

Book Reviews

Global Research on the Environmental and Agricultural Nexus for the 21st Century: A Proposal for Collaborative Research among US Universities, CGIAR Centers and Developing Country Institutions. Report of the Taskforce on Research Innovations for Productivity and Sustainability. Office of International Studies and Programs, University of Florida, P. O. Box 113225, Gainesville, FL 32611-3225, USA, October 1995. Paperback. 160 pages + x.

Kenneth A. Dahlberg

Kenneth A. Dahlberg is Professor of Political Science and Environmental Studies at Western Michigan University. He was one of the early critics of the Green Revolution¹ and is currently working on strategies and projects to develop regenerative food systems at all levels - from the household to the international. One of these, the Local Food Systems Project, is assisting in the creation or strengthening of local food policy organizations in six communities around the US

Introduction

This publication includes a report and a set of proposals. The report is important reading because it gives a clear sense of current thinking in the public sector agricultural research establishment — national and international. It offers a fascinating examination of both the continuities in the basic assumptions of the establishment and its openness to examining new questions and issues. The report describes a number of important challenges facing agriculture as it moves into the 21st century. Unfortunately, and precisely because the report does not reexamine the basic assumptions and institutions of the establishment, there is little effective connection between the report and the proposals that claim to address the challenges of the future. Thus, there is a strong contrast between the rhetoric of the report and the substance of the proposal.

The report was prepared by a fourteen member Taskforce on Research Innovations for Productivity and Sustainability (TRIPS). The taskforce was co-chaired by Uma Lele of the University of Florida and the World Bank and Ronnie Coffman of Cornell University. All members have had extensive experience in working within the CGIAR network. The membership was reasonably diverse in terms of regions and disciplines, although there were no members who had expertise in biodiversity or climate change — two of the four research areas identified as crucial for future research. Also, there were only two women: one of the cochairs and one of the two resource people serving the taskforce. The taskforce was funded by the Rockefeller and Ford Foundations and grew out of a 1993 workshop sponsored by the University of Florida and Cornell University. Some 1000 copies of a draft of the Taskforce's report were distributed at the CGIAR International Centers Week in 1994 to solicit feedback — which was extensive. One can thus say that the report is representative of the views of the public sector agricultural research establishment.

Basic Elements of the Report

The “triple global challenge” of the 21st century according to the Taskforce is to address global hunger, environmental degradation, and population growth. To do this, the report argues that research is needed in four different program areas:

- enhanced productivity, food security, nutrition, and health;
 - sustainable use of soils, water, forests, and fisheries;
 - conservation of biological diversity in natural and domesticated systems; and
 - coping with an uncertain and fluctuating climate.
- In addition, it is stressed that these four areas need to be informed by two crosscutting research themes:
- farmer participation in research; and
 - policy analysis and socioeconomic research.

After describing in detail the need for this much broader research agenda, the report points to the decline in funding for national and international agricultural research funding and argues for a major new US commitment to help encourage a more general reenergizing and redirecting of international agricultural research.

Positive Aspects of the Report

There is a great deal of valuable information, discussion, and analysis in the report on the levels and types of public sector agricultural research that are needed in the future. All of this can all be read with profit as long as one recognizes that there is little effective connection between the discussion of needs and problems discussed in the report and the “solutions” proposed in the GREAN Initiative (see below).

In calling for a series of “second green revolutions,” the report recognizes the need for regionally and locally adapted research strategies and programs. The overall goal of these various new green revolutions is to move towards “sustainable productivity.”

As part of this, there is a need for interdisciplinary research that will “encourage adequate recognition of the role of women and the true costs of natural resource use” (p. 5).

As listed above, the agricultural research agenda is expanded to include important new topics, including nutrition and health, conservation of biodiversity in natural systems, and climate variation. The importance of farmer participation is also stressed and more policy analysis and socioeconomic research is called for.

The report also highlights a number of important priorities, including the need to address poverty and food security, the importance of local agricultural productivity in so doing, and the need to explore the linkages between global trade and the saving of natural resources. The report discusses a number of admirable “guiding principles” for its 21st century research agenda. For example, such an agenda “must address the needs of the small-holding, resource-poor farmers who were bypassed in the first Green Revolution” and “emphasis should be placed on the consumption needs of the poor” (p. 39).

Three specific challenges to priority setting are identified: 1) the need to develop a much broader approach to marginal lands, 2) the need to ensure broad-gauge adoption by poor farmers of relevant technologies, and 3) the need to clarify what is meant by sustainable agricultural development so that proper evaluation of progress towards it can be made. Unfortunately, only confusion emerges on this latter point (see below).

The discussion of the four proposed research program areas and two crosscutting themes is useful, but still strongly reflects the productivity biases of the establishment. Area #1 — productivity — has ten pages of discussion. A useful summary of current thinking is presented, but only two really new areas are added: the need for nutrition education and the need to include larger public health issues. Area #2 — sustainable use of soils, water, forests, and fisheries — has seven pages of valuable discussion. Area #3 — biodiversity — has only three pages, while Area #4 — coping with an uncertain and fluctuating climate — has only two. Each of the two crosscutting themes — farmer participation in research; and policy analysis and socioeconomic research — has three pages. There are many important observations and suggestions, particularly in the discussion of the two crosscutting themes. Again, it is unfortunate that there is no effective connection between these discussions and the operational aspects of the GREAN Initiative.

Considerable attention is given to evaluating the research strengths and weaknesses of the three partners identified for the proposed GREAN initiative: the US university system (read the Land Grant System), the CGIAR system, and the National Agricultural

Research Systems in the developing countries. Included is an excellent summary of the evolution of these systems and the new context within which they find themselves. Finally, there is an extensive review of current collaborative mechanisms between the three potential partners. These are evaluated both in terms of current inadequacies and the potential for more effective collaboration.

Weaknesses of the Report

There are a number of weaknesses to the report. At the broadest level, the report is based upon assumptions of Western and industrial superiority generally and of industrial agriculture and agricultural research in particular. The report does not question the basic approach that has been followed since World War II: of transferring “superior” scientific knowledge and technologies to the developing countries through the training of their scientists here, by creating industrial-style agricultural universities there, by creating CGIAR research centers there, and by running a series of “collaborative” programs that have until now been effectively dominated by industrial conceptions and priorities. Neither is there any questioning of the larger industrial institutions of free trade or intellectual property rights. Some acknowledgment is made of the need to reexamine land tenure systems and property rights.

