World Bank consultation for the North American region on proposed assessment on how hunger and poverty can be reduced, rural livelihoods improved and environmentally and socially sustainable economic growth be stimulated through the generation, access and use of science and technology

28-29 April 2003
Washington, DC

Summary of the Discussions

The meeting opened with remarks by Ian Johnson, Vice President for Environmentally and Socially Sustainable Development at the World Bank. Kevin Cleaver, Director of Agriculture and Rural Development chaired the session and presented summary remarks at the conclusion. Bob Watson gave two presentations on the proposed assessment – S&T issues and potential governance structures (these presentations can be found at www.agassessment.org).

There was general support for the issues & recommendations in the preliminary documents from the Bank with the exceptions and enhancements noted below in the following summary of the discussions.

Value

The concept paper that initiated the consultative process stated that there was an urgent need *to improve the quality of the information available for policy makers on agricultural science and technology issues at the national and international levels, as well as to provide information useful to farmers and consumers in their decision-making*.

This need was seen to result from the appearance of a number of contentious issues on the political landscape, including, but not limited to:

- the potential environmental and human health benefits and risks associated with transgenic crops;
- the effects of intellectual property rights on access to applied knowledge by poor producers in developing countries;
- the sustainability of current agricultural practices on declining natural resource bases;

The urgency of the need was cogently expressed by one participant -- “We’re looking at a very unique event in the planet’s history—feeding more mouths than we may ever need to feed again” – and we will need to accomplish this in the context of projected changes in climate; economic growth; available labor, land and water; and increasing concerns over the environmental and social sustainability of various agricultural policies and technologies.

Participants agreed that a key concern of the proposed assessment should be not merely how to feed this unprecedented number of people, but how to feed them in a nutritious, healthful, and environmentally and socially sustainable way. Another key concern is how to improve the livelihoods of the rural poor. Most participants agreed that the value of the proposed assessment would be measured by how well it provides decision makers with the information they need to address these concerns.

The majority of participants agreed that an assessment could be useful if it would help to determine research priorities, accelerate or bring about policy decisions; give

stakeholder guidance to the CG, NARS and IARS on a variety of issues, including biotechnology. There was also general agreement that the assessment would be useful if it elevated/highlighted the experiences and knowledge of poor and/or marginalized producers and agricultural workers.

Approach and scope of assessment

General

To accomplish the goals mentioned above, an assessment would need to address the suite of S&T issues likely to appear in the policy arena around agriculture. Limiting the scope to issues with policy implications would provide a discrete agenda and a clear audience.

Most participants agreed with this approach, although there was disagreement about what issues actually fit into this niche. Some argued that policy and institutional questions were the critical issues to be addressed in relation to hunger and poverty; that an assessment of the role of applied social science in poverty and hunger reduction would be more useful than an assessment of agricultural S&T. Others argued for hard S&T questions. After much discussion, the consensus was that the assessment would need to address both sets – policy and institutional as well as core S&T.

Participants described potential users of the assessment as producers; NGOs; the private sector; policy makers who make decisions on how to invest public funds in science, technology, infrastructure and development programs; and those who decide on incentives for private investment in research and development and business development.

Global, regional and local aspects

It was generally agreed that whereas the governing body would set the scope and terms of reference, the regions would be best situated to put forward their own questions within the framework of the terms of reference. This would build in acknowledgement that individual technologies may have different roles and impacts in specific cultures, geographies, cropping systems, etc.

The assessment would also need to take into account the difference in relationship between pre- and post-industrial countries to the public sector. Questions could address economies and ecoregions as well as geographic regions. Some suggested that a few regional studies precede the global study.

Virtually all agreed that the assessment should be global, but with a greater focus on developing countries. A number of issues could be highlighted in a global context (health; disease; soil, air and water quality), but specific S&T solutions often require tailoring at the local level. It was felt that a regional subset of global issues would prevent the process from being ripped apart by differing views and would allow the assessment to address the needs of very different geographies, cultures, and end users around the world and maximize the assessment's potential value. In general, regionalization was considered by most to be a very good way to capture diverse sets of interests. The first step would be to define the problems (projecting to 2050) faced by different regions (ideally to the local level) and then match S&T solutions to these.

