and the successive steps to be taken.

The suggestions presented for the baseline research on institutional forms seem the best to produce the terms of reference that attend the research needed:

- general needs assessment
- state of the art (successful or unsuccessful) examples
- interface with non-government sectors
- the effects of state reform programs on sustainability

A result of this exercise will be the identification of the most desirable characteristics for the existing or new institutions.

² Ministerio de Medio Ambiente, Brazilia, Brazil

In the same way the proposed research for reinforcing existing initiatives and issue based institutional research will be better understood.

In relation to the indicators of success we believe it should not be so difficult to determine a priority order for the achievement of the final objective, the so desired, but no so pursued, sustainable development.

Hopefully these challenging discussions will be continued.

SECTION F

Towards a Focused Agenda

*The final session commenced with two discussants **Martín Piñeiro** and **Alejandro Nadal** who had been asked to reflect on what they had heard and give their first impressions to the group. The remarks are reproduced verbatim.*

FINAL COMMENTS ON THE SEMINAR

by Alejandro Nadal¹

For two days and a half we exchanged ideas on the complex subject of the identification of research priorities. The first question that comes to my mind is the following: "Are we listening to the signals of Latin America? The region is experimenting a process of deep and rapid changes: income concentration, fall in real wages, poverty increase in almost the entire region, distorted demographic transition, unemployment, deterioration of the natural resources base, increase in inflation rates . Which are the signals of the region? Are we listening to them carefully? And, in this sense, it is a call to all participants of this meeting to consider if we have been up to the problems which afflict the entire region.

Many different ideas emerged here and I will try to group them with the objective of thinking over our initial question. In the first place, I shall examine the ideas which I found to my liking; in the second place I shall discuss the ones which were considered but which I do not find relevant. In the third place, I would like to reflect on some ideas which I consider important but which were omitted in our discussions.

I would like to point out as interesting and relevant, the idea of promoting a greater participation and collaboration. I find that the idea of participation of social and civilian groups integrated by women and men whose lives are being affected by environmental problems as a research objective, is vital not only because of ethical reasons but because of the very nature of the research projects. For example, it is not possible to understand how a community can allocate working time resources among the multiple tasks related to natural resources management, without the active participation of the community in research activities. It is not possible to figure out how a community perceives and reacts to the environmental degradation without an active participation of the members of the community in the tasks of detection and analysis of the components of such deterioration process. Moreover, we already have much evidence that the members of a community are able to manage different qualitative indicators and perhaps with more relevance, than those which are presented by a group of researchers which falls down from the sky with its "academic parachute". In the case of farmers' communities, artisanal fishermen and small forestry workers, coexistence with processes of environmental change for a long time, has provided a formative pattern of the capacity to identify and analyse, and of adjustment to environmental changes.

What I have already highlighted does not leave out the importance of the scientific tools, which we sometimes refer to as "formal". On the opposite, it is and will continue to be a necessary

¹ Science and Technology Program, El Colegio de Mexico, Mexico

frame of reference for research work. But what I would like to emphasize here is that it becomes a much more powerful tool when it forms part of the framework of the communities' experience which are active participants in the research work. Due to this, and as far as possible, communities should be part of the research team from the very beginning, that is, from the projects' conception and design phase. In this sense, the key is the collaboration among institutions of different types. Not only should we try to study in depth the topic of interdisciplinarity but also the collaboration among universities, communities, productive sectors and government. In order not to lose the main goal of my recommendation, I again insist on the fact that the weakest link has been the collaboration and participation on equal terms, of the universities and communities in the different research activities. This is something new and important which has been unanimously backed by the participants of this seminar.

An issue which is related with this point of view of the research activities is the idea of projects' generation bottom-up and which has been highlighted on several occasions. Of course, this responds to the urgent need of merging different analytical frameworks in feasible and relevant research projects for the same communities. But also, from the funding agencies point of view, this responds to the idea of counting with a multiplying effect which I will consider further on.

I will now point out ideas that were brought to the table and with which I do not concur. The economic situation of the region has been mentioned, but without too much detail. I think we have not made an in-depth analysis of the seriousness of the situation. And this is highly important because one of the principal recommendations put forward in this meeting was the one referred to poverty and its relationship with the environmental degradation. If one examines the data for Latin America and the Caribbean as a whole, the poverty situation has not improved for the last fifteen years. On the contrary, the poverty line has increased. Data on population which survives in conditions of extreme poverty are not very encouraging. Beyond the made up figures that the governments of the region and even ECLAC give us, specialists in poverty issues are quite clear: negative tendencies are not reverting.

However, neither the poor are self-generated, nor the environmental deterioration is spontaneously produced. Neither it is true that environmental deterioration is mainly produced by the poor; however but this is something else. What I want to stress here is that we have been very sparing on the analysis of the economic model of privatization, deregulation and liberalization that prevails in the region and of its effect on poverty generation. Of course it is important to consider up to what point is the privatization, deregulation and liberalization model the cause of the deterioration of the living standards of increasing segments of the population. It is also important to consider the analysis of the economic forces behind the deterioration of whole dimensions of the environment: from fisheries and forests to the atmosphere and genetic diversity.

The economic model which is supported on the three pillars recommended by the International Monetary Fund and the World Bank (privatization, deregulation and liberalization) does not seem to lead the countries of the region along a way in which the goals of a feasible insertion of the world economy, the general population improvement and the protection of a base for natural resources which can assure the process feasibility in the long term, are reconciled.

Chile has been mentioned as a good example of the goodness of the model. We should have dedicated more time in this meeting to the analysis of this case in which we can point out three important issues. In the first place, the deregulation of the Chilean financial system has been cautious and has allowed the reduction of the volatility of the stock-exchange market. In the second place, it is necessary to reexamine the performance of the Chilean economy in relation to unemployment and poverty. The results are not precisely brilliant in this key issue in spite of the achievements at the macroeconomic indicators level. In the third place, we should examine the environmental cost in the area of management of natural resources. The fisheries situation is not very promising to put it in soft terms. The growth in citrus fruit growing, particularly intensive in agrochemicals, is having negative effects. In these and other issues it is important to analyse carefully the performance of the Chilean economy to figure out the environmental implications of the privatization and liberalization model. The consequences in the field of regulations to detain, counteract and prevent the environmental deterioration are key issues for the future research agenda in the region.

There were several references to the need to continue backing the measurement and use of the model. It is true, that in some cases, measurements are still needed (even if I would not stress too much on the need to assess natural resources). However, this was something useful at the moment; today, I think that the research priorities are set on the economic and social forces which are determining a rapid deterioration of the natural resources base and producing contamination in every way. Within this framework, a dynamic analysis is essential. And this is precisely the field where the models of general applied or computable balance (MEGA) hopelessly fail. These models, (whose use and abuse is very well documented in the recommendation of deregulation and liberalization policy), have been recently adjusted for the analysis of environmental problems. However, this adjustment exercise is a complete failure, in part, due to the very nature of the models which are particularly wrongly adjusted to the study of dynamic phenomena. And, in part, due to the economic assumptions of which they depend: the most important one is that markets perform correctly their role as devices in which the formation of balance prices is produced more or less quickly (in the models, instantaneously). Even if it is paradoxical, this assumption is not more than that: an assumption. The results in stability matters (or in the convergence to balance points) are up to now, unsatisfactory. At the present moment, a rational evidence that market forces lead relative price vectors to a position of general equilibrium, does not exist. I think that the use of these models should not be backed in relation to the subject we are dealing with.

To conclude, I would like to refer to some omissions which I think are important in a discussion of research priorities in environmental and economic issues. No references were made in relation to industry. The subject of waste management (toxic and non-toxic) is crucial and very few references were made. Most of the debate was centered on or around agriculture and the management of natural resources. Neither was the services sector considered, even if this one is the most dynamic in the region. I think there is a considerable lack of information in relation to the environmental implications of the services sector activities.

On the other hand, I think we did not stress sufficiently the issue of the uncertainty of the effects on the environment. It seems we would be able to identify which are the effects that this or that

economic project has on the different environmental dimensions (atmosphere, land, water, etc.). The truth is that in most cases we face a great uncertainty. The direct environmental consequences of an economic project are generally very difficult to identify. The indirect consequences are, in most cases, impossible to identify. An example of the above-mentioned is the poor performance of studies on environmental impact which show two key flaws: they concentrate on individual projects ("piecemeal basis") with which the scale effects are ignored and the temporal horizon is very short so that the cumulative effects in time are also ignored. In this way, studies of environmental impact systematically disregard the deterioration which a specific economic project is able to produce. Someone with a cynical vision of the issue could conclude that perhaps this is why they are so useful to grant permissions by environmental authorities.

The last issue which was omitted was the one referred to the pertinent unit of analysis. This is important in different areas, but essential in the natural resources management. For example, in many case studies in agriculture the pertinent unit is the family. In other cases, we can concentrate on a hydrological basin and observe it as a system. What I want to underline here is the need that in research projects the unit of analysis should be the appropriate, according to the object of the research.

COMMENTS ON THE PRESENTATIONS AND DISCUSSIONS THAT AROSE DURING THE MEETING

by Martin Piñeiro¹

I have been asked to make a few comments on the contents of the event. It was an interesting meeting, full of ideas, reflections and proposals. However, I believe that the scope and complexity of the substantive issue under consideration, coupled with the diversity of interests and professional backgrounds of the participants, made it especially difficult to arrive by consensus at agreements that could in turn be used as the basis of specific conclusions. Although the outcome of the working group sessions enabled progress to be made and several concrete results to be achieved, I am not sure whether we actually lived up to the expectations of the organizers. The objective of the meeting may have been excessively ambitious, and I hope Carlos Seré is lucky and manages to fit together the jigsaw puzzle he is confronted with.

I shall focus my comments around the three core issues of the agenda under consideration:

- a) Agenda 21
- b) Choice and delivery
- c) Cooperation and support

My comments are the result of the things I heard, how I understood them, and my own prejudices, it is up to you to determine the extent of each.

- a) Agenda 21

The Rio Meeting -UNCED- that gave rise to Agenda 21 was a historic event. It introduced the issue of the environment in the international agenda. Although there are many who believe that the entire process has been a failure, I think this is untrue. Suffice it to see the changes that have taken place in the discourse of the governments and of the international agencies, as well as in the level of social awareness regarding the subject. This meeting and the fact that IDRC has decided to defend the environment as its priority topic provide us with examples of the new relevance that the subject has acquired. On the other hand, there are manifold instances of concrete actions undertaken in defense of the environment.

I wish to make a comment that will help put the subject in a suitable political perspective. The Rio conference is held at a very special time in history. The end of the cold war and the rapid globalization process focuses the attention of the countries on issues of a global nature. The

¹ Consultores en Economía y Organización (CEO), Buenos Aires, Argentina

environment seems to be a subject that arouses a common interest and on which North and South can define a "Common Agenda", contrary to other issues of a more controversial nature such as trade and international migrations.

Nevertheless, if the environment is incorporated as it deserves to be in a development perspective, arriving at North-South agreements then becomes somewhat more difficult, since different interests and priorities become more explicit. This drawback arose quite clearly during UNCED itself and even more so after the Conference during the recommendations implementation process.

I mention this in order to stress how important it is for Latin America to be able to develop its own rationale so that it can be used as a framework for the setting of priorities and for international negotiations. The great challenge that lies ahead for all of us is to work on environmental issues in a development context that is in line with the characteristics and prevailing conditions of Latin America. In this perspective, all IDRC work and research is a true example of the motto it has chosen: "empowerment through knowledge".

b) Choice and Delivery

The discussions on how to choose priorities showed how difficult the subject was. The paper prepared by Carlos Seré is an excellent review of existing literature and reveals that none of the methodologies available is enough in itself to deal with a subject that is as broad and complex as the one that brought us together and about which, besides, very little is known and scarce systematic information is available.