One of the fatal conceptual flaws in the report (widely shared in our society) lies in the failure to recognize that current institutions — which are based upon functional specialization — cannot effectively deliver systems-based research or programs. This can be seen at two levels. At the broadest level, we have created an economy that is functionally specialized into various sectors: industry, agriculture, transportation, energy, finance, etc. At the research level, we have universities that are again functionally specialized by field and discipline. Colleges of agriculture represent an additional conceptual separation of production (agriculture) from the other parts of the food system. At whatever level, food systems include not only production, but processing, distribution, food access, food use (health, nutrition, and food safety), and the waste stream.² The report generally accepts current institutional patterns, both those of the larger society and those of the Land Grant, CGIAR, and National Agricultural Research Systems. No reforms in the structure of the Land Grant System or CGIAR are called for. No new curricula, nor any new systems-based organizations are called for. Only modest organizational and programmatic changes are called for — along with major increases in funding.³

The call for a set of “second green revolutions,” must be seen in this light. While the report reflects some learning from the mistakes of the first green revolution, it still misses the central point that it was the functional specialization and emphasis on produc-

tivity of the first green revolution that very predictably led to the "problems" identified in the report.⁴

Another fatal conceptual flaw is the continued reliance of the establishment (and the society at large) upon neoclassical economics and its underlying assumptions of economic growth and productivity — which all but preclude effective inclusion of the full and long-term environmental and social costs of agriculture into evaluations of its sustainability.⁵ What is needed is a fundamental shift in evaluative criteria from economic growth and productivity to maintaining the longer-term health and regenerative capacity of natural, social, and technological systems.⁶ While these two conceptual flaws are widely shared, there has been extensive discussion of them, not only in this journal, but elsewhere — something that points to another weakness in the report. That is, it shows only the barest familiarity with the more thoroughgoing critiques of industrial agriculture.

More specific criticisms can be made of the various sections of the report. In the analysis of the triple global challenge, there is little serious discussion of human population numbers, much less the need to include the global explosion of livestock — which now consume 38% of the world's grain.⁷ Much like the utility industry in the 1970s, which got locked into an expensive and ultimately self-defeating effort to meet unrealistically high demand projections for energy, the public sector agricultural research establishment accepts projected increased demand for meat uncritically and assumes that agriculture should and must meet the demand. Just as the utilities are still struggling to learn to include demand management and reduction along with greater conservation and efficiency, the many negative environmental and health costs of excessive meat production and consumption ought to suggest a similar approach for agriculture. This, once again, requires a shift to health criteria as the basic evaluative criteria.

Another major difficulty is that the report does not address the ways in which agricultural responses to the three global challenges need to be coordinated with efforts in other sectors — both conceptually and practically. Global change studies suggest the need to greatly reduce the use of fossil fuels, both by increasing energy efficiency and reducing demand. While the report suggests doing a number of useful studies of the climatic impacts of different kinds of cropping, cultivation, and land use practices, there is nothing on the need to analyze the relative energy efficiency of different agricultural systems, much less the relative energy efficiency of different types of food systems.⁸

In terms of the setting of research priorities, there are many nice "shoulds" mentioned in the text. Yet there is no discussion of how these are to be institutionalized. For example, it is stated that "firstly, research efforts should be based on considerations of the rela-

tive urgency of problems as viewed by the ultimate clients of technology, namely the rural poor in developing countries" (p. 38). Later on, one finds that it is the developing country agricultural research centers and colleges that will determine what those needs are. Similarly, "an ideal chain of command should be from the farmer to the scientist with local institutions, NARS, the CGIAR centers and US universities providing the necessary linkages between basic science and adaptive research" (p. 40). Yet this contrasts sharply with the top-down approach proposed later.

A whole essay could be written on the confusions found in the section on defining and measuring sustainability. Suffice it to say that rather than trying to understand and describe the health, adaptive, and regenerative criteria by which to evaluate the sustainability of different scale natural, social, and technological systems over different time horizons, the focus is upon "achieving sustainable productivity growth in agriculture" (p. 47) and on quantifiable measures of the most obvious and direct on-site and off-site economic and environmental costs (p. 49).

While offering a useful description of "the new playing field," the section on partners in international agricultural research illustrates some of the faulty institutional and structural analyses and assumptions that lead to the basic weaknesses of the "solutions" proposed in the GREAN initiative. One of these is a preference for top-down approaches carried out by very expensive and cumbersome institutions. Granted, there is an attempt to improve coordination among these institutions, but no serious consideration is given to what would appear to be the more appropriate and cost effective: a bottom-up approach emphasizing local institutional development that would effectively draw upon local resources and knowledge to actually help poor farmers improve their situation.⁹

Besides the major shift in institutional priorities that this would require, there appears to be another reason for not having considered this approach: a set of faulty analyses and assumptions regarding the greater economic efficiency of larger institutions. This is seen in a box (p. 91) describing how much greater economies of scope and scale in biotechnology research are found by building one large research lab that can house over twenty separate laboratories as compared to building twenty separate labs. The point made is that "all other things being equal, the unit cost per biotechnology innovation will be lower at Cornell than at a smaller university." At the simplest economic level, this is obvious, but there are a number of complications. First, all other things are rarely equal. Decentralized facilities may offer more benefits in terms of adapting research and training to regional needs. More importantly, there is the assumption that biotechnology innovation is the basic criterion that should be used to evaluate results. But what good is such innova-

tion unless it is actually applied in useful ways? This approach is penny wise and pound foolish because it does not evaluate how many of the innovations produced actually provide useful results in the field. However, to assess this requires one to sort out what is needed where, and which actions, policies, research, technologies, and institutions can provide such results.

By assuming such faulty economies of scale and scope, one ends up with a type of “trickle-down” theory that is much less likely to produce useful results than a bottom-up approach that is targeted at local needs. Among a number of such examples that are not discussed in the report — and one particularly relevant on this point — is the current experience in Cuba, where the necessity of drastically reducing imported pesticide and fertilizer inputs has led to what is probably the world’s largest effort to move to organic agriculture. In addition to extensive experimentation and a number of policy changes, over 200 decentralized and relatively low-cost biotechnology labs have developed sophisticated techniques that use local organisms to formulate and apply a wide range of locally adapted bio-pesticides and biofertilizers.¹⁰ The cost effectiveness of delivering useful and locally-adapted technologies that save millions and millions of dollars for farmers and reduce balance of payments drains on the national economy are clearly orders of magnitude greater than the “efficiencies” claimed for a centralized facility focusing upon innovations that may or may not be used and that generally maintain high levels of agricultural dependence upon fossil fuels.

