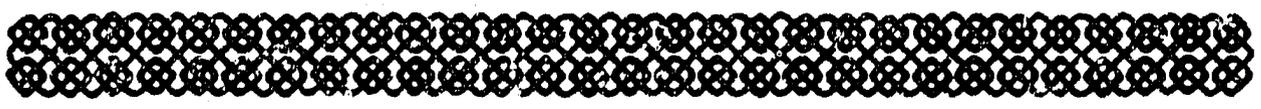


4-1-0

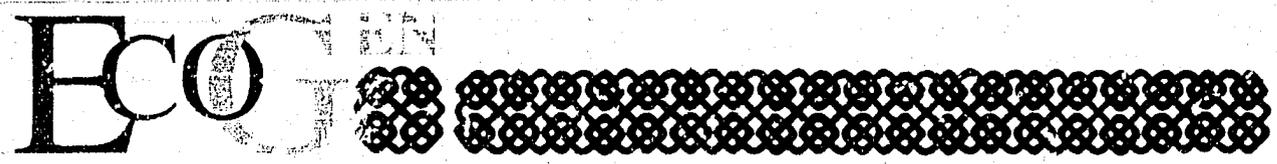
1991 25/1/92



Introducing the ECOGEN Approach to Gender,  
Natural Resources Management,  
and Sustainable Development

Barbara Thomas-Slayter  
Dianne Rocheleau  
Dale Shields  
Clark University

Mary Rojas  
Virginia Polytechnic Institute  
and State University



# Introducing the ECOGEN Approach to Gender, Natural Resources Management, and Sustainable Development

Barbara Thomas-Slayter  
Dianne Rocheleau  
Dale Shields  
Clark University

Mary Rojas  
Virginia Polytechnic Institute  
and State University

Ecology, Community Organization and Gender (ECOGEN) is a joint project of Clark University and Virginia Polytechnic Institute and State University established for the purpose of examining the role of gender in rural livelihood systems.

This paper is published by Clark University and reports on work supported by Social and Institutional Aspects of Regional Resource Systems (SARSA) Cooperative Agreement No. DHR 5452-AA-00-9083 at Clark University, the Institute for Development Anthropology, and the Virginia Polytechnic Institute and State University, funded by the U.S. Agency for International Development, Bureau for Science and Technology, Division of Rural and Regional Development and supported by the Women in Development Office of the Agency's Bureau for Program and Policy Coordination. The views and interpretations in this publication are those of the authors and should not be attributed to the Agency for International Development or to any individual acting on its behalf.

# Table of Contents

Acknowledgments	iii
Foreword	iv
I. A Rationale for Gender Analysis in Natural Resource Management	1
The Role of Gender in Rural Livelihood Systems	
Gender, Poverty, Ecological Decline, and Policy	
II. Ecological Frameworks For Analyzing Gender and Natural Resources	3
III. Institutions: Local Organization, Participation and Empowerment	5
IV. The Challenges	8
New Methodologies and Tools of Gender Analysis	
Policy Applications	
A New Framework for Analyzing Gender in Natural Resource Management	
Bibliography	11

---

## Acknowledgments

The authors of the paper, "Concepts and Issues Linking Gender, Natural Resources Management, and Sustainable Development," of which this document is a distillation, wish to acknowledge several scholars whose research and writing over a number of years have been central to shaping the perspectives and ideas which are reflected in this paper. They include Robert Chambers, Gordon Conway, Louise Fortmann, Goran Hyden, Marilyn Hoskins, Janice Jiggins, David Korten, Achola Pala Okeyo, Susan Poats, Paul Richards, Patricia Stamp, Irene Tinker, Norman Uphoff and Paula Williams.

In particular, the authors wish to thank Wanjiku Mwangiru, Director of Kenya's National Environment Secretariat, Karen Schofield, research assistant for

the ECOGEN project, and Richard Ford, Professor in the International Development Program at Clark University, for their thoughtful comments and editorial review of our efforts. We have benefitted from their perceptive observations and wise counsel. We are also most appreciative of the support we have received from Gerald Karaska, Professor of Geography and Director of the SARSA Project, and Dan Dworkin, SARSA Project Manager at AID's Office of Science and Technology/Rural Development. Finally, without the keen interest and continual support of Rosalie Huisinga Norem of the United States Agency for International Development's Office of Women in Development, ECOGEN would not be possible.

---

# Foreword

The ECOGEN project was established in mid-1990 at Clark University and Virginia Polytechnic and State University for the purpose of conducting research into the gender-division of resource management activities in rural livelihood systems. The following pages present, in abbreviated form, the key points of the first project output, a paper entitled "Concepts and Issues Linking Gender, Natural Resource Management, and Sustainable Development" which establishes the conceptual framework, defines the premises and methodologies, and sets forth the challenges guiding ECOGEN research. This paper is followed by case studies from several countries, beginning with three from Kenya and will lead to policy papers that explore the ways in which attention to gender may increase the equity and effectiveness of natural resource management programs. These documents, including the unabridged version of the concept paper, may be obtained from Clark University and from the WID Office at USAID.

It is our hope that dialogue across a number of these topics will be useful to international agencies, national governments, and non-governmental organizations working in the development field. There are elements in effective natural resource management

that can be influenced through understanding and use of gender analysis. Development planners who understand how to incorporate gender considerations into development interventions will increase the equity and sustainability of the activities which they are promoting.

The point of departure for ECOGEN is that the nature and impact of gender on natural resource management and development strategies have been either overlooked or misunderstood by researchers, practitioners, and policy makers dealing with environmental issues in the Third World. When gender considerations have been incorporated into agricultural and natural resources development work, they have been approached from a sectoral perspective with emphasis on the "differences" between men and women which must be accounted for in program and project planning. The following pages present the ECOGEN rationale for gender analysis in natural resources management, highlighting the ecological and institutional aspects of a new framework. They also suggest how ECOGEN research is exploring program and policy applications of the new methodologies and tools of gender analysis.

---

# I. A Rationale for Gender Analysis in Natural Resource Management

## The Role of Gender in Rural Livelihood Systems

In communities around the world, women as well as men are key resource users and managers and have different roles, responsibilities, opportunities, and constraints in managing natural resources both within the household and in the community. An analysis of gender is central to an understanding of the ways in which resource users and managers relate to resources and to each other.

Gender is a dynamic, historically and culturally determined social construct created by men and women to define their relationships with each other and with the environment. This includes access to and control of resources, a social, not simply an economic process (Berry et al, 1989). Gender analysis provides a conceptual framework and methodological tools for disaggregating information about the functioning of the household and community organizations involved in natural resource management. Such disaggregation helps clarify men's and women's roles, the indefinite boundaries of household and family, and the complex ways in which family, household, community, and ecosystem are linked.

Such an approach does not suggest that there is a "women's perspective" or that all women are alike. Class, ethnicity, and other characteristics lead to very different experiences for all women. These differences, however, do not obviate the need for examining the ways in which social and economic roles are structured by gender. Ultimately, it is necessary to understand the ways in which changes in the environment and in community structures affect both men and women across all social categories. Using gender as a central variable for analyzing rural production systems enables us to understand men's and women's roles, gender-based responsibilities and accountability, and the gender-based responses to environmental change and ecological degradation.

---

---

*Such disaggregation helps clarify men's and women's roles, the indefinite boundaries of household and family, and the complex ways in which family, household, community, and ecosystem are linked.*

---

---

## Gender, Poverty, Ecological Decline, and Policy

Attention to gender is particularly relevant in the context of natural resource management in the Third World because of the close connections among increasing poverty, the feminization of poverty, and the world environmental crisis. In many countries of the South, the natural resource base on which large populations depend for their livelihood is deteriorating significantly. Pressures of commercialization often affect land use adversely from the perspective of the needs of the poorest households. The everyday pressures of poverty force families to cultivate increasingly fragile, non-productive lands, and to make optimal decisions for today hoping that, somehow, tomorrow will be different (Leonard, 1989; Katz, 1990).

There are growing numbers of landless among the rural poor, and there are increasing numbers of women and women-headed households among the

poorest. There is also a growing awareness that the burdens of natural resource destruction may fall most heavily on women in poor households. In many areas, regardless of wealth and social class, women are *legally* landless, which limits their options for independent land use innovation (Okeyo, 1980, Rocheleau, 1987). Thus, an extraordinary challenge to development policy and practice is found in growing linkages among poverty, gender roles, resource decline, and ecological degradation.

At a time when the numbers of female-headed households are growing world over and when women are increasingly supporting their children in declining rural economies, it is essential to incorporate gender into the discussion because it is central to positioning both men and women vis-a-vis institutions that determine access to land, to other resources, and to the wider economy.

---

## II. Ecological Frameworks For Analyzing Gender and Natural Resources

The crisis of poverty is closely tied to the nature of local ecosystems for it arises in part out of growing scarcities in water, food, fodder, and fuel which are associated with increasing ecological destruction (Agarwal, 1986; Shiva, 1989). While the ecological perspective often leads to an isolated view of specific systems, it *can* accommodate both the economic and political conditions shaping the use of resources locally, nationally, and internationally, and the local division and sharing of resources by gender.

Such an approach "challenges the mechanistic tradition by focusing on the interchange of energy, materials, and information among living and non-living things in the natural environment" (Merchant, 1989:7). The key concepts are interdependence and interrelatedness in complex, dynamic systems. Rather than the "dog eat dog" world of competitive exclusion, many ecologists now invoke images of cooperation and complementarity. They work from the hypothesis that the earth is a super-ecosystem controlled living organisms which both adapt to it and simultaneously create the proper conditions for the continuation and proliferation of life.

---

---

*A gender-focused land user approach derives from all of these cultural ecology traditions and innovations, with emphasis on multiple uses of resources, multiple users, a sliding scale of analysis from individual to nation, recognition of indigenous knowledge as science and treatment of rural people as research partners.*

---

---

This "new" ecology lends itself well to the inclusion of people, since it can incorporate both competing and cooperating groups and their respective use of space and resources in a given place. The theories and methods of cultural and political ecology complement this new ecology with a basis for a more inclusive, integrative approach to gender, ecology and rural community development. Cultural ecology most often focuses on human/environment relations and the resulting land use practices in rural, non-industrial systems.

Political ecology, a recent off-shoot of cultural ecology and political economy, offers a more critical approach to rural resource management using many of the field methods and concepts of cultural ecology. Most political ecologists focus on the uneven distribution of access to and control of resources by class and ethnicity. Recently researchers have expanded their analyses of poverty, powerlessness and environmental degradation to focus increasingly on gender differences in access to and use of natural resources. A gender-focused land user approach derives from all of these cultural ecology traditions and innovations, with emphasis on multiple uses of resources, multiple users, a sliding scale of analysis from individual to nation, recognition of indigