

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH
TECHNICAL ADVISORY COMMITTEE

TAC CHAIR'S REPORT

TAC SECRETARIAT

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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TAC CHAIR'S REPORT

1. Introduction

This TAC Chair's report brings the Group up-to-date on the Committee's activities since ICW'00, highlighting progress or accomplishments in the principal areas of TAC's responsibility: (a) assuring the relevance and quality of Centre science; (b) developing priorities and strategies, (c) commenting on resource allocations and monitoring programme implementation; (d) reviewing strategic considerations in the external environment, and (e) ensuring assessment of the CGIAR System's impact.

The activities of TAC are structured in terms of the work of its three sub-committees – Standing Committee on External Reviews (SCOER), Standing Committee on Priorities and Strategies (SCOPAS), and Standing Panel on Impact Assessment (SPIA). These committees interact closely with one another given complementarities of their respective functions. The report which follows focuses on activities implemented by TAC as a result of the work of SCOER, SCOPAS and SPIA.

For activities that cut across the responsibilities of its sub-committees, TAC employs *ad hoc* Working Groups, notably for the review and analysis of Centres' medium-term plans and financing plans. In this case, TAC members serve in their capacity as Liaison Scientists for each of the 16 Centres, a function entailing broad responsibility in the areas of review, evaluation, and impact assessment that enhances TAC's institutional memory vis-à-vis individual Centres' and their performance.

The Members of TAC and the TAC Secretariat are listed in Annex 1. TAC met twice during the reported period: TAC 80 during 25-29 March 2001 at ICARDA in Aleppo, Syria, which was attended by 36 participants; and TAC 81 during 23-28 September 2001 at CIFOR in Bogor, Indonesia, which was attended by 37 participants. The TAC 81 End-of-Meeting Report is available at the AGM'01 for information.

Before turning to the Committee's specific activities during the period under review, it may be noted that TAC contributed to the CGIAR Change Design and Management deliberations in a number of ways. The TAC Chair attended the SG/CDMT meetings of 7-8 December 2000, Washington, D.C., and 6-7 February 2001, The Hague. At TAC 80, the Committee discussed the SG/CDMT report of 15 March 2001 and shared its views on the report's recommendations with the CGIAR Chair. In this context, TAC considered the implications of these recommendations for TAC's future structure, *modus operandi*, and activities.

The TAC Chair, Emil Javier, and Michael Cernea, TAC Member, also served as resource persons on the Task Force on Science Council, and Alain de Janvry, TAC Member, served on the Task Force on Challenge Programmes. At TAC 81, the Committee discussed the four draft reports of the Task Forces submitted to the Interim Executive Council (IEC) and the minutes of the IEC discussions on the Task Force reports at the Bonn Meeting, and shared its views on the reports and minutes with the CGIAR Chair and Members and the Co-Chairs of the four Task Forces. *As it appears that Science Council may have a peer review role in the evaluation of Challenge Programmes, and as there is interest to fast track the initial ones, TAC prepared a*

note expressing its views on fast tracking a Challenge Programme without compromising the consultative process (Annex 2).

During the period covered by this report, various TAC Members and TAC Secretariat staff attended meetings relevant to the work of the Committee. Usha Barwale Zahr attended the meetings of the CGIAR GRPC; Richard Harwood attended the NRM Workshop at Cali; Alain de Janvry, Usha Barwale Zehr, Oumar Niangado, Shellemiah Keya and Amir Kassam attended respective regional planning meetings in Latin America, Asia and Sub-Saharan Africa; Alain de Janvry attended the Global Poverty Mapping meeting in Washington. Shellemiah Keya attended the Water Symposium in Stockholm. Emil Javier, Joachim von Braun, Usha Barwale Zehr attended the *IFPRI 2020 Conference on Sustainable Food Security for All*, in Bonn. TAC-SPIA held a meeting in Washington which was also attended by Alain de Janvry and Lucia Vaccaro.

2. TAC's Activities

2.1 Assuring the Relevance and Quality of Science

One of the principal means by which TAC carries out its responsibility to assure the quality and relevance of Centre science is by conducting External Programme and Management Reviews (EPMRs) to evaluate both Centre and Systemwide programmes, and by undertaking stripe reviews of themes which cut across Centre mandates. During the period under review, the following progress was made in the implementation or planning of such reviews:

EPMRs:

(a) Fifth EPMR of IITA

The Main Phase of the Fifth EPMR of IITA was conducted during 20 April to 7 May 2001. The Panel comprised Ken Cassman (USA) (Chair), Michael Dingkuhn (Germany), Andrew Gutierrez (USA), Ann Hamblin (Australia), Kimseyinga Savadogo (Burkina Faso), Paul Zuckerman (UK), and consultants Michael Gale (UK) and Julie Noolan (Australia).

The Panel Chair presented the report of the External Review Panel during TAC 81 in September 2001 through telephone conferencing, and highlighted its major findings and recommendations. This was followed by responses by IITA DG, Lukas Brader and the Board Chair, Enrico Porceddu. TAC prepared a commentary to the report endorsing largely the Panel's recommendations. The Review Report is on the Group's Agenda at AGM'01 in the Business Meeting under Agenda Item 2a.

(b) Fifth EPMR of CIP

The Planning and organization for the Fifth EPMR of CIP was advanced at TAC 80 in March 2001, and is on schedule. The composition of the review Panel was finalised at the end of May as follows: Chair, Ed Schuh (USA); Organisation and Management, Jean-Yves Maillat (France); Crop Improvement, Wayne Powell (UK); Pest and Disease Management, Alain Coleno (France); Natural Resources Management, Karl Harmsen (The Netherlands); Social Sciences,

Ricardo Godoy (USA); Collaborative Research Partnerships, María Elena Cruz (Chile). The Initial Phase of the review took place from 1 to 6 October 2001 at the CIP Headquarters. Field trips are planned between the Initial and the Main Phase to China and Indonesia/Vietnam (29 October - 4 November) for one sub-panel, to Kenya and Uganda (December) for the second sub-panel and to Ecuador/Bolivia and Peru for the third sub-panel just prior to arriving to Lima for the Main Phase of the review (25 February - 16 March 2002). The EPMR Panel Report will be considered by the Science Council in April 2002.

(c) *Fourth EPMR of ISNAR*

Planning for the 4th EPMR of ISNAR was initiated at TAC 80, and advanced at TAC 81. The Initial phase will take place from 25 February to 2 March 2002, and the main phase will start on 1 July 2002, with the exact duration still to be specified. The Chair of the review, Dunstan Spencer (Sierra Leone), will attend the Executive Board Meeting in Washington in October 2001. John Griffith (Australia) will serve as the panel member responsible for governance and management. The rest of the Panel include two members (plus consultants if required) to cover the following three programmatic areas: agricultural organizations (public, private, NGOs); methods of capacity building, including training; institutional/organizational research and research methods, and have specific knowledge of major geographic regions. The EPMR Panel Report will be considered by the Science Council in September 2002.

(d) *Fifth EPMR of ICRISAT*

Planning for the 5th EPMR of ICRISAT was initiated at TAC 80, and advanced at TAC 81. The Main Phase of ICRISAT's 5th EPMR is planned for November/December 2002 after the Initial Phase in August/September 2002. A list of candidates for Panel chair and members was considered by TAC at its 81st meeting. Following the selection of the Panel Chair, the Review will be organized and implemented based on the TAC-approved Panel profile. The EPMR Panel Report will be considered by the Science Council in March 2003.

(e) *IPGRI and CIMMYT EPMRs*

The IPGRI and CIMMYT EPMRs are scheduled for 2003, with the possibility to start the IPGRI EPMR at the end of 2002, with the main phase in early 2003 so that it could be presented to the IPGRI Board meeting in March 2003, and be completed before the departure of IPGRI's Director General. Discussions with the Directors General on the prospective dates, Panel profile and possible candidates for the Panel Chairperson have been initiated. The EPMR Panel Report on IPGRI will be submitted to the Science Council in March 2003, and on CIMMYT in September 2003.

At TAC 81, the Committee discussed specific issues regarding CIP, ISNAR and ICRISAT for the respective Panels to consider. Emphases in these reviews will be on strategic issues for the future as well as their alignment with the new CGIAR vision and strategy.

Reviews of CGIAR Systemwide programmes:

(f) ILRI CCER on the Systemwide Livestock Programme

The ILRI CCER on the Systemwide Livestock Programme was completed in May 2002. The Panel was composed of Jock Anderson (Australia) (Chair), Olanrewaju Smith (Nigeria) and Raul Vera (Uruguay). At TAC 81, the Panel Chair presented the report of the Panel through a videoconference. The main finding of the report is that the work covered in the SW-LSP on crop-livestock systems fills an important niche and despite severe funding difficulties during the early stages of the programme, it has now got to a good start and should be continued, provided that a critical level of funding can be guaranteed. TAC endorsed in general the Panel's recommendations and prepared a commentary on the report. The report will be considered by the Group at AGM'01 in the Business Meeting under Agenda Item 2b.

(g) First External Review of the Systemwide Programme on Integrated Pest Management (SP-IPM)

The TAC-commissioned external review of the SP-IPM is being carried out by Andrew Gutierrez (USA) (Chair) and Herman Waibel (Germany) in conjunction with the 5th EPMR of IITA, the Programme's Convening Centre. The Panel report will be considered by Science Council in April 2002.

(h) First External Review of the Systemwide Programme for Collective Action and Property Rights (SP-CAPRi)

TAC has commissioned the 1st external review of SP-CAPRi and planning was initiated at TAC 80 and advanced at TAC 81. Discussions are underway with IFPRI, the Convening Centre of CAPRi, for conducting the review in 2002. A short list of candidates for Panel Chair and the draft TOR of the CAPRi review were discussed at TAC 81. The selection of the Panel Chair and members is to be completed by December 2001.

(i) First External Review of the Systemwide Programme on Alternatives to Slash and Burn (SP-ASB)

TAC has commissioned the 1st external review of SP-ASB and planning was initiated at TAC 80 and advanced at TAC 81. Discussions have also been initiated with ICRAF, the Convening Centre of the SP-ASB, for conducting the review/impact study in late 2002 or early 2003.

(j) First External Review of the Systemwide Programme on Farmer Participatory Research and Gender Analysis (SP-PRGA)

TAC has commissioned the 1st external review of SP-PRGA and planning was initiated at TAC 80 and advanced at TAC 81. Discussions have also been initiated with CIAT, the Convening Centre of the SP-PRGA, for conducting the review in 2003.

Stripe review:

(k) Capacity Strengthening in the CGIAR

A stripe review/impact study of capacity strengthening in the CGIAR was commissioned by TAC in TAC 79. The first phase of this review will focus on training activities in the CGIAR. At TAC 80 the Committee discussed the preliminary study plan and suggested adding a research element to the study by calling for proposals for methodology and implementation from different organisations with the relevant expertise. After TAC 80 the views of the CGIAR Centres and members were sought to improve the study proposal, and a modified study proposal was discussed at TAC 81. Each Centre was asked to nominate a focal point for the study. Recent EPMRs were summarised and relevant issues were drawn from them to contribute to the planning and the implementation of the research part of the study. The first phase of the Training study and a desk study would be completed with assistance from a consultant. The Main Phase awaits assurance from the Co-Sponsors of availability of funds for this study.

Evaluation processes in the CGIAR:

The rationalization and streamlining of the evaluation processes in the CGIAR is a continuing concern of TAC.

By way of follow-up to a recommendation of the Third System Review, TAC made further progress in organizing an overall review of evaluation processes in the CGIAR in consultation with stakeholders. A draft "*Proposal for a New Approach to Evaluation in the CGIAR System*" was prepared by a TAC *ad hoc* Working Group outlining the main components of the CGIAR's work that require regular or periodic evaluation, providing an assessment of the effectiveness and efficiency of the procedures currently in place for evaluating science and management, and describing elements of a proposal for improving the current system with its stronger emphasis on output and impact. A review system characterized by Centre-based, continual self-evaluation processes having appropriate independent (external) checks is a key feature of the proposal. TAC 80 discussed the draft proposal and identified key issues requiring further debate and resolution. A new draft document of the Evaluation Process in the CGIAR was shared with the Task Force for Science Council.

TAC also prepared and discussed at TAC 81 draft guidelines on the Centre Commissioned External Reviews (CCERs) which are integral parts of the external Evaluation Processes in the CGIAR. Depending on the decisions made about TAC/SC at AGM'01, the Interim TAC/SC would seek stakeholder and Centres' views of the new Evaluation Process paper as well as the draft CCER guidelines.

Development of a TAC roster of scientists:

TAC recognizes the need to systematically organize, update and expand its candidate information system (CIS) for purposes of identifying potential panel chairs and members for EPMRs, stripe reviews, and special studies. To date, the Committee has relied on informal sources of information such as TAC members, the TAC and CGIAR Secretariats (and to some extent the CIS), Members of the Group, the Centres and colleagues at FAO, among others.

Presently, the Committee maintains an updated roster of over 1,000 names of experts who have participated in or have been considered for external reviews and strategic studies over the past 15 years. At TAC 80, the Committee approved a plan to develop a TAC roster of active scientists and specialists across relevant disciplines to be drawn upon by TAC in discharging its quality assurance function. The Committee also discussed criteria to be applied in screening experts, the process for initial selection, evaluation and retention in the pool and other modalities/implications with respect to accessing and updating the database. The database, which is being developed and maintained by the TAC Secretariat, is expected to become fully operational in 2002.

This international roster of top scientists in their respective fields will be increasingly useful as the future Science Council draws more heavily on global expert panels in the conduct of its strategic science and policy advisory activities. The same roster could serve as a source of experts for the Centre-driven *ex-ante* peer review processes which are being proposed to be installed in the future.

2.2 Developing Priorities and Strategies

Emerging trends in science:

At TAC 80, the Committee brainstormed on emerging trends in science and their implications for the efficiency and effectiveness of the CGIAR in making progress toward its strategic objectives. The discussion treated advances in selected disciplines relevant to the CGIAR's mission with a view to identifying opportunities for interdisciplinary ways of addressing issues that may warrant a programmatic approach. The Committee explored trends in the biological, physical and social sciences as well as in policy and institutional analysis. This exercise was a first step in developing consensus within the CGIAR on an optimal science strategy to address emerging issues through improved disciplinary and interdisciplinary approaches.

The discussions on biological sciences focussed on genetic enhancement and associated sciences, in particular biotechnology and genomics. TAC also discussed developments in genomic science, including the recently published first draft of the human genome and the sequencing of the Arabidopsis and rice genomes, which were giving new impetus to the case for expanding CGIAR investment in novel molecular biological approaches.

The discussions on the physical sciences centered on INRM for improved productivity, and on GIS. The need to address three central issues in the context of natural resources characterization and management are (a) how to extend point observations to assessment to higher scales; (b) how to explore alternative scenarios; (c) how to predict agricultural systems' behaviour and response. The application of ICTs had been an important factor in recent advances in linking natural resource assessment to INRM. A paper prepared by TAC Secretariat on the application of GIS in agricultural research and on CGIAR Centres' GIS-based activities was also provided as background information for TAC's discussion.

The discussions on social sciences focussed on the need for social research necessary to deepen our understanding of behaviour at the individual, family and group levels which required a characterization of different organizational structures and an analysis of issues associated with

empowerment. The discussions on policy and institutional analysis focussed on the major advances in development economics and their relevance to emerging research issues in behavioural, institutional and environmental economics, sources of economic growth at global and regional levels, economics of intellectual property rights and of incentives to innovate, and methodological and quantitative techniques for impacts assessment, that required the CGIAR's attention. Details are provided in the TAC 80 report (SDR/TAC:IAR/01/15).

Regional priority setting:

TAC has provided a progress report (SDR/TAC:IAR/01/32) on the regional approach to research for consideration at the AGM'01 Stakeholder meeting under the Agenda Item 5c (Updates, Regional Priority Setting).

Since the CGIAR endorsed the new vision and strategy at ICW'00, regional and sub-regional organizations and CGIAR Centres have taken action to facilitate regional consultation processes to establish a regional approach to research priority setting and implementation for the CGIAR and NARS as envisaged by Plank 4¹. Also, TAC, in collaboration with GFAR, national and regional institutions and CGIAR Centres, took steps to facilitate the implementation of the Group's decision at ICW'00 for piloting an experimental bottom-up, priority setting approach in the Central America sub-region.

At TAC 80 in March 2001, the Committee considered a TAC progress report on regional planning (SDR/TAC:IAR/01/03). The report provided information on the action taken by Regional Organizations, GFAR and TAC since ICW'00 in facilitating the implementation of the Plank 4 of the new CGIAR Vision and Strategy. Based on the discussions at TAC 80, the Committee prepared, for consideration at MTM2001, a report entitled, *Regional Approach to Research for the CGIAR and its Partners* (SDR/TAC:IAR/01/09). The report highlighted the advantages and limitations of the regional approach to research for the CGIAR and NARS, and noted some emerging lessons from the regional consultation processes.

At TAC 81 in September 2001, the Committee considered a second TAC progress report on regional planning (SDR/TAC:IAR/01/29). The report dealt with progress in regional research planning activities in Latin America, sub-Saharan Africa and Asia since TAC 80.

To facilitate the planning and consultation process in the pilot Central America sub-region, TAC organized a consultancy study by Reed Hertford entitled, *Poverty in Meso-America: Tendencies, Causes and Implications for Agricultural Research* (SDR/TAC:IAR/01/16), to the FORAGRO multi-stakeholder meeting in May 2001 which led to the preparation of the proposal entitled, *Pilot Project for the Study of Research Priorities for Meso-America*. The TAC Meso-America poverty study and the FORAGRO pilot project proposal are included in the TAC progress report document.

At MTM'01, TAC reported on some emerging lessons from the regional consultation processes. Since then additional challenges have come to light with regards to establishing a

¹ Plank 4 of the new CGIAR vision and strategy calls for the adoption, in collaboration with national and regional partners, of a regional approach to research planning, priority setting and implementation.

multi-stakeholder regional approach to research planning focussed on poverty alleviation. Experiences so far have highlighted the following problems and opportunities:

- How best to introduce the perspectives of NGOs, farmers' associations, and the private sector into the planning process?
- How to align major investment decisions in agricultural and rural development with research activities and/or structure research to support investment decisions?
- How to integrate agriculture planning with fisheries and forestry whose research organizations conventionally are independent of agricultural institutions?
- How to tackle the methodological issues of linking technology with poverty; of poverty mapping and synthesizing global priorities out of the identified regional priorities?
- How the regional exercises should feed into and influence the heartland agenda of the CGIAR Centres and the articulation and development of Challenge Programmes?
- Given the high transaction costs of establishing and sustaining multi-stakeholder processes, how should these be supported to maintain momentum, effectiveness and cost-efficiency?

To implement the new CGIAR vision and strategy and the regional research approach, TAC anticipated the need for: (a) improved understanding of the processes and conditions under which agricultural technology can be an effective instrument for poverty reduction; and (b) a set of guidelines for setting regional research priorities and their integration with global research priorities. TAC commissioned IFPRI to take up the first challenge and ISNAR the second. Consequently, at TAC 81, the Committee considered two more documents.

The first document, *CGIAR Research and Poverty Reduction* (SDR/TAC:IAR/01/02 Rev.1), was prepared by IFPRI, in particular Peter Hazell and Lawrence Haddad, in association with TAC with the aim of describing the processes and conditions under which agricultural technology can be an effective instrument for poverty reduction. As already mentioned, TAC accepted the report in the context of its ongoing work on priorities and strategies and prepared a commentary. The report has been distributed to stakeholders for consideration at the AGM'01 Stakeholder Meeting under the Agenda Item 5c Updates, Regional Priority Setting, together with this progress report (SDR/TAC:IAR/01/32).

The second document, *A Regional Approach to Setting Research Priorities and Implementation: Towards Satisfying National, Regional and International Concerns* (SDR/TAC:IAR/01/21) was prepared jointly with ISNAR, in particular Willem Janssen, with the aim of formulating a set of guidelines for setting regional research priorities, taking into account challenges and concerns highlighted at national, regional and international levels. This working paper is included in the TAC progress report which has also been distributed to stakeholders for consideration under Agenda Item 5c of the AGM'01 Stakeholder Meeting.

The enthusiasm with which the NARS and their regional organizations and the CGIAR Centres have approached joint research planning is an essential first step. But the full benefit of the regional approach can be attained only with participation of the farmers themselves, of the private sector and the development and investment agencies. There are enormous process and methodological hurdles yet to be overcome.

TAC believes that it has gone as far as it should in facilitating regional priority setting. The support of the donors is now crucial in the days ahead.

2.3 Reviewing Strategic Considerations in the External Environment

Following completion of the CGIAR's new Vision and Strategy, TAC resumed its work on strategic considerations in the external environment likely to influence the System's future priorities and strategies and research portfolio. Highlights of the Committee's activities during the past year include:

Poverty related studies:

The CGIAR has many years of accumulated experience in using agricultural technology to seek an impact on poverty reduction. In order to take advantage of this accumulated knowledge in providing guidelines for future investments, TAC requested IFPRI at MTM2000 to prepare a study report of the links between CGIAR research and poverty reduction. The second draft of the study was considered at TAC 80 and TAC's commentary on the document was subsequently shared with IFPRI with a view to finalizing the study. At TAC 81, the Committee considered the final report which it accepted and prepared a commentary.

The understanding of the nature of the linkages between poverty and technology has important relevance to the CGIAR priority setting process, and to the regional priority setting activities that are underway in all the regions in the context of the new CGIAR vision and strategy. The IFPRI study is an important document that will serve as a benchmark in pursuing further studies of the technology-poverty nexus at the regional level for sometime to come. Thus, TAC decided that the IFPRI study and the TAC commentary should be considered by the Group in the context of its deliberations on the regional priority setting under the Agenda Item 5c (Updates, Regional Priority Setting) of the AGM'01 Stakeholder Meeting.

TAC considers that it is important to rigorously establish causal linkages before firm conclusions can be offered about the understanding of the technology-poverty linkage in the different regional settings. In this regard TAC has requested IFPRI to develop case studies on the technology-poverty relation which, when completed, will enrich our current knowledge and be made available to the CGIAR Stakeholders. Also, further work on technology-poverty relationship is being planned utilizing formal modeling.

Poverty mapping:

A progress report on poverty mapping was discussed at TAC 81. TAC participated in the poverty mapping meeting of the FAO-coordinated multi-institutional (CGIAR/TAC-FAO-UNDP-GRID-ARENDAL) Global Poverty Mapping Project, Washington, D.C., 24-25 April 2001. This project is supported by a grant from the Government of Norway. TAC considers the use of GIS tools for poverty mapping and poverty analysis a very important initiative, not only as a research tool but also to improve decision-making by Centres and TAC in allocating resources to research in seeking a maximum poverty reduction impact. *TAC has offered a commentary (Annex 3) to the CGIAR's Consortium for Spatial Information.*

Integrated natural resources management (INRM):

At TAC 80, the Committee decided to contribute a paper to the Workshop on Integrated Management for Sustainable Agriculture, Forestry and Fisheries, at CIAT in August 2001. TAC's paper entitled, *Evolution of NRM Concepts and Activities in the CGIAR* (SDR/TAC:IAR/01/18), is a comprehensive summary of pre-1996 CGIAR activity in NRM, the TAC study on priorities and strategies for soil and water research in the CGIAR, recent thinking and activities related to NRM, and TAC's currently evolving perspective on INRM in the CGIAR.

At TAC 81, the Committee discussed a TAC paper entitled, *NRM Research in the CGIAR: A Framework for Programme Design and Evaluation* (SDR/TAC:IAR/01/24 Rev.1). In this paper, TAC elaborates its forward-looking ideas on CGIAR priorities and strategies in INRM and proposes a framework for programme design and evaluation. This paper and the TAC Cali paper have been distributed to the CGIAR Stakeholders for discussion under Agenda Item 5a (Programme Initiatives, INRM) of the AGM'01 Stakeholder Meeting.

TAC's evolving position on INRM is summarized in Annex 4.

Water management:

At TAC 80, the Committee decided to further explore the formulation, with the CGIAR Centres, of an overall CGIAR strategy on water management research, including the timeframe for research impact in the context of the links between water, agriculture, health, and environment. At TAC 81, the Committee considered a TAC paper entitled, *Water and the CGIAR* (SDR/TAC:IAR/01/23A). The paper has been prepared with three objectives in mind; first, to inform CGIAR stakeholders of the current state of water in the context of CGIAR activities and of the needs, challenges and opportunities for water research in the CGIAR. A second objective is to identify the most relevant issues and goals to be pursued in research by the CGIAR, given the complexity of water problems, the probable future scenarios, and the comparative advantages of CGIAR Centres. Finally, a vision for the future and the elements of a research agenda on water for the CGIAR, including possible roles of the various Centres in this area, are presented. The overall aim of the paper is to facilitate discussions towards the formulation of a common strategy for water research in the context of the evolving CGIAR framework for integrated natural resources management. The revised paper has been shared with all the CGIAR Centres for their input for a planned joint discussion with the Science Council in April 2002. To facilitate discussions at TAC 81, the TAC Secretariat arranged for a background paper entitled, *Water Productivity in the Context of the CGIAR* (SDR/TAC:IAR/01/23B), prepared by Jacob Kijne (consultant).

TAC's evolving position on water management research in the CGIAR is elaborated in Annex 5.

Social research capacity in the CGIAR:

Based on the discussions at TAC 80, at TAC's behest, a major Systemwide conference on Social Research in the CGIAR will be organized in 2002, convened by CIAT. At TAC 81, the Committee discussed a proposal for the Conference entitled, *Social Science in the CGIAR:*

Supporting the Strategy—Achieving Impact (SDR/TAC:IAR/01/25), covering the objectives, agenda, participation, expected outcomes and process. The process to organize the conference will be initiated with a stripe survey of Centres to establish baseline information on the current social science capacity in the CGIAR.

Food safety:

At TAC 81, the Committee discussed a TAC *Proposal to Review Food Safety Considerations in CGIAR Research* (SDR/TAC:IAR/01/21A). The proposal was supported by a TAC Secretariat paper entitled, *A Status Note on Food Safety* (SDR/TAC:IAR:01/20B) prepared with the help of Saurav Barat (consultant). TAC decided that a “Think Piece” on food safety should be commissioned for consideration by the Science Council. The document should describe the food safety problems and issues and the research and development implications. The study document should focus on the particular concerns and needs of the poor in the developing world. The paper will be prepared in collaboration with FAO and WHO. Based on the Think Piece and discussion by the Science Council in April 2002, the Council would commission, if deemed necessary, the preparation of a “White Paper” through a panel of experts. The Paper would assess priority research needs and opportunities for the CGIAR in the context of its new vision and strategy, and serve as a framework for addressing food safety concerns for the poor in technology and policy research and in capacity strengthening.

Biosafety and bioethics:

The development of genetically modified foods and other living modified organisms, are the subject of widespread public debate as to the safety, efficacy and ethical development and use of the new products. At TAC 81, the Committee considered a proposal prepared by Gabrielle Persley (consultant) entitled, *Proposal on Biosafety and Bioethics Issues and the CGIAR* (SDR/TAC:IAR/01/30), for formulating a strategic policy framework for biosafety and bioethics as they relate to the CGIAR’s mission, research agenda, outputs and needs of its partners, especially those in developing countries. TAC plans to commission an *ad hoc* panel of experts in the fields of biosafety and bioethics, in the light of current activities by individual Centres and various CGIAR Systemwide activities, to:

1. Identify the issues in biosafety and bioethics that are relevant to the mission, research activities, and partnerships of the CGIAR.
2. Propose principles and practice to guide the Centres in the safe and ethical use of biotechnology.
3. Advise on how the CGIAR System can continue to monitor developments in these fast changing fields and have in place mechanisms (including the necessary institutional strengths) to ensure that the principles and practices of the Centres and their partners reflect current best practices and timely responses to emerging issues.

TAC will further discuss the initiative in April 2002 before proceeding to implementing the initiative.

Climate change:

The topic of climate change has been on TAC's agenda from 1995 when the Committee invited Bernard Tinker to brief TAC on the developments from IPCC. Since then the theme has featured in TAC 74, 75 and 78. TAC has contributed to the discussions at CGIAR meeting and worked closely with ICWG-CC and FAO.

At TAC 81, the Committee discussed its evolving position on climate change and agriculture which is summarized in the Annex 6.

International public goods in an era of IPR:

At TAC 80, the Committee agreed to undertake a study on this topic. At TAC 81, the Committee discussed a proposal for implementing the study entitled, *What are the possible strategies for the CGIAR to conduct research and deliver technological innovations that benefit the poor in a context of intellectual property rights* (SDR/TAC:IAR/01/30). TAC will further discuss the initiative in April 2002 before proceeding to implementation.

Stress genomics:

At TAC 80, the Committee discussed a paper by John Bennett of IRRI on the status of breeding for tolerance of abiotic stress and prospects for use of molecular techniques. The paper discussed the scope for further utilizing the combined resources of the CGIAR for research on abiotic stresses. At TAC81, the Committee considered a TAC discussion paper entitled, *Genetic Engineering for Abiotic Stress Genomics* (SDR/TAC:IAR/01/27) as prelude to preparing the terms of reference for a study on opportunities and priorities for abiotic stress genomics in the CGIAR for consideration by Science Council in April 2002.

Information and communications technology:

At TAC 80, the Committee discussed the emerging opportunities for the CGIAR in the area of ICT. During TAC 81, the Committee was briefed on the developments in the area of ICT, particularly on the OECD proposal for a Geneva Plan of Action on Digital Opportunity for All: Meeting the Challenge. The proposal has implications for CGIAR's role in poverty alleviation. TAC agreed to be keep a close watching brief on this topics in the coming months.

2.4 Commenting on Programme Implications of Resource Allocations and Monitoring Programme Implementation

2002 Research Agenda and Centres' Medium-Term Plans:

At TAC 80, the Committee reviewed the Medium-Term Plans of the 16 CGIAR Centres. Details of the Committee's views and recommendations on the 2002 CGIAR Research Agenda and Centres' 2002-2004 MTPs were reported to the Group at MTM'01. Based on its assessment, the Committee certified that Centres' proposals were congruent with CGIAR priorities and strategies. This time TAC focused in particular on changes from existing plans that were

responsive to the CGIAR's new strategy. Within that broad frame of reference, TAC's analysis took into account scientific priorities and focus of the Centres' research portfolios; research content of portfolios as reflected by significant restructuring of projects; evidence of planned outputs as indicated by the relevance, utility and robustness of milestones; linkages and partnerships with other institutions; and responsiveness to major recommendations of external programme and management reviews. The MTPs of nearly all Centres were seen to be broadly consistent with Group-endorsed Plans. Significant restructuring of project portfolios by four Centres had permitted those Centres to respond to major planks of the CGIAR's new strategy in the areas of technical and policy support to intergovernmental bodies concerned with agriculture, institutional development at national and regional levels, and accessing advanced biological science. At the System level, TAC noted significant positive trends in the 2002 Research Agenda in the areas of functional genomics, integrated natural resources management, poverty impact assessment, and cooperation with regional organizations, among others.²

2002 Financing Plans:

At TAC 81, the Committee reviewed its assessment of the 2002 financing plans of the 16 CGIAR Centres which were submitted to TAC on 17 August. Based on its assessment, the Committee certified that Centres' financing plans were broadly congruent with the Research Agenda endorsed by the Group at MTM'01, although some centres face significant financing shortfall. TAC's assessment was transmitted to the Interim Executive Council for consideration at its second meeting in Bonn on 7-8 September. Details of the Committee's views and recommendation are reported to the Group under AGM Business Meeting Agenda Item 3a (CGIAR Financing Plans). The Committee assessed the programmatic implications of the plans, particularly their consistency with the Centre Medium-Term Plans (MTPs), their conformity with the 2002 Research Agenda approved by the Group at MTM'01, and the programmatic implications of potential financing gaps. Given that the CGIAR adopted a new vision and strategy in 2000, TAC also observed to which extent changes in funding plans reflect the goals – especially poverty reduction and food security. TAC found that the trends suggest that there is a continuing bias in investment against certain crops, livestock and activities related to germplasm and sustainable production. TAC concluded that Centre financing plans appear increasingly adjusted to the vision and strategy goals of the CGIAR. More comprehensive reporting systems, however, in relation to poverty and food security mapping as one base for assessing financial plans, are needed in the future.³

2.5 Ensuring Assessment of the CGIAR System's Impact⁴

At TAC 80 and 81, the Committee discussed the results of the following studies completed or nearing completion.

² For details, see *CGIAR 2002 Research Agenda and Initial Proposals for 2004* (Document No. SDR/TAC:IAR/01/10).

³ For details, see 2002 Financing Plan – TAC Comments (Document No. SDR/TAC:IAR/01/19 Rev.1).

⁴ For details see TAC-SPIA Report to the AGM2001

Germplasm improvement impact study:

All eight CGIAR crop Centres participated in this study and the three country case studies were later added at the advice of Yale professor Robert Evenson, who served as study coordinator. The conclusions of the study of the impact of CGIAR germplasm improvement were, *inter alia*, that IARC varietal improvement programmes had contributed directly to annual total factor productivity gains ranging from 1 to 2 percent per year. The study is currently being peer reviewed and will be published in book form by CABI once the authors/editors (R. Evenson and D. Gollin) have responded satisfactorily to comments from three anonymous reviewers. The final report on this project (*The Green Revolution at the End of the Twentieth Century*, SDR/TAC:IAR/01/12) was presented at MTM01.

Training impact assessment:

This impact study is part of the stripe review on scientific capacity strengthening in the CGIAR (see Section 2.1, Stripe reviews), and attempts to document the impact of CGIAR Centre training of national scientists. The study would assess, to the extent possible, changes in institutional capacity attributable to CGIAR activities and how these changes might be associated with impacts in terms of CGIAR goals. The study proposal has been shared with Centres and CGIAR Members for comments and suggestions.

Poverty impact project:

A TAC-commissioned project implemented by IFPRI is assessing the impact on the poor of a representative sample of CGIAR research activities, including commodity improvement work, NRM, and policy research. Phase I findings had confirmed that agricultural research can have very favorable impacts on the poor under certain enabling conditions. A series of country case studies now in progress would enhance understanding of the CGIAR's impact on the poor at regional and global levels.

Phase II is ongoing. It consists of a series of case studies documenting the impact on poverty alleviation of a selective sample of CGIAR research activities carried out in a broad range of countries, thereby contributing to a better understanding of the CGIAR's impact on the poor at regional and global levels. The studies will use an integrated social and economic analysis to identify the different channels through which agricultural research can impact the livelihoods of the poor, including changes in vulnerability, intra-household effects, on-farm production effects, labour market effects, and indirect growth, non-farm and food price effects. The studies will also contribute to improved understanding of the conditioning economic and social factors that determine whether and how agricultural research benefits the poor, and will provide guidelines on appropriate policies that may be needed to complement technological change to enhance favourable impacts on the poor. It is anticipated that the research methodologies developed and tested in the course of Phase II will contribute to identifying best practice impact assessment methods for future use by the CGIAR and its NARS partners.

The case studies will be conducted in two waves. The first is ongoing and will be completed in December 2002. (A synthesis paper based on the first wave of case studies will be completed by August 2002) The second wave began at the end of 2000 and will be completed by

June 2003, leading to a second synthesis paper by August 2003. A final project report will be completed by December 2003. Ruth Meinzen-Dick from IFPRI reported on this study during MTM'01 and presented an overview of how the study is considering social dimensions of impacts beyond traditional economic ones.

Environmental impact study:

An assessment by Michael Nelson (New Zealand) and Mywish Maredia (India) of the potential impacts on the environment of technologies developed by the CGIAR and its partners has been completed. The main positive impact was that because of the use of these new technologies, less land was required to produce a given output of agricultural crops. It had not been possible to make aggregate quantitative estimates of potential negative environmental impacts, given present analytical methods and available data. The study will be published before the end of 2001. A separate paper on the issue of negative environmental impacts had been prepared by Mywish Maredia and Prabhu Pingali (CIMMYT) will also be published shortly.

The conclusions from the reports prepared by Michael Nelson and Mywish Maredia on Phase 2 of the Environmental Impact Study (*Environmental Impacts of the CGIAR: An Assessment*, SDR/TAC:IAR/01/11) and the report prepared by Mywish Maredia and Prabhu Pingali on the negative impacts of productivity enhancing research (*Environmental Impacts of Productivity-Enhancing Crop Research: A Critical Review*, SDR/TAC:IAR/01/14) were discussed at TAC80 in Aleppo, and the documents were presented at MTM'01.

Conference on Impacts of Agricultural Research and Development:

Planning was underway for an international conference organized by CIMMYT at the behest of TAC on “*Impacts of Agricultural Research and Development*”, 5-7 February 2002, San José, Costa Rica. The conference will bring together impact assessment professionals with an interest in documenting and measuring the impact of international agricultural research. A major emphasis will be put on methodological aspects, drawing on experiences gained in various Centres and TAC-SPIA studies. The conference will highlight experiences and case studies of impact measurement in the following areas: impact on agricultural productivity; impact on equity, poverty, social health, and nutrition; impact on the environment; and impact on institutions and human capital. Participants will also describe novel approaches to hard-to-measure impacts in such areas as training, networks, participatory research and policy research

Contributions to agricultural development in sub-Saharan Africa:

A paper entitled, Contributions Made by the CGIAR and its Partners to Agricultural Development in sub Saharan Africa (SDR/TAC:IAR/01/13), was prepared in response to a request from FARA and as a contribution to MTM'01's Africa Day discussion. and relied on readily available documentation. It was, of necessity, incomplete in terms of documenting the full range of actual and likely contributions of the CGIAR. With this caveat, the paper nonetheless provided clear evidence that the CGIAR and its partners had made substantial contributions to agricultural development in Africa. Much work remained to be done before a more comprehensive, quantitative assessment of impact on CGIAR goals could be made. TAC planned to pursue further the question of regional impacts of the CGIAR.

A number of other impact studies have been prepared, including a “milestones” paper, *Milestones in Impact Assessment Research in the CGIAR, 1970-1999*, by Prabhu Pingali (printed by CIMMYT) synthesizing the contributions of CGIAR scientists to the theory and methods of impact assessment. Also, the report of the May 2000 Workshop at FAO on the *Future of Impact Assessment in the CGIAR* has been finalized and is available at the AGM’01.

3. Other Business

In addition to activities already noted above, TAC 80 considered: (a) the proposed integration of IWMI and IBSRAM; (b) a progress report on the Systemwide Initiative on Malaria and Agriculture (SWIM II) by IWMI Director General, Frank Rijsberman. The Committee prepared a commentary on the IWMI-IBSRAM integration, which has been conveyed to the Chair of the CGIAR.

At TAC 81, Geoff Hawtin via conference call briefed the Committee on the latest developments of the International Undertaking on Genetic Resources for Food and Agriculture. Richard Harwood apprised the Members of the main findings and outcome of the Workshop on Integrated Management for Sustainable Agriculture, Forestry and Fisheries, held at CIAT from 28-31 August 2001. Shellemiah Keya presented a report summarizing deliberations and conclusions of the Water Symposium, held in Stockholm from 12-16 August 2001. Joachim von Braun gave an overview of the programme and outcome of the IFPRI 2020 Conference on Sustainable Food Security for All, held in Bonn, Germany, September 2001. Darmo Suparmo from the FAO Regional Office in Bangkok, apprised the Committee on progress of plans for two major events: the World Food Summit, Five Years Later, which was to be held in Rome in November 2001 and the World Summit for Sustainable Development, Rio + 10, to be held in Johannesburg in September 2002. Frans Neuman from Netherlands presented a summary of the latest developments on WISARD, a tool for agricultural research information management and knowledge-sharing on the Internet.

4. Future Meetings

The next meeting is scheduled for 8-12 April 2002 at CIP, Peru, followed by a meeting tentatively scheduled for 23-30 September 2002 at FAO, Rome.

5. Concluding Remarks

TAC has had an extremely busy and productive year in the implementation of its advisory responsibilities. Several TAC members took on extra work and TAC was ably supported by the TAC Secretariat staff. TAC also received full cooperation from the CGIAR Chair and the CGIAR Secretariat, the Co-Sponsors, CBC, CDC, Centres, GFAR and Regional and Sub-Regional Organizations.

The Committee expresses its grateful and sincere thanks to them all.

Since TAC is proposed to give way to the Science Council effective 2002, this is formally the last TAC Chair’s Report to the Group. The Committee and I express our appreciation to the

Co-Sponsors and the Group for the opportunity to serve the poor through the CGIAR and its Centres of scientific excellence.

TAC Members and TAC Secretariat Staff

TAC

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Michael Cernea (Rumania)
Elias Fereres (Spain)
Hans Gregersen (USA)
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Guido Gryseels (Belgium) (until end June 2001)
Amir Kassam (UK)
Timothy Kelley (USA)
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Irmu Braun-Castaldi
Jane Garrioch-Cerquiglini
Ann Drummond-Setaro (until end April 2001)

TAC Evolving Views on Fast-Tracking Initial Challenge Programmes Without Compromising the Consultative Process

There is interest in moving forward with one, perhaps two, Challenge Programmes as early as 2002. Can this fast-tracking be done without compromising the legitimacy of the bottom-up consultative process? The TFCP considered this issue and recommended the following:

“Any fast-tracking should not compromise the integrity of the process described for CPs that are starting from “scratch”. Any potential programmes being assessed through a fast-track process should be subjected to the same set of stringent criteria as programmes developed from scratch.

“The TF considers that any shortened process would essentially imply by-passing Phase 1 (Idea Generation) in case the broad theme for a Challenge Programme has already been accepted by the CGIAR as worthy of exploration through pre-proposal development. This means that all institutions (including CGIAR institutions) could now be invited to submit pre-proposals on the identified theme. These would be subjected to the same assessment as other Challenge Programme themes identified through the open process”.

TAC suggests that there are two options.

One is, as proposed by the TFCP, to by-pass Phase 1, with the idea that the theme is of such overwhelming importance, and already flagged by the CGIAR as such, that it would, in any case, be strongly represented in an open call for ideas. *If this option is chosen, TAC suggests that this be announced up front at the Stakeholder Meeting in AGM2001 so there is no ambiguity, and there are opportunities for Members and stakeholders to support (or challenge) the decision.*

The other option is to proceed as quickly as possible, following approval of the Challenge Programme process at AGM2001, with an open consultation. Through an open electronic consultation of the type run by TAC in developing the latest Vision and Strategy, this can reasonably be done in November-December 2001. TAC/SC could then be consulted by electronic means to provide recommendations for the selection of themes to be fast-tracked. Delay compared to the first option would not be more than two months.

TAC considers that both options are adequate.

Recognizing the overwhelming global significance of climate change and water, given the substantial preparatory work that have been done to formulate Challenge Programmes on 1) Climate Change and Agriculture, and 2) Water and Agriculture, and considering TAC’s own previous deliberations, *TAC considers climate change and water*

as worthy themes for Challenge Programmes which the Group can expeditiously authorize at AGM'01.

However, space should be left open in the fast-tracked pre-proposals for ideas/projects that will emanate from the regional planning exercises, subject to the same rigour of standards prescribed for all projects.

Additionally, for balance, and by way of experiment, TAC suggests that the Group at AGM'01 signal the urgency of preparing at least one or two regionally-driven Challenge Programmes to complement the fast-tracked globally-driven Challenge Programmes.

CGIAR/TAC-FAO-UNDP-GRID Arendal Poverty Mapping Project

TAC81 reviewed the report prepared for TAC on the April 26-27, 2001, meeting held in Washington D.C. of the CGIAR/TAC-FAO-UNDP-GRID Arendal Poverty Mapping Project. This project is supported by a grant from the Government of Norway. TAC considers the use of GIS tools for poverty mapping and poverty analysis a very important initiative, not only as a research tool but also to improve decision-making by the Group and the Centres in allocating resources to research in seeking a maximum poverty reduction impact. TAC offers the following commentary to the CGIAR's Consortium for Spatial Information.

1. Competitive grants and peer reviews

TAC congratulates the Consortium for pursuing this project and for putting into place a competitive grants system. Following practice endorsed by TAC for competitive grants, it recommends that the selection committee include external peer reviewers to secure objectivity and obtain useful suggestions for improvement on the projects reviewed.

2. Mapping, tracking, and explaining poverty

The poverty mapping exercise should be used as a learning experience to not only draw poverty maps, but also to go beyond this and explore how to measure, explain, and predict poverty. Poverty can be characterized in a multiplicity of dimensions, such as income, consumption, vulnerability, health, nutritional status, education, and demographic status. In spite of the arbitrariness of weighting schemes, synthetic indicators of poverty can also be used that make easier for policy makers to locate poverty and track change. In many situations, data are available for more than one period in time, allowing to track the evolution of poverty in time across space, and to decompose poverty into chronic and transitory poor. Explanatory variables can be overlaid with poverty maps or used in regression analysis.

3. Quality of science

The poverty mapping should be done with state of the arts methodology, including rigorous characterization of the statistical properties of the poverty predictions. This is necessary to place confidence intervals around measurements so as to use criteria of statistical significance in making poverty comparisons across units of analysis.

4. Focus on CGIAR comparative advantage

Poverty mapping is now routinely done by the World Bank using a combination of household surveys (such as the Living Standards Measurement Surveys) and population census data. To differentiate its contributions to the poverty mapping

approach, the CGIAR should clearly identify the nature of its own comparative advantages. This expectedly includes ability to give, through the construction of GIS variables, a characterization of the agroecological and farming systems dimensions of the context that explains poverty. These variables will in turn be essential for scientists in determining optimum research/technological options for poverty reduction in each small area analyzed.

5. Use for resource allocation by Donors and Centres (and TAC)

Poverty maps should be developed as an effective tool in helping Donors and Centres (as well as TAC) allocate resources in a spatial dimension to maximize sustainable poverty reduction. This methodology should also be shared with NARS and policy makers to help them with the same purpose.

6. Poverty mapping and impact analysis

Where data are available over time, and observations bracket particular project initiatives (e.g., the release of new technologies), the approach should be used to monitor progress (diffusion) and measure the impact of the project on poverty. Even cross-sectional data can be used for this purpose, with proper control for selection biases.

7. TAC/SC's future interest for strategy and planning

TAC/SC is interested in continuing to monitor progress of this project. Pursuing the initial objective of its association with the project, TAC/SC would ultimately like to introduce a poverty mapping approach in its Strategy and Planning methodology to achieve better geographical targeting in Systemwide resource allocation.

TAC Evolving Views on Integrated Natural Resources Management

TAC has been closely following, and participating in the work of the CDC Task Force on Integrated Natural Resources Management. TAC applauds the efforts of the Task force and the significant effort of CIFOR and CIAT in coordinating the effort and hosting the 2000 and 2001 meetings. TAC was briefed on this work by the CDC at TAC 81 in Bogor.

This effort has resulted in significant advances in both development and articulation of theory, methodological approaches and in science. Several refereed journal publications, a special journal issue and a synthesis book are in progress.

A very active “Community of Practice” is being stimulated through the Task Force work.

TAC considers this to be very much a “work in progress”. The guidelines and scientific approaches are still not sufficiently clear. TAC has therefore prepared a discussion document “NRM Research in the CGIAR: A Framework for Programme Design and Evaluation”. This document suggests several production ecosystem types which demand an INRM focus. A framework for NRM/production ecosystem programme design and evaluation is suggested. This is meant to advance thinking and discussion following the Cali 2001 workshop. The emerging scientific consensus is that priority setting and planning for INRM research and intervention must be regionally-based and have local and regional ownership from the start.

It is urgent that the Science Council and the CDC Task Force continue to facilitate the rapid evolution of the INRM approach both to bring focus to ongoing efforts and to provide a solid scientific platform for upcoming global Challenge Programmes.

TAC's Evolving Views on Water Management and the CGIAR

For too long, research on water issues has been disjointed, based on traditional disciplinary sciences hardly crossing boundaries, largely focused on short-term issues, and lacking coordination and cooperation among potential partners.

A consequence of the research approach described above is that progress in some disciplines have been lagging behind relative to others. For instance, it is now evident that research in the social sciences has not matched the progress made in the biophysical and engineering sciences, in the development of knowledge in water. Yet, it has been clear for some time that science and technology are just two components of the solution to most water problems, and that the economic, social, institutional, and cultural aspects of water are essential determinants of its use and management.

Given that water scarcity is going to be a critical problem for mankind in the future, improving the efficiency of water use in all sectors of society will become a fundamental challenge. For the CGIAR, bearing in mind its goals, activities and institutional comparative advantages, the following four broad general areas are most relevant:

1. Improving the efficiency of water use in agriculture
2. Management of watersheds for multiple functions
3. Management of aquatic ecosystems, in particular those with boundaries with terrestrial ecosystems.
4. Policy and institutional aspects of water management

The first area covers most of the current efforts on water-related research of several CGIAR Centres and deserves the highest priority because of its direct links with one of the two main objectives of the CGIAR, namely that of sustainable food security. In this area, the focus should be in conducting research on the improvement of water productivity, the ratio of yield to the water consumptively used. It is difficult to increase water productivity in the short term by changes in the genetic make up of crops. However, biotechnology offers new possibilities that, combined with the expertise that several CGIAR Centres have in crop adaptation and performance in adverse environments, should open an important avenue for research in the medium term.

Surface water quality deteriorates first but now, evidence of the lowering of groundwater quality is becoming apparent in many parts of the world. We need a better understanding of the physical, chemical and biological processes that determine the long-term changes in water quality, particularly in groundwater, which is expected to be an increasingly important source of supply in the future. Much progress has been made in recent years in the development of simulation models of contaminant transport in soils and water but more efforts are needed in devising means for preventing pollution, in

assessing the capacity of environments for processing contaminants, and in predicting impacts of water quality changes at the ecosystem level.

Many more research challenges could be listed but regardless of the problem tackled, what is most important is to approach it with the correct framework and focus. It is time to consider simultaneously water quantity and quality; to analyse jointly surface and groundwater; to bring into the analysis at the start, all the social, environmental, and health components that are relevant to the problem under consideration. To summarize, it would be hard to find an area of research where multidisciplinary approaches would be more effective than they can be in the area of water.

TAC's Evolving Views on Climate Change and Agriculture

It is by now clear that human activities are increasing the concentration of greenhouse gases which alter the radiative balance of the planet and tend to warm the atmosphere. TAC expressed its views on climate change to the Group at ICW1999 and MTM2000. Long-term increase in temperature, increased variability in climate, shifting patterns and intensity of rainfall, and even changes in cloud cover affect all of the mandate commodities of the CGIAR. Productivity, nutritional quality and areas of adaptability can change. Pest and disease complexes and the biological processes which moderate and control them can and do shift. These changes may reduce opportunity for income and food security for many rural people, but providing new opportunity for others. Many of these changes will affect rich and poor alike, but TAC is concerned that the rural poor have fewer options or face more difficult challenges in adapting. It is central to the mission and goals of the CGIAR that these challenges become key parts of its efforts to achieve food security and reduce poverty within the context of sustainable natural resources management. Many research opportunities for the CGIAR Centres were mentioned in TAC's document, particularly in cooperation with the many partners carrying out activities in the Working Groups of the Intergovernmental Panel of Climate Change.

Recent climate change research is pointing out at the increased vulnerability and risks that resource-poor farmers around the world - the primary customers of the CGIAR- will be facing in the coming decades. The need for greater resilience of production systems in the developing countries through technological, institutional and social advances has never been greater than now, when regional and global changes in climate variables are expected for the future. TAC believes that there is a very important opportunity for the CGIAR to develop a Global Challenge programme on climate change and agriculture.

Such a programme meets the basic requirements set forth in the IEC report for Global Challenge Programmes, namely:

- addresses an issue of overwhelming significance;
- fits within the CGIAR mission and goals;
- is based on core scientific competence and comparative advantage of CGIAR Centres and their partners; and
- contributes to capacity building of NARS.

TAC has closely followed the developments, currently underway, that is leading to the formulation of a Challenge Programme on Climate Change and Agriculture. Of particular interest and encouragement is the rigorous analysis proposed by the ICWG-CC, which is working on the proposed Challenge Programme. TAC concurs with the ICWG-CC's view of limiting CGIAR's role in climate change research on adaptation and

mitigation. However, since participation in the ICWG-CC deliberations had been largely limited to the Centres, it is important that space be left open in the proposal to incorporate ideas/projects that will emanate from the regional research planning exercises underway.