Future scenarios

Most agreed that the provision of future scenarios would be critical because we need to know the range of "potential worlds" in order to adequately assess the potential of S&T. The challenge is to define scenarios that are agreeable to all stakeholders.

One participant thought the assessment would provide an excellent opportunity to evaluate the variation in cost-effectiveness of various technologies over the next decades. This type of analysis would also apply to valuing goods and services.

The group recommended including clear assumptions to predicate the conclusions and policy relevant findings in such a way that future users of the assessment will see if assumptions have been invalidated - thus invalidating the finding(s). Participants further recommend specifically building in trigger points and decision trees that would set in motion alternative findings or re-assessment in these cases.

Nutrition, sustainability and livelihoods

Participants concurred that the approach must go beyond the traditional agriculture community by including vital links to health and welfare. In this context, it was mentioned that the assessment should define hunger as more than an empty belly. It was felt that a focus on nutrition, sustainability and livelihoods would organize the assessment around the drivers of the assessment. This would embrace the three pillars of sustainability – economic/social/environmental – and could be accommodated within a farming (producing) systems or a product-specific context.

It will be critical for the assessment to acknowledge the realities of farming (producing) and of producer interactions with institutions and policies. The metrics used to assess S&T will be important to this acknowledgement -- ideally, the key indicators will embrace all three pillars and identify the S&T needed to improve a system. These needs can then be met through implementing available technologies or generating further research to develop the needed technology.

Suggested framework

A methodological framework was offered to ensure that the focus of the assessment would be the problems faced by the rural poor – producers, workers, and indigenous people. This proposed conceptual framework would make sustainability key to the analysis and allow for the inclusion of intermediary/intervening factors that are central to any discussion of agriculture S&T, such as markets and political institutions.

From R&D to practical usage:

- **How is technology developed and by whom?**
- **How is it diffused? What constrains/promotes diffusion?**
- **How is technology adopted?**
- **Who benefits? Who does not?**

Metrics for analysis:

- **What are the impacts of technological innovation and adoption?**
- **What are the impacts of traditional knowledge and its adoption?**
- **Is the technology environmentally, socially and economically sustainable?**
- **Does it lead to poverty reduction?**
- **Does it improve nutritional outcomes?**

Both sets of questions include several key intermediary/intervening factors – markets, social norms/customs -- especially around gender, but also ethnicity -- that determine who does what and who controls what; and the locus of decision making --political institutions. The assessment could describe how the intermediary factors operate, only go on to assess those that are not being dealt with elsewhere.

Appendix A contains a list of questions proposed for the assessment. The steering committee will review questions from all of the consultations and decide which ones should form the basis of the proposed assessment. The committee will also structure the questions into a logical framework.

GOVERNANCE AND ORGANIZATIONAL STRUCTURE

Intergovernmental with regional component

Participants believed in general that the governance should be intergovernmental since the goal is to create an assessment that is comprehensive and objective with maximal influence.

An inter-governmental model with a strong regional approach was put forward as a good way to capture different values. The regional component was seen as a robust and broad participatory mechanism for ensuring input, review & vetting prior to governance level decisions. Authority for governance would primarily take place at the intergovernmental level.

It was not clear if the regional level is relevant to governance, but certainly, the regions are key to broad representation, diversity, and the comprehensive coverage of issues and ideas. Some expressed a desire to see regions develop documents as charged by an intergovernmental body. These regional documents would then become part of a global document. For example, the IG Panel could inform or task regional groups as to scope and the regional group could develop questions. The Secretariat would assist by vetting questions and acting as timekeeper. It would be the responsibility of the regions to incorporate all stakeholders in the tasks of asking and answering the questions.

Some recommended consideration of the United Nations' use of "Major Groups" as a promising framework for ensuring broad representation and robust participation from civil society in intergovernmental process (references were made to the recent UN WSSD and CSD processes, which both used the Major Groups model with some success).

It was generally agreed that one or more UN agencies should host the intergovernmental panel. FAO and WHO were seen to have multi-scale and multi-regional expertise. The World Bank was put forward by some as a reasonable choice for hosting the secretariat for the assessment, although others indicated that coordination by the Bank could undermine civil society trust in the process.