One final problem particularly visible in this section is the working assumption that public sector agricultural research is and should be largely complementary to private sector agricultural activities both domestically and internationally. While reference is made to concerns expressed by “influential contemporary critics” that the US Land Grant system has been co-opted by agribusiness, only vague hopeful statements are made in response. The failure to systematically address these risks and to analyze which new constituencies public sector agricultural research needs to cultivate is another serious shortcoming.

The GREAN Initiative

The latter part of the publication turns to a new initiative that it is claimed will meet the various problems and needs earlier identified. Funding of \$100 million a year for the next 20-30 years is called for. However, recognizing the difficulties of obtaining such a commitment from Congress without demonstrating the effectiveness of the new approaches proposed, the Taskforce calls for foundation funding in the range of \$10-\$15 million in new money to launch what is termed “the GREAN initiative.” Why the Taskforce chose this acronym (based on the title) is not clear. It suggests in an ironic, but appropriate manner

that the Taskforce doesn’t quite know what green really is.

The four basic research areas and two crosscutting themes have already been discussed (see above). As mentioned, the guiding principles for this research include encouraging true tripartite collaboration, assigning high priority to problems perceived as needing attention by the national agricultural research systems (NARS) in the developing countries, and by insisting that research results be translated into adoption. It is also stressed that the initiative “is not intended to substitute for, but complement the existing programs of research and application” (p. 140).

As indicated above, the ways in which these proposals are structured will not effectively lead to the results that are desired. Several reasons for this have already been discussed, including the Taskforce’s failure to critically question the top-down and functionally specialized institutional structures of the establishment and its complete reliance upon neoclassical economic assumptions. Both of these make the kind of systems-based approaches required for dealing effectively with hunger, environmental degradation, and population problems almost impossible. Compounding this is the conceptual confusion the report exhibits regarding the dimensions and requirements of sustainability.

Other failures to link the generally useful review of problems to equally useful proposals for action include a particularly ironic failure of the Land Grant system to analyze and extract the many important lessons to be learned for US rural development from their long experience in working with various development agencies on rural development overseas. Equally ironic (and telling) is the failure of the report to consider the participatory approaches and institutions that have been used to encourage sustainable agriculture — both within the US and in the developing countries. This can perhaps be explained in part by a reluctance to challenge those quarters of the Land Grant system and the agribusiness world that are hostile to sustainable agriculture and its institutional, curricular, and policy requirements. At the same time the Land Grant System has adopted much of the rhetoric of sustainability.¹¹

The report, and especially the GREAN initiative, would have benefited from a thoughtful examination of the various localized and participatory institutional approaches used in the US and in the developing countries. Valuable lessons can be learned from USDA’s Sustainable Agriculture Research and Education Program (SARE). Central is the development and use of local leadership by setting up regional administrative and technical advisory committees that include not only farmers and ranchers seeking lower input and more environmentally friendly approaches, but scientists and public, private, and nonprofit representatives.

Other valuable lessons can be learned from the institutional experience in the nonprofit world — both in the US and in the developing countries — where numerous local, regional, and state groups are promoting sustainable agriculture and sustainable food systems.

Prior to considering seriously the proposals put forward in the GREAN Initiative, any foundation or other funder should require that the proposals be reworked based upon a thorough review of the lessons to be learned from the experience of non-profits, NGOs, and SARE in using participatory processes to promote sustainable agriculture. This would be a challenging exercise — but exactly the kind of thing that ought to be a central part of a genuinely effective set of proposals. The challenges relate to the great political problems that sustainable agriculture proponents in the developing countries face in terms of trying to get research and extension that is appropriate, locally-adapted, and relevant to the needs of small and poor farmers. Such a review should be done by a non-establishment group or a group with strong representation from the various non-establishment perspectives. After coming up with their results, it would then be useful for this review team to work with the original Taskforce to try to make such bottom-up and participatory approaches a central part of a revised GREAN Initiative. Such a review would also help the GREAN initiative avoid duplicating existing efforts and trying to reinvent the wheel.

The other suggestion for improving the initiative relates to the “pilot” phase proposed — which is to focus initially only on one of the four research areas. It is crucial that this *not* be the traditional area of strength of the establishment: production. Rather, whatever new money that is generated by the initiative should be used for one of the other three research areas. To my mind research area two — sustainable use of soils, water, forests, and fisheries — is the one where a new focus by the establishment would be most productive both in aiding small and poor farmers and in moving the establishment’s research agenda towards sustainability. In doing this, however, it is important to include policy research on how to improve land use and land tenure systems and on how to change current approaches to natural resource management to make them more sustainable. Climate change and biodiversity issues and expertise also need to be included here. This still leaves largely unaddressed for now those research agenda items like nutrition and health that might help move the establishment towards food systems approaches and more localized approaches.

The above two suggestions offer important ways to improve the GREAN initiative. They would not, however, address the larger problems and failings discussed above. That is a much larger process, one involving a more general rethinking of agriculture, the Land Grant system, its relationship to the private

sector, and how and what kind of restructuring would bring the system back to where it serves the larger public interest in ways that are socially just and environmentally sustainable. This in turn is part of a larger national and international process of trying to find ways to achieve sustainable development in all sectors of society while maintaining the regenerative capacities and diversity of our natural and social systems. It is only when agriculture starts placing itself in this larger strategic setting of sustainable development and begins developing approaches based on its requirements that we will truly be working on “green” initiatives.

Notes

1. Dahlberg, Kenneth A. *Beyond the Green Revolution — The Ecology and Politics of Global Agricultural Development*. New York: Plenum, 1979.
2. For a full discussion of the concept of food systems, see Dahlberg, Kenneth A. “Regenerative Food Systems: Broadening the Scope and Agenda of Sustainability.” In *Food for the Future: Conditions and Contradictions of Sustainability*, ed. Patricia Allen. New York: John Wiley, 1993, pp. 75-102.
3. Contrast all of this with the thoughtful recommendations of James H. Meyer; “The Stalemate in Food and Agricultural Research, Teaching, and Extension,” *Science* 260 (14 May 1993): 881 & 1007 and James H. Meyer, *Transforming the Land Grant College of Agriculture for the Twenty-first Century*. University of California Printing and Reprographics Services, Davis, 1995.
4. The phrasing of the report is as follows: “Yet the Green Revolution, like all revolutions, brought its own problems. It bypassed millions of resource-poor farmers and had unintended environmental and social consequences.” (GREAN, 1995: 13). In spite of such language, early critics of the then being created Green Revolution such as Carl O. Sauer predicted that there would be exactly such consequences and argued vigorously against the high yielding variety (HYV) approach being developed by plant breeders without first thoroughly evaluating the social, economic, and environmental consequences. For details, see E. K. Oasa and Bruce H. Jennings, “Science and Authority in International Agricultural Research,” *Bulletin of Concerned Asian Scholars*, 14: 32, 1982.
5. Among others, see Herman H. Daly. *The Steady State Economy* (2nd ed.). Washington, DC: Island Press, 1991; Robert Goodland *et al.*, “Burden Sharing in the Transition to Environmental Sustainability,” *Futures* 26 (March 1994): 146-155; and Kenneth A. Dahlberg, ed. *New Directions for Agricultural and Agricultural Research*. Totowa, NJ: Rowman and Allanheld, 1986.
6. For a discussion, see Kenneth A. Dahlberg, “World Food Problems: Making the Transition from Agriculture to Regenerative Food Systems.” In *Building Sustainable Societies: A Blueprint for a Post-Industrial World*, ed. Dennis Pirages. Armonk, NY: M. E. Sharpe, 1996, pp. 257-74..
7. World Resources Institute. *World Resources: 1992-93*. New York: Oxford University Press, 1992, pp. 276-277.

8. Earlier energy studies done in the 1970s (which did not include the energy costs of waste disposal) concluded that the US food system required 10 calories of energy input for each food calorie delivered on our plates. The breakdown was roughly one third of the inputs in the production phase, one third in the processing and transportation phase, and one third in local marketing and household refrigeration and cooking. See John Steinhart and Carol Steinhart, "Energy Use in the United States Food System," *Science* 184 (1974): 307-316.
9. Among many examples, the Sustainable Agriculture Program of the International Institute for Environment and Development (IIED) publishes *PIA Notes*, which shares a wide range of experience and thinking about local "participatory learning and action." This grew out of their earlier work on rapid rural appraisals. In addition, there are various networks that share information and even seeds. Information sharing is done by Volunteers
- in Asia, which publishes the *Appropriate Technology Sourcebook* as well *ATTRA* (Appropriate Technology Transfer for Rural Areas), which operates an 800 number for those interested in technical assistance on sustainable agriculture. *Echo Development Notes* is the newsletter of an international information clearing house focusing on local level self-help ideas for increasing self-reliance. It also offers to development workers trial packets of seeds for a wide variety of vegetables, forages, and cover crops.
10. See Peter Rosset and Medea Benjamin. *The Greening of Cuba: A National Experiment in Organic Agriculture*. Oakland, CA: Institute for Food and Development Policy, 1994.
11. For a discussion, see Kenneth A. Dahlberg, "Sustainable Agriculture: Fad or Harbinger?" *BioScience* 45 (May 1991): 337-340.

***Women, Poverty and Resources* by Poona Wignaraja, New Delhi: Sage Publications, 1990, 241pp.**

Nancy W. Axinn

Nancy W. Axinn is an independent consultant who has worked extensively with programs for rural women in Africa and South Asia. She reviewed, as a consultant to UNICEF, FAO, and the Ford Foundation, many of the South Asian programs discussed in this book, including nearly 10 years of intermittent activity with the program for Production Credit for Rural Women in Nepal.

This is one of the first books to analyze in some depth the programs that address the situation of the very poor women in the world who are frequently "targets" of development activities. Moreover, it has been written by an experienced practitioner in the development field. Poona Wignaraja, a Sri Lankan, has worked with various international and UN agencies for more than 25 years. He served as Secretary General for the Society of International Development for more than 6 years, and has authored a wide range of books related to development issues, particularly in South Asia.

Richard Jolly, UNICEF Deputy Executive Director, states in his Foreword to the book, "The solutions to women's poverty can only come from actions by women's groups and by their better organization. Individuals cannot address the problem of their powerlessness; this is only done through collective action. The organization of women around issues of common concern is a prerequisite for effective and sustainable economic and social development. The provision of credit in the absence of this organization is not developmental, but further erodes self-respect, dignity and collective action and leads to depletion of even the resources and assets already available to poor women." (pp. 11-12)

Wignaraja has built on his long experience and understanding of poverty issues in South Asia in his review of innovative approaches to women's poverty in South Asia. While the Grameen Bank program in

Bangladesh has gotten the most international attention, a number of other outstanding programs, including the Production Credit for Rural Women (PCRW) in Nepal, the Bangladesh Rural Advancement Committee (BRAC), and the Working Women's Forum (WWF), the Self-Employed Women's Association (SEWA), and The Fund for Poor Women, all in India as well as the Baldia Home Schools in Karachi, Pakistan are described in an early chapter of this book. The detail in the analysis of each of these programs reflects extended interaction, as well as a considerable time period of involvement, of the author in the effort to identify significant factors that contribute to each program's success.

In his next chapter, which is a detailed analysis, Wignaraja reviews 11 lessons learned from these case studies, and identifies some of the essential features that are key to the success of these kinds of programs. These features include recognizing that the implementation is not by the traditional bureaucracy but by a new kind of poor people's organization in which the poor become part of the participatory process. Also, a continuous dialogue with participatory monitoring is needed at the village level to develop a responsive problem solving approach. Further, the social infrastructure, including health and nutrition, has not been separated from the economic process. The village programs are planned from the bottom up, starting with the poorest. And, the process has been initiated

with personal savings of the poor women themselves, and with essential small grant funding. In his description of the cases that leads to the analysis, Wignaraja reflects on the qualities of leadership and commitment required for initiating these programs, as well as illustrating ways in which traditional bureaucracies were circumvented to permit successful achievement of program goals.

The author then moves from these lessons to concepts, making the point that "it has to be recognized that good theory and practice go hand in hand. The theory has to be abstracted from the reality, and the practical methodology has to flow from this theory" (p. 114). This is an excellent analysis of the interdependence that exists in nearly all South Asian villages, and impinges on the opportunities for success with programs for poor women. "Disunity among the poor (women and men) arises from asymmetrical dependency relationships that tie the poor individually to the rich. This, then, generates dependency attitudes and a vicious circle is initiated with disunity built into it. In the case of poor women, the patriarchal system creates dependency on men." (p. 116). And, he continues, "under these circumstances, before the poor women can benefit, their dependency on the rich has to be reduced by giving them independent staying power in a conflict-ridden social environment." (p. 117). Suggestions for ways to break out of this vicious circle follow, concluding with the point that "the process cannot be predetermined from the top or by outsiders." (p. 119).

This analysis chapter also includes the author's suggestions of steps to take in initiating a participatory action-research experiment. It includes a discussion of the role of the animator, and of evaluation criteria, including attitudinal criteria as well as criteria for the social aspects and the economic base. This chapter concludes with the note that in terms of evaluation there is, "finally, the question of the fundamental task — empowerment of poor women. The test for this is

whether the principal process of exploitation, of which poor women are the major victims, is being reduced by virtue of the increasing strength that the group derives from the process, and whether conditions are being created to move towards asserting the group's power as direct producers in society and for enjoying the benefits." (p. 139).

Also included in the book are descriptions of a number of innovative approaches in Africa, reviewing programs in Kenya, Tanzania, Zimbabwe, and Burkina Faso as well as two new programs in Colombia and Mexico in Latin America.

The book concludes with two chapters addressing the issues from the donors' perspectives. Wignaraja points out that donors are not yet "equipped" to support participatory processes that enable vulnerable groups to move into sustainable development activities. He notes "most donor procedures, as currently practiced, seem to create dependence and then suddenly donor support is cut off, destabilizing the fragile process." (p. 202) He concludes this book with a discussion of ways in which collaboration between sensitive donors could support programs built on local knowledge and local resources that would lead to increasing poor women's access to resources.

This is an important book because it addresses the issues with real understanding and sensitivity. It is written by a man who has long experience in the donor world, and therefore, hopefully, more influence on the donor organizations than some other people might have. It reveals a better understanding of the issues facing poor women than many available publications, and moreover, by reviewing some of the aspects of successful programs offers proof that there are ways to successfully address the problems. The South Asian context is perhaps more complex than other geographical areas of the world, but Wignaraja's understanding of that enriches the topic and suggests there are ways for programs in all parts of the world to address the problems of women's poverty.

***Population and Environment: Rethinking the Debate*, edited by Lourdes Aripze, M. Priscilla Stone, and David C. Major. Westview Press and Oxford, 1994. Pp. 352. ISBN 0-8133-8843-0.**

K. Ravi Srinivas

As a free-lance journalist, K. Ravi Srinivas writes on such topics as the impacts of biotechnology, issues in science and technology, sustainable agriculture, environment and development, and reproductive rights. He has published in *Biotechnology and Development Monitor*, in *Economic and Political Weekly* and elsewhere.

The increasing population, particularly in developing and least developed nations and the impact of this increase on natural ecosystems is often cited as a major problem. Scientists (e.g., Paul Ehrlich), UNFPA, groups active in environmental movement (Sierra Club, Audubon Society), NGOs working on population issues (Zero Population Growth, Population Action In-

ternational) have highlighted this issue. But their claims have been challenged by scientists (e.g., Barry Commoner), many feminist groups, and third world NGOs. This issue was given much importance during the preparations for the Rio conference. (Interested readers, can refer to the articles, bibliography, and documentation available from Betsy Hartmann, Director,

Population and Development program, Hampshire College, Amherst).

The report prepared for UNCED by Indira Gandhi, Institute for Development Research, Bombay argued that contrary to the conventional wisdom, consumption patterns of the population in industrialized nations cause much more damage to the environment than the population of the developing and least developed nations. Barry Commoner has examined the role of technology and production processes in environmental destruction ("Rapid Population Growth and Environmental Stress," *International Journal Of Health Services*, Vol. 21, No. 2, 199-227). Patricia Hynes has provided a feminist critique of the much quoted equation developed by Paul Ehrlich, to assess environmental impact (*Taking Population Out Of The Equation*, Institute On Women & Technology). Thus the debate on the population and environment relationship has moved from alarmist perspectives. This volume addresses the population-environment issue by providing theoretical work and empirical evidence that call for a rethinking of many of the assumptions that underlie the debate on population and environment. In 1992, the Call for a New Approach on Women, Population and Environment given by the Committee on Women, Population and Environment was endorsed by many women activists and third world NGOs. This book is the outcome of a project sponsored by the International Social Science Council, the Social Science Research Council, and Development Alternatives with Women for a New Era (DAWN).

Instead of studying the implications of population processes merely in terms of aggregate projections and historical trends, the essays in the volume study various aspects that are often ignored. The articles in the volume provide new perspectives that help the reader to get a better understanding of the population-environment dynamics.

An excellent and succinct overview of the various dimensions of the population environment issue is provided by L. Aripze and M. Velazquez. They point out that no single factor dominates the changing patterns of environmental loadings across time. After surveying much of the empirical work and theoretical work relating to impacts of population, they conclude that "... the concept of humanity seems more germane than that of population" (p. 36).

Wolfgang Lutz's article analyses the dynamics of changing population patterns. He provides a discussion on the ten different projections of population sizes in 1990, 2050, and 2100 to understand the potential impacts of the projected population sizes. He analyses the linkages between population growth and carbon emissions under different scenarios and emphasizes the limitations of using only aggregate growth in populations of different countries to estimate the carbon emissions. He shows the limited usefulness of most

calculations on the increase in carbon emissions on account of population growth. He acknowledges the complex interactions between sociocultural, economic, and natural changes and tells us that we have a very limited idea about potential impacts of population growth on the environment. He stresses the need to model specific case studies to take into account the time horizon of at least a few decades and the role of feedbacks from environment to population. Lutz recognizes the role of women in lessening environmental destruction and argues for enhancing the status of women, particularly providing education to women.

Gita Sen, in her article "Women, Poverty and Population: Issues for Concerned Environmentalist," describes the population-environment and development debates and highlights the limitations of the ideas and actions of various agencies and environmental movements. Her article provides six major lessons from population programs and urges the environmental groups to focus on gender relations and environment. While Sen's article could provide a better understanding of the population, environment, and reproductive rights nexus, one wonders whether it is really possible to build the sort of coalitions and agendas that many feminist groups believe that most of the populationists advocate, if populationists, while paying lip service to reproductive rights and empowerment, advocate and put forward plans that virtually negate them in practice. Bina Agarwal's essay, "The Gender and Environment Debate: Lessons from India," provides an interesting critique of ecofeminist perspective on women, nature, and development. Her article highlights the impacts of various processes like erosion of common property resources, environmental degradation and statization, and privatization of access to natural resources for meeting the needs for survival and sustenance. She analyses the role of movements like Chipko, without romanticizing them.

The articles in Part Two focus on specific issues, like agricultural intensification, land degradation, deforestation, urbanization, and extraction of resources. Richard E. Bilsborrow and Martha Geores review the literature on population, land use, and environment and on the hypothesis put forth by Boserup in her well known work, "Conditions of Agricultural Growth." Focusing on the relationship between population, land use, and agricultural technology, they show that although positive relationships exist between population growth and land intensification, the relationships are complicated by other inter relationships. They argue for more research on small geographic areas/communities and household level analysis.

Mary Tiffen *et al.*, provide evidence from Machakos region in Kenya and conclude that "The Machakos experiences between 1930 and 1990 lends no support to the view that rapid population growth leads inexorably to environmental degradation." (*Popu-*

lation Growth and Environmental Recovery; Policy Lessons from Kenya, Gate Keeper Series No. 45, IIED, London, 1994.)

The first part of Peter D. Little's article inquires into the problematic concept of desertification and various notions and assumptions on desertification. While part two of the article provides a framework to examine the relevant variables, the next part is based on case studies of desertification from Africa (Kenya, Western Sudan) and India (Rajasthan). The final section outlines an interesting and informative agenda for future research on desertification. The two important disclaimers mentioned by Little highlight the sheer complexity of the issues.

Drawing on case studies of deforestation, Marianne Schminla in "The Socioeconomic Matrix Of Deforestation" problematizes the definition of deforestation and suggests further research on social dynamics at local level interactions. The Socioeconomic matrix is useful to understand the micro-macro level linkages in deforestation. Another article in this volume, by Alberto Palooni, explores the relationship between population and deforestation by using quantitative and meta analysis.

Stephen G. Bunkers in "Problems of Population and Environment in Extractive Economies" questions the simple assertions on population growth and resource depletion. He argues that in the global resource depletion economy, extraction for export often impoverishes the environment and local population. Factors like technological choices, corporate strategies, and national and international relations are too important to be ignored for theoretical understanding and for

evolving practical solutions. The environmental cost of mining and related processes is not taken into account in determining the prices of the raw materials. As the competing extraction dependent economies are unable to include environmental costs in the price of raw materials, low prices stimulate further consumption and more resource depletion.

Bryan R. Roberts in "Urbanization and Environment in Developing Countries: Latin America in Comparative Perspective" argues that urbanization *per se* does not determine environment impact. Other variables like consumption needs and pattern of economic growth play a crucial role in determining the impact of urbanization on environment. He points out that the increasing role of service sector need not necessarily result in less resource depletion as electronic goods, and most of consumer goods, are not environmentally benign. After examining the urbanization trends and environment in 19th Century Europe, he concludes that industrialization is the crucial variable to understand environmental change in urban areas. Rapid urbanization in developing countries and integration into the global economy are not to be wished away and policies to anticipate and lessen the environmental impacts of urbanization are necessary. The concluding chapter provides a summary of the important perspectives found in these papers and offers interesting thoughts for future research.

This book provides many interesting insights and explores the dimensions of the relationship between population and environment. Undoubtedly, this volume is a significant contribution to the population and environment debate.

***Against All Odds: Rural Community in the Information Age*, by John C. Allen and Don A. Dillman. Boulder: Westview Press, 1994. 238 pp.**

Andrew Zekeri

Andrew A. Zekeri (Ph.D., The Pennsylvania State University) is an Assistant Professor of Rural Sociology at Tuskegee University. Dr. Zekeri's areas of interest in which he has published refereed journal articles are international agricultural development, rural development policy, community economic development, natural resources, sociology of agriculture, and career outcomes of former agricultural students from southern land-grant universities. He is currently studying rural housing needs, homelessness, and community economic development in Alabama's Black Belt counties. In addition to his teaching and research responsibilities, Dr. Zekeri also works with the National Resources Center on Africa at Tuskegee University.

One major question addressed in contemporary essays and research on the community in rural areas is, "How is it possible for the community to persist in modern society?" This question relates to the essential elements of the community. The book by Allen and Dillman answered the question and helped to clarify those elements. The book (a rural study series of the Rural Sociological Society) does much to further our understanding of the role communities play in a rapidly changing global system as we come to the end of

the twentieth century. The messages Allen and Dillman convey are that interaction is a core property of the community, one without which community as defined from virtually any sociological approach, could not exist. This is indeed a clear support for the interactional or field-theoretical approach to the community. Professor Kenneth P. Wilkinson and his students' work all explicitly support this view. The second message is that rural community residents are not powerless in the face of global restructuring. With an

understanding of the historical and contemporary forces that shape their communities, rural residents may harness changing conditions in their favor rather than fall victim to them.

Against All Odds represents a fine scholarly work on the subject of rural communities. It is a major contribution to the search for and explanation of community that has been a primary concern of scientists for over 100 years. This book is a most instructive treatise on the subject, focusing directly upon the historical progression of community in America and social change. Herein rural sociologists John Allen and Don Dillman provide a much needed contribution to the tradition of community ethnographies of the first half of this century in the United States, a tradition that gave way to comparative statistical analyses in the 1960s

My highest praise for *Against All Odds* is for its contribution to the familiar (and, I think, overdrawn) "demise of community" argument. In this well written book, Allen and Dillman locate the essence of community in the relationship between space and social activity. As some community scholars have contended all along (for example, see Wilkinson, 1991), one of the authors' finding is that "community, as an umbrella group that guides behavior, is alive and well in Bremer." This is a major contribution to the literature and it discredits the argument by some sociologist that community is only a romantic term for a way of life long since passed in the progress of civilization. Another praise for the book is that it examines a long-standing question in the sociology of community. Tilly's (1973: 209) question, "Do communities act?" asks about the persistence of the local community as a unit of mobilization in an increasingly global society. Clearly, much action occurs in localities, but is it or can it be, the community that mobilizes? From Allen and Dillman's study in Bremer, the answer is a much qualified "yes." The final praise for the book is that the

analysis is pursued with craftsmanship, the method of data gathering, community theories employed, and analytical strategies are clearly described, and the writing is a joy to read. The ultimate contribution may be small, but it was worth doing.

The book is divided into thirteen chapters that are tightly written. Apart from the first two chapters, which provide an overview of the community, each chapter concludes with a summary. One of the strengths of Allen and Dillman's work is found in the third chapter. Here they provide a framework for the analysis. The authors' contention that a synthesized theoretical framework should be used for clear understanding is well taken. This chapter is extremely informative. All these qualities make it an excellent reading for an undergraduate course on rural community.

For rural sociologists and other students of the community, *Against All Odds* is must reading. As a clear, cogent, and a much needed ethnographic study on rural communities, it fills a void in the sociological literature on communities. The book makes a strategic contribution of a type needed in many specialized areas of sociological investigation. The way is cleared for more systematic future research and perhaps for a seminal treatment of the community. The quality of the research and major contributions are sure to make this book one of the mostly widely cited of those currently available on the subject. A bonus is the "dedication" to Professor Kenneth P. Wilkinson, who posthumously continues to have a powerful voice in the study of rural communities. *Against All Odds* is accessible and informative.

References.

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 Wilkinson, Kenneth P. 1991. *The Community in Rural America*. New York: Greenwood Press

***African Development Perspectives Yearbook 1992/1993 Vol. III: Energy and Sustainable Development*, by Hans H. Bass et al., Westview Press, 1994. 683pp.**

Paul W. Armah

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The aggravating social, political, and economic crisis on the African continent forces institutions, organizations, scientists, working groups, and all others involved in African development affairs to intensify analytical and conceptual work on alternative development approaches for Africa. Over the last twenty years, energy has prominently been an urgent issue in the economic development of Sub-Saharan Africa. Globally, the focus of the energy issue has changed over

time from economic scarcity ("oil crisis") to environmental consequences of fossil fuel consumption (greenhouse effect). However, the African "double energy crisis" is still dominated by the scarcity problems. While the commercial sector in most sub-Saharan African countries highly depends on scarce oil imports, the rural population mostly relies on traditional energy sources like firewood, dung, and waste, which also become scarce with growing population pressure. Con-

fronted with these scarcity problems, energy policy in African countries has to consider environmental degradation as well. In this context, the issue of sustainability gains significance in the economic development. However, in order to sustain the development path, the environment has to be handled with care.

Building upon this background, this yearbook inquires into several dimensions of energy and sustainable development in Sub-Saharan Africa. While certainly not the last word on this issue, the book raises many relevant points, counterpoints, and strategies that help to bring the field of resource and environmental issues back to its agricultural roots by providing a comprehensive and integrated exposition of conceptual and empirical issues related to Africa agriculture, economic development, energy, and the environment.

This yearbook, written by the Research Group on Africa Development Perspectives at the University of Bremen, is organized into eight units. A total of forty-one coauthors and eight editors contributed to the book. With so many energy and environment issues based on different country studies, consistency and continuity across all the units is a major challenge. The coauthors and editors met this enormous challenge with good success. I was particularly impressed with the rigor, consistency, practicalities, and relationships across all the eight units dealing with diverse energy and sustainable development issues. Each unit also provides rich and insightful local, and regional information so that all of the units are interrelated and complementary. While well structured, of course, with forty-one authors, no one could expect much individual personality to shine through.

The first introductory unit deals with the general significance of the sustainability-concept for African countries and is divided into four parts focusing on specific energy-related issues. It analyzes the concept of sustainability by using the "eco-development" approach, the Brundtland Report, and the criticisms of its basic perspectives. The unit also discusses three main theoretical debates on alternative economic strategies for Africa: (1) main stream economics, (2) the basic needs/structuralist approach, and (3) the transforming institutionalist approach. The introduction does a good job of putting the reader in position to understand the conceptions of sustainability as they appear throughout the book.

The basic thrust that the coauthors used in writing this yearbook is that Africa with its rich endowments regarding energy resources could benefit a lot from strategies that relate energy sector adjustments to overall structural and sectoral reforms. As this review specifies, unit two of the yearbook does in substantial detail what the coauthors claim it does — it provides the necessary elements of a new energy strategy for Sub-Saharan African countries. In particular, it shows that any multinational, regional, and subregional coopera-

tion and coordination of energy strategy must start with a clear statement of objectives and a discussion of policy instruments and processes at the level of national decision-making on energy policies. One might be tempted, because of special strategy interests, to turn directly to one of the special strategies. However, to get the full benefit and insight of all the strategies, the conceptual background in unit one should be read first. This is especially beneficial to those without strong knowledge and training in environmental, energy, and sustainable development in Africa.

In unit three of the yearbook, seven authors with far-reaching experiences in the field of energy cooperation focus more closely on different modalities of bilateral, multinational, and international energy cooperation with Africa. They discuss the crucial question of how international support can be successful regarding the transfer of modern and sustainable technologies and energy concepts. In particular, past and current policy strategies are described, bottlenecks of technology transfer concerning renewable-energy-resources are unveiled and discussed as well as various concepts and their shortcomings. Some general lessons that are to be learned with respect to cooperation efforts in rural energy production in Africa are also presented. Given the difficulty of creating an energy cooperation in Africa, the authors present a NGO-developed methodology that enables rural African people to articulate their most pressing problems and organize proper solutions in self-determined ways. More importantly, the third unit shows the first encouraging experiences and results with this bottom-up approach in Kenya.

In units four and five, energy sources and their use in agriculture and in households are scrutinized with regard to existing potentials concerning a transition towards sustainable energy systems. Of course, one important area that rural African people can tackle themselves on local and regional levels are the approaches to energy-related agricultural techniques and the management of energy resources (such as trees). In this regard, unit four practically addresses the rural energy issues and agroforestry programs in Sub-Saharan Africa very well. The unit develops a "new agroforestry" concept that recognizes trees as a multipurpose resource in land-use systems and not only as a simple answer to wood fuel shortage. It also pleads for more intelligent methods of agricultural production in full awareness of the riches of traditional local knowledge. An examination focusing on household and the role of women and their energy resources for private households is discussed in unit five. Although the unit defines sustainable development as "the realization of potentials under limitations" (p. 400) and provides a range of approaches that aim at sustainable development of African households energy system, it fails to recommend "minimum safe conditions" for sustainability, such as maintaining the total natural capital

stock at or above the current level (i.e., investing in "environmental insurance"). The principal challenges that the authors failed to address and that future researchers and policy makers may have to pay attention to are how to incorporate ecosystem dynamics in the analysis of sustainable development in Africa, how to quantify environmental values and account for them in local, national, and regional economic performance measures, and how to evaluate "premiums" worth paying for in the form of environmental insurance.

The last three units of the yearbook contain detailed up-to-date information about recent development, ongoing events, and news from Sub-Saharan African countries as well as several book reviews and notes.

As one would expect in a volume covering so much ground with so many contributors, this yearbook is a mixed bag. However, I believe this yearbook is a useful reference for researchers, economics students, and policy makers interested in environmental issues related to sustainable development in Africa. It also makes a very positive contribution toward meeting the need for a comprehensive "bringing together" of energy and sustainable development from an environmental perspective. Most of the material presented is correct and conveniently arranged. Indeed, the editors have set out to assemble a reference book on current energy, environmental, and sustainable development issues in Africa and they have largely succeeded.

***Changing the Boundaries: Women-Centered Perspectives on Population and the Environment* by Janice Jiggins. Washington, DC and Covelo, CA, Island Press, 1994. ISBN 1-55963-260-7 (paper).**

George H. Axinn

Readers who have seen life from the perspective of the disadvantaged will appreciate what Janice Jiggins is thinking about when she uses the word boundaries in the title of her exciting new book. Those whose culture, whose society, whose economic status, or whose political identity have caused boundaries to contain the limits of their lives will understand. And for professionals concerned with human development and human values, this volume offers the understanding and insights of a scholar-practitioner who is also an advocate.

The author starts right off in her preface by taking on programs in both population and the environment.

Policies driven by demographic data, applied uncritically without reference to the poverty that makes it rational for people to choose larger families, tend to lead to interventions that are totalitarian and inequitable in effect and, because of the backlash they provoke, ultimately counterproductive.

Further,

... environmentalists with too little exposure to the developmental experience of the past half century seemed all too eager to save large mammals and rain forests and too little concerned about people's role in managing natural and agricultural resources sustainably for their own survival. (xv)

She goes on to point out that, "The scientific study of the environment and the rigor of demographic analysis must be complemented by the insights of the social sciences into the contextual, contingent, and diverse ways in which people and societies shape their futures and adapt to circumstance." Then Jiggins goes on to illustrate her concerns with a series of pithy chapters whose titles capture their content. A reader can move in Part I from "Why Women's Perspectives Matter," to

"The Game is Not Fairly Divided." Then in Part II she presents "Do We Know What's Going On," "Food and Agriculture: Is there Room to Maneuver?" and "Energy and Trees: Where to Women Really Fit In?"

And after that, Parts III, IV, and V get even better. These are full of actual case examples relating to the education of women and girls, an exploration of reproductive health, and women in relationship to agriculture and natural resources. Jiggins' critical and revealing analysis of the case material, selected from many different parts of the world, puts power in her argument. It leads her to some of the conclusions quoted below:

For many women, their experience of life and the way they relate to people and the natural environment bring a different vision of the relationship between physical and human resources. Women's vision includes nurturance rather than control, the management of networks of relationships rather than hierarchical dominance, and a concern for future generations as a guiding principle for today's decisions. (7)

Women in their daily lives are the ones who manage the relationships that bring biological and socioeconomic phenomena together within the basic units of family and community life . . . The development of women is not an option; it is the essential condition of sustainability. (13)

Women thus are linked to three contrasting, indeed contradictory, metaphors of change. The labels, notably, do not encompass the relational nature of gender. Women are treated as if they were actors independent of their relationship to men and to the context in which they live. In addition, the labels leave no scope for self-determination, the potential for women to change gender relations and shape the

future on their terms. In asking whether we know enough about what is going on to reach for crisis-driven policies, it is well to remember how profoundly the debate is marked by contrasting metaphors and models of the nature of reality . . . (63)

In a chapter entitled "Green and Just," Jiggins points out that "There can be no sustainable communities, however, where the goods and services generated by women are treated as cost-free, where the value of women's contribution is appropriated by men and the state, or where women's agricultural labor is assumed to be infinitely capable of making up the deficiencies of the market sector. As women environmental activists in Australia ask: What future do we want - just green or green and just? (198)

Later in that chapter she lists three woman-centered principles: *The Feminine Principle, No Sustainable Agriculture without Sustainable Communities, and Living the Present So That Future Generations Might Live.*

Since Jiggins is an advocate, as well as a scholar, she concludes with an action agenda of ten items:

1. Balance efforts to stabilize population with efforts to change the consumption and production patterns of rich people and rich countries.
2. Guarantee all women over the age of puberty access to reproductive health care, including wide contraceptive choices, pregnancy and delivery care, safe abortion, and prevention and treatment of sexually transmitted diseases.
3. Develop technology that women can control that protects against sexual infection as well as unwanted pregnancy.

4. Help men take responsibility for their own sexual behavior and fertility, as well as their partners' health and well-being.

5. Ensure that reproductive health services and population policies are accountable to women, for as long as women remain their primary clients.

6. Invest in universal primary education for girls and the education of women, to bring the schooling of women and girls at least to levels enjoyed today by boys and men.

7. Ensure that women have rights of access, ownership, and use of natural resources and agricultural land.

8. Ensure that women receive production inputs such as improved seeds, financial services, agricultural training, appropriate technologies, and producer markets to a degree commensurate with their contribution to agricultural output and their roles in production, processing, preparation, and preservation of foodstuffs and other farm products.

9. Respect women's distinctive knowledge and experience.

10. Ensure that women are at the table where decisions are made and that their voices, too, are heard in the debate about the world's future. (247)

To the donors who support international development projects, to managers and technicians who implement such activities, to scholars of women in development, to those who teach about these matters at universities, and to others who are concerned about the nature of the contemporary human condition, it is a pleasure to enthusiastically recommend Janice Jiggins' book. She is an unabashed advocate. The reading is lively, stimulating, and backed up by solid evidence.