These methodologies are useful in evaluating and comparing alternatives that are relatively similar to each other and about which there is reasonably dense quantitative information available. The congruency model, for instance, that is extensively used in the Consultative Group on International Agricultural Research (CGIAR), has been useful in allocating relative priorities to different evaluated crops. It has been far less useful when other subjects were included in the comparison.

Personally, maybe because I am an economist, I like methods based on or related to economic surpluses. The main advantage is that they lead straight to the identification of social actors, their concrete interests and how the latter are affected. Hence, this method leads to a political economy analysis.

Continuing along this line of thought, I think that if we wish to analyze the subject of the environment in the context of a development model or strategy and in a framework of political economy, the paper presented by A.D. Tillett furnishes us with a good starting point. Latin America is experiencing deep economic and social changes driven by changes in the world economy and by a model of economic policy that has been adopted by all Latin American countries with few variations. A model that, at least for the time being, has not been environmentally sound.

I want to give two examples. First, A.D. Tillett's paper highlights the deep transformations that are taking place in the agricultural and sector, spurred by globalization and commercial openness. These changes lead to a reorganization of production and to greater pressure on the land. Second, Latin America is the developing region with the highest degree of modernization and the one which registers the fastest growth of large cities, many of which present appalling pollution and resource depletion problems. These are, for Latin America, two particularly important questions which in my opinion should not be left out of whatever set of priorities is adopted.

Consequently, a possible procedure to follow might be to choose a limited number of broad priorities, such as those illustrated above, and then use some of the priority screening methodologies described by Seré (especially those with scores or the one suggested by Vosti) in order to define more concrete research areas. A methodology such as this one would provide us with a group of priority issues that could be used as the basis of a research program during an initial stage. The program thus defined would enable us to focus our efforts and build up a body of articulated and sufficiently deep knowledge to make policy recommendations on a few important themes.

c) Cooperation and Support

The things I heard during the discussions in this session lay bare the difficulties to be encountered when it comes to accurately defining a work program. I heard the following:

1. The subject is conceptually complex. It requires interdisciplinary work.
2. The subject is immensely extensive and relatively unknown. It requires the cooperative effort of different institutions in order to gain a greater dimension and foster talent diversity.
3. The research needed on this subject demands many financial and human resources. Hence, cooperation among donor institutions is convenient and necessary; the implementation of the outcome of research requires the participation and commitment of individual economic agents who should therefore participate or be involved in the research.

These statements which were heard during the discussion describe a complex work map. What can IDRC do in this context? Which are its comparative advantages? A few come to mind:

1. An institutional mandate that is suitably focused, and great flexibility in defining the style of work that best matches the special circumstances of the organization. In this sense, identification of IDRC with "empowerment through knowledge" is extremely appealing and powerful. But the question arises legitimately: "who are those that we can or wish to empower?". The answer to this dilemma, that can be outlined from the discussions at this meeting, is that the beneficiaries are civil society organizations. I agree with this but with two caveats. First, there is a limit to this orientation in the case of IDRC, which is

after all parastatal. Second, one of the main objectives when working with civilian society organizations is to strengthen them in order to strengthen democracy. This gives a special orientation to working with NGO's.

2. A good image among the scientific community and a successful experience in acting as a catalyzer in setting up networks of institutional consortia.
3. IDRC is in the special situation a parastatal institution. It has legitimacy and independence, but it also falls within the framework of intergovernmental relations. As a result certain limits are imposed on the institution, but on the other hand it also endows it with respectability. This conclusion defines an institutional role that is ideal for work on policy issues.

I wish therefore to summarize all this in what I believe are certain criteria that have to do with priorities: 1) policy analysis, 2) the public sector and sectors of the civil society as the main recipients of information and knowledge, 3) developing the information through networks of consortia of researchers who work together with the economic agents that control the natural resources to be preserved.

Before winding up, I wish to make an additional comment regarding the institutions. During the meeting, a series of negative comments were made concerning the democratic representativeness of Latin American governments and, maybe by extension, on the effectiveness of the actions of such governments, of the universities and of other public organizations.

In the context of those comments I wish to make three points. In the first place, the governments and the public sector institutions, in spite of their shortcomings, are power centers which have the capacity to transform society. It is a resource that cannot be ignored. In the second place, from a more historic point of view, I believe it is important to recall that these are good times for Latin America. All the governments have arisen from democratic processes, flawed in some cases but nevertheless democratic. Similarly, in several of our countries, the universities have embarked on interesting processes of modernization and opening to the society at large. I think that they are a significant source of intellectual resources and that in a few years time some of the universities will once again have the place they should have as in the more developed countries. Thirdly, it is difficult to imagine how we can work on the issue of the environment without the participation of the public institutions. The environment is by definition a subject in which market forces are not enough. We require new institutions capable of providing the proper articulation between what is public and what is private. One of the greatest sins of the economic model has been the destruction of public sector institutions that were obsolete and ineffective. But no new ones have been set up. That is why creating a new institutionality is one of the major priorities of this endeavour.

I wish to finish by expressing my deep sympathy to Anthony Tillet and Carlos Seré who will have the strenuous task of putting together this jigsaw puzzle we are leaving them with.

Final Session - General Discussion

This session included the presentation of the results of the four break-out groups, a brief presentation on the environmental activities of the Inter-American Development Bank (IDB) in the field, the synthesis of the workshop by Alejandro Nadal and Martin Piñeiro and the general discussion.

The four breakout groups were charged with the task of developing alternative strategies for IDRC in the environmental field/LAC. They were allocated a budget of CAD 3 million annually over a 5 year period. The broad themes around which they were asked to develop the strategy were:

- Greening of development policy
- Macro-micro linkages
- Poverty-environment links
- New institutional forms for the environment

The reports of these groups are presented separately.

The immediate discussion of the group findings was limited largely to clarification points. Some interesting additions were made.

The "poverty-environment" discussion brought up the point that strategies for "graduating" from poverty depended largely on the resource base available to the poor and thus had diverse environmental impacts. Another point made was the fact that conventional measures of poverty thresholds are underestimating the levels of income needed to live without degrading the resource base.

With respect to the report of the "Greening of development policy" group the comment from the floor was that a political economy dimension of policy change and its environmental impacts ought to be considered.

The discussion of the presentation by the "Macro-micro linkages" group mainly dealt with the feedback mechanisms from the micro level to the macro and with the priority of urban versus rural issues. It was argued that urban issues are important in the LAC region but that large sums are allocated to these problems. Given the size of IDRC's resources it was argued, they should be targeted for the rural sector. There was no consensus around this issue.

Peter Dulin's presentation on the IDB caused a lively discussion. The role of environmental impact assessment was considered to narrow, as an "afterthought" of development projects. What was needed was a more holistic analysis of development strategies for whole regions vis a vis the present environmental analysis of "stand-alone" discrete projects. Analyses should

consider the cumulative impact of interventions, and should go well beyond the first round environmental impacts.

The role of "monitoring of environmental impacts" was said to be very limited, and only useful if undertaken by a politically powerful institution.

The link between IFIs and technical cooperation programs was also discussed. The Bank was seen to pay very limited attention to technical aspects, usually hiring individual consultants who address problems in a piecemeal fashion, and frequently only at one point in time. One of the challenges for the region was seen in attracting well-trained people to remain in the region and provide the required expertise on a continuous basis. Institutions to address these issues were seen as the glue and grease to attain sustainable development. IDB projects in the region were estimated to involve some 700 million US\$ of consulting services, which are largely allocated to commercial consulting firms. There seems to be interest from the side of IDB to diversify its suppliers of consulting services; non-commercial ones could expand their market share on the basis of their more detached and independent perspective.

After the synthesis remarks by Nadal and Piñeiro (see separate reports) a lively discussion of the morning's presentations got under way.

A suggestion was made that case studies should be developed for the urban, forestry and mining sector as proxies for brown, renewable and non-renewable resource issues. An experience in participatory priority setting at the municipality level was described.

Population changes were said to be one of the variables clearly linked to environmental degradation. Changes are not uniform across the region. At present small and medium-sized cities are growing fastest.

The difficulty of assessing impact of institutional research was noted. "Hybrid" institutions were suggested as possibly effective tools; in a more general manner the analysis of what types of institutions are effective in addressing environmental problems would seem to be a valuable research contribution.

A particular concern is understanding the sustainability of institutions once external funding is discontinued.

A plea was made for considering not only applied, directly policy-relevant research, but also more basic research, e.g. on indicators of sustainability. Results will feed into the more applied work.

The limitations of the existing neo-liberal model for the LAC region were discussed repeatedly. There were diverging views on the implications thereof for IDRC strategy. For some there is limited scope for very different models and one should rather focus on finding out how to enhance environmental management within this paradigm i.e. designing mitigation measures to deal with its increasingly notorious weaknesses. One such issue is the collapse of public

institutions in the LAC region. Others would emphasize research on alternative sustainable development models.

Donor fatigue was mentioned. The challenge was seen in thinking in different ways. An drastic ecoregional focus was suggested by one participant. An example given was concentrating on Haiti or Cuba. This led to the point that LAC's diversity requires a more desegregated analysis than the one presented at the workshop.

It was stated that a concrete, feasible set of agenda issues was emerging. IDRC was seen as having an important role in rethinking whether the overall model can be made compatible with environmental health. There was a consensus on the issue of the institutional framework. On balance, priorities would have to be where the people are and related to the dynamic export markets, both minerals and agricultural products, as shown by Tillett's presentation. Thus a portfolio of certain green and brown issues is emerging. This can then be translated into geographical priorities.

The concern was voiced that IDRC should focus on a field in which it could make a bold, visible, geographically focused contribution taking into account whether IDRC has the leverage to make a difference in the chosen field.

There was a clear message that the redesign of institutions is essential, but that it has to be done starting from the existing institutions, particularly of the public sector and the universities. The environment is clearly a public good and will require public intervention. In this context it was noted that the role of the private sector had not been really addressed by the group. It was on the other hand said, that the traditional partners of IDRC are rapidly disappearing and that therefore the Center should clearly anticipate the issue of who will do the research in the future and what the vehicles will be to link it to the real world. Thus it was suggested that an "on-line" link to projects was needed for relevance and leverage.

Countries and regions were said to have made a series of efforts to set their priorities. Many of these fora were isolated and thus a plea was made for enhanced connectivity among interested parties.

Civil society can play a very important role as a check on public and private action. To do so there is a need for a widespread capacity for analysis and synthesis of issues. The latter is particularly important to influence policies. To develop civil society in this direction an important effort in the formation of human resources is needed.

The session was closed by Anthony Tillett who thanked participants for their very open and active participation. He stressed the value of the external input to the IDRC planning process and indicated that a continuing dialogue on the subject is envisaged. As a first step in this direction he promised to distribute the draft report of the meeting within a short period of time

Carlos Seré

SECTION G

Background Materials

*This section includes the Meeting's Agenda and List of
Participants with biosketches*

MEETING OUTLINE

Tuesday June 20, 1995

Afternoon Arrival of participants

18:00 - 20:00 Welcome cocktail
[Casa Tillett: Federico Abadie 2940/102 near Hotel Ermitage]

Wednesday June 21, 1995

08:30 - 08:35 Welcome: *A.D. Tillett*

08:35 - 08:45 Opening remarks: *Carlos Seré*

08:45 - 09:45 Presentation of participants

09:45 - 10:00 Coffee break

10:00 - 12:30

Agenda 21 and LAC experience

Chair: *A.D. Tillett*
Introduction: *Javier Gatica*
Rapporteur: *Luc Mougeot*

10:00 - 10:10 Introduction: Issues to be addressed

10:10 - 10:35 *Peter Ellehoj*: Aid flows for environment to Latin America and the Caribbean

10:35 - 10:45 *Enrique Leff*: Discussion opener

10:45 - 11:15 Paper discussion

11:15 - 12:30 General discussion

12:30 - 14:00 Lunch

14:00 - 18:00

Choice and delivery

Chair: *André Deschenes*

Introduction: *Michael Jenkins*

Rapporteur: *Gary McMahon*

14:00 - 14:10

Introduction

14:10 - 14:25

A.D. Tillett: Opening remarks. Strategic imperatives for Latin America and the Caribbean

14:25 - 14:40

Raul O'Ryan: The Chilean case

14:40 - 14:55

David Kaimowitz: Discussion opener

14:55 - 15:15

Paper discussion

15:15 - 15:30

Coffee break

15:30 - 15:50

Carlos Seré: Experiences in priority setting; lessons for environmental research in Latin America and the Caribbean

15:50 - 16:00

Stephen Vosti: Discussion opener

16:00 - 16:20

Paper discussion

16:20 - 18:00

General discussion

Thursday June 22, 1995

08:30 - 12:30

Co-operation and support

Chair: *Arsenio Rodríguez*

Introduction: *Ruben Puentes*

Rapporteur: *A.D. Tillett*

08:30 - 08:40

Introduction

- 08:40 - 09:00 *María Dolores Espino*: Human resources development in environmental and natural resources management in Latin America and the Caribbean.
- 09:00 - 09:10 *Gary Newkirk*: Discussion opener
- 09:10 - 10:30 Paper discussion
- 10:30 - 10:45 Coffee break
- 10:45 - 12:30 General discussion
- 12:30 - 14:00 Lunch
- 14:00 - 18:00 ***Towards a focused agenda for environment***
- Chair: *David Brooks*
Rapporteur: *Hugo Li Pun*
- 14:00 - 15:00 Introduction
- 15:00 - 15:30 Discussion in small working groups
- 15:30 - 15:50 Coffee break
- 15:50 - 18:00 Discussion in small working groups (continuation)
- 20:00 - 23:00 Dinner "Asado"
Club Banco Comercial, Rambla República del Perú 1588
Keynote speaker: *David Brooks*
Watershed: the role of fresh water in the Israeli-Palestinian conflict

Friday June 23, 1995

08:30 - 13:00

Conclusions

Chair: *Hubert Zandstra*
Rapporteur: *Carlos Seré*

08:30 - 09:30 Presentation of working group conclusions

- 09:30 - 10:30 *Paul Dulin*: Perspectives for financing environmental programs through the Inter-American Development Bank (IDB)
- 10:30 - 10:45 Coffee break
- 10:45 - 11:45 Perspectives on environmental management in Latin America and the Caribbean or what I think about what I heard.
- Principal discussants:
Martín Piñeiro
Alejandro Nadal
- 11:45 - 12:45 General discussion
- 12:45 - 13:00 Closing remarks: *A.D. Tillett*

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LACRO Discussion Series

1. *Potential for Partnership*, Tim Draimin - July, 1994.
2. *LACRO Survey: The Role of Regional Office*; R. Bazzani, C. Seré and A.D. Tillett - October, 1994.
3. *A New Research Dialogue: Canadian and Latin American Research Communities*, Eva Egron-Polak, Jean-Pierre Lemasson, Gregg Macdonald - November, 1994
4. *Environmental and Natural Resource Management Priorities for Latin America and the Caribbean* - July, 1995