Transparency

All agreed that the assessment process should be transparent – it should be obvious how one is selected to participate, speak, write, review, etc. All governments should be able to nominate authors and reviewers– not just those governments that contribute funds. Broad participation was recommended at each stage of the process, including reiterative steps for synthesizing and reconciling inputs. In this context, it was noted that farm/fisheries/forestry workers should be included among the stakeholders.

The selection of writers and reviewers is critical for both validity and for credibility. A balance between comprehensive representation and efficacy in execution is important. Face-to-face meetings of reviewers were seen by some as a way to promote a much richer discussion, provide for rapid reiterations and clarification of misunderstandings and novel syntheses. Complete transparency should be the norm for the review

process. Although in certain cases some method of protection might be needed for reviewers.

Documents

Some suggested that a staged process would favor efficiency and learning. Some participants thought there was too much emphasis on producing the report within a certain timeframe, noting that it might take longer than two years to produce a credible, robust high quality document.

A number of participants felt strongly that translation into at least Spanish and French would be essential to maintain transparency and multiple stakeholder buy-in. At a minimum, this should include translation of a draft for public comment and review as well as the final document. Others noted that intergovernmental governance would require that the document be printed in the official UN languages - Arabic, English, Chinese, French, Russian and Spanish.

Communications and awareness

Most viewed a communications strategy designed to increase trust among stakeholders and a market plan designed to maximize awareness and impact as critical to a viable assessment process.

Funding

Neutrality will be important in terms of funding sources. Government funding was preferred to ensure adequacy and to reduce the appearance of bias, with the understanding that the governments who provide funding do not have more influence than those that do not.

It was noted that the quantitative plans for the assessment will need to realistically match the resources needed to execute them. Similar guidance will be required for number and length of chapters, number of authors, and the review process.

APPENDIX A

NB: These questions have been suggested by participants at the regional consultations to date. The steering committee for the consultative process will recommend questions for the assessment based on these suggestions and those heard at the remaining consultations.

CORE S&T ISSUES

(addressing the environmental and social aspects around each topic)

1. Productivity and profitability

- What is the potential for the small producer to increase productivity and profitability through the following and can science and technology improve the potential? What are the risks and benefits? *(Reflect country/regional + global perspective and address the environmental, social and gender aspects around each topic)*

    a. Low-external input agriculture
    b. Organic farming
    c. Integrated pest management
    d. Biotechnology
    e. Precision technologies and Geographic information systems (applied to production and marketing)
    f. Producer-derived technologies/farmer-designed experimentation

- What is the potential of science and technology to reduce post-harvest loss and minimize waste? What can scientists and technologists learn from indigenous approaches to overcoming biophysical constraints to agricultural production?
- What role does diversification, including the use of new crops, as well as the greater use of neglected and underutilized plant species play in reducing risk and increasing productivity and profitability?
- Who carries out research on underutilized plant species and what partnership collaborations could be built? What are the nutritional characteristics and marketing opportunities?
- What is the potential of S&T to increase productivity through improved crop traits or innovative cropping methods in drought-prone areas and areas subject to above optimal temperatures?
- What is the potential of agricultural S&T to improve biofuel and bioenergy production?
- What is the potential for combining traits such as higher edible nutrient content and an improved ability to extract soil nutrients into crops with high yield capacity?
- What cropping methods (e.g., intercropping, crop rotations) achieve the dual goals of efficient nutrient use/cycling and high quality nutrient output for human consumption? What are the economic, environmental, nutritional and other costs/benefits of these approaches?
- What is the potential of S&T to improve nutrient cycling?
- What are the amounts and kinds of soil amendments we need? Is a continuation of past practices sufficient? Will more attention to the root-soil interface be necessary or beneficial?

- What is the potential of S&T to combat new or emerging pests and diseases? What are the most effective and environmentally benign means for dealing with plant diseases and pests?
- Can a better understanding of the microbiology of systems improve productivity?
- Do we need to make S&T more capable of modification by individual producers?

2. Nutrition, health and biosafety

- What nutrients do we need for a healthy life? Do advances in S&T actually lead to better nutrition and less hunger? When have advances in S&T decreased the nutritional value of food or weakened health?
- What investments do we need to make, if any, to improve nutrient composition of foods? For example, what germplasm should we use so that the diet of fishers is optimal? When is it more effective to focus on improving access to a range of nutritious foods, locally grown and/or harvested?
- What are ways in which existing or proposed S&T might compromise the health of producers, workers, and consumers – and how can this be avoided?
- Are transgenic products safe for human and animal consumption?
- What are the risks to human health, nutritional security and the environment posed by planting biopharmaceutical crops?
- What is the potential of S&T to improve food safety? What are the risks to food safety?

4. Natural resource management

- What role does natural resource management play in food security and the livelihoods of the poor?
- What are the knowledge, policy and institutional requirements for establishing effective sustainable management of the following resources?

    a. Water
    b. Fisheries
    c. Forests
    d. Rangelands
    e. Soil and land

- How could S&T help ameliorate degraded resources and help protect resources from further degradation? How could S&T help conserve biodiversity?
- What is the potential of S&T for improving energy and water efficiency in agriculture? What is the potential of S&T to reduce external and energy-intensive inputs?
- How can stakeholders better manage common resources, such as forest and rangelands? How can S&T aid in the better management of common goods, for example, the North Sea fish stocks?
- What is the potential of S&T to address multiple functionality, landscape- and eco-stewardship?
- How much land will be required to meet biodiversity, production and conservation requirements in 2020-2050?
- What are the ecological consequences (insect resistance, mortality of beneficial/innocuous insects and wildlife, food contamination) of

insecticide applications? What are the potentials of natural insecticides, growth inhibitors and pheromones in pest control? What are the consequences of herbicides?
- How have transgenic products affected the environment and what additional effects are likely to occur in the future?

5. Climate change and climate variability

- How are marine and inland watersheds affected by climate change?
- How can we increase the capacity of groups to deal with rapid change in their natural environment?
- Are the production systems in place today adequate to address projected extreme events in climate?

ENABLING ISSUES

1. Intellectual property rights

- How can we secure the intellectual property rights of the poor? What are the factors affecting the exchange of intellectual property rights?
- What are traditional/customary practices or inherent knowledge within communities that should be considered in the development of norms and laws on IPR? Can traditional knowledge be patented or copyrighted?
- When do intellectual property rights enhance or inhibit investment in agricultural research and development?
- What models ensure intellectual property rights protection for end users and by end users?
- How can we secure the intellectual property rights of the poor?

2. Trade, markets, and regulatory regimes

- What is the potential of S&T to improve the effectiveness of global, national and local market systems in stimulating market-oriented production, promoting local value-added processing activities, increasing rural incomes and improving local access to food?
- How does market access by small producers affect natural resources and endowments (forestry and fisheries)?
- To what extent are countries in competition with each other over products, such as coffee?
- What are the factors limiting price transparency? What institutional changes are critical to ensure price transparency?
- How can we increase the capacity of women in agriculture and other rural livelihoods (including forestry, fishing) to deal with rapid change in market and trade situations? How can we increase the capacity of other vulnerable groups to deal with rapid change in market and trade situations?
- How do trade and markets affect gender equity and the role of women? How does women's relationship with trade, markets, products and services affect household nutrition?
- What is the potential of S&T to contribute to the realignment of markets in Eastern Europe?
- What are the impacts of international regulatory obligations and standards (e.g., Cartegena Protocol, CODEX) on agricultural S&T in developing countries?

- How do existing provisions on international fisheries affect sustainable development? What will be the effect of the changes envisaged in the WTO negotiations?
- What are the implications of how governments certify, promote and regulate products?
- Are effective mechanisms in place to assess the risks and benefits of new and existing technologies?
- What are the constraints on the commercialization of products, e.g., regulations (including costs); IPR; national and regional human/institutional/financial capacity?
- What regulations create an enabling policy environment for environmentally sustainable S&T?

3. Information and communication technologies

- What have been the impacts of ICT on poverty and hunger?
- How can we become more effective at enhancing communication between researchers, institutions and producers? How can S&T help improve the quality of communication? How do we transform information into knowledge and knowledge into information?
- How can we facilitate an exchange of experiences with various technologies, and analyses of their respective economic, health and environmental costs and benefits, among agricultural workers and between workers, growers, independent producers, researchers, private sector and institutions?
- How can we facilitate the sharing of information and experiences between producers facing similar challenges in different parts of their country, region or world? How can information, communication and GIS technologies be used to assist small producers?
- How can we improve the dissemination of knowledge relevant to the sustainable development of resources (aquatic, land, etc.)?
- What are the barriers to using and accessing agricultural scientific and technological knowledge?
- What are the necessary enabling conditions in relation to policies, institutions, and markets, to ensure that small producers have access to the results of research and opportunities to adopt proven technologies and avoid harmful ones?
- What is needed to eliminate information and communication technology gaps, in terms of technical and human capacity? In situations where useful technology and resources are in one place and the need is in another, what kind of institutional and political arrangements can most effectively reconcile the gap?
- How can we create interactive knowledge networks to improve understanding and enhance exchange of ideas between the North and South?
- How can we provide weather forecasts to producers in a timely fashion in developing countries and what resources do they require in order to utilize the information?

4. Institutions and infrastructure

- What are the political and social structures needed to effectively use science and technology?
- What institutional arrangements effectively facilitate women's participation in agricultural research and development? What

arrangements help them realize the benefits of research and development?

- What are the constraints to research uptake by national institutions?
- What are the institutional and infrastructural factors affecting the management of land and water resources by producers? How do governance systems constrain forestry and fisheries management?
- Who defines risks and benefits and how do institutions react to these? Are institutions fully aware of the risks and benefits faced in the dynamic environments in which producers operate?
- How can institutions more effectively work with producers to understand their needs?
- Do we need fundamentally different institutes to address the diverse needs around agriculture?
- Do we have institutions that can recognize and address values (e.g., diversification, gender equity, nutritional security) other than maximizing production?

5. Land rights, land tenure

- How do accessibility, availability, land laws, and land tenure affect rural poverty and hunger?
- What is the role of land tenure in the access to and use of S&T?
- What is the status of women's property rights, especially to agricultural land? How does women's access to agricultural land affect the diffusion of science and technology?
- How has science and technology affected the use and protection of common property resources, especially women's access to common property resources?

6. Research and funding priorities

- What kinds of research need to be performed, where and by whom, to develop science and technologies that improve nutritional security and raise incomes?
- What are the research priorities in S&T; what level of investments is needed, what are appropriate roles for the public and private sector, and are public-private partnerships an effective way of doing research? What are potential pitfalls of such partnerships and how can conflicts of interest be avoided? How do (private) products vs. (public) methods shape the development of S&T and how should they be balanced?
- How can we determine research priorities given changing contexts (e.g., environment, social values, markets, and economic development)?
- What are effective ways to identify knowledge gaps and to design appropriate S&T interventions in natural resource management, production, food processing and consumer access to food?
- What are the necessary factors for S&T to actually produce a valuable product?
- How can we enhance the stewardship role that civil society organizations play in setting research priorities?
- Has the commitment to S&T declined nationally and internationally? If so, what are the causes?
- What is private sector likely to fund and not to fund? Where will funding by governments and other public sector organization be most effective?
- What is the needed balance of investments between technologies to improve food production and food traits and methods to improve access

to food by poor people through policy reform and institutional strengthening?

- How can we avoid the politicization of scientific research?
- What are potential benefits for donors and recipients from public investment in agricultural S&T?
- Are scientific and technological research priorities affected by subsidies and if so, how?
- What is needed to improve the gender balance in the development of, access to, and benefits from S&T?
- What is the potential of S&T to address problems derived from migration to urban areas?
- How are S&T research priorities affected by subsidies?
- What types of institutions are needed to fulfill the research needs?
- What percentage of the money spent on S&T has produced a valuable product?
- What are the contributions of agricultural S&T (including applied social sciences) to economic, environmental, and social development?
- What will drive investments in agriculture in the future?
- What do past efforts to reduce hunger through S&T tell us? Why was the response to the Green Revolution disproportionate in Africa and Asia? For example, did infrastructure differ? Did investment in public extension differ? How did these past efforts improve or undermine food security and well-being for different segments of the population and what lessons can be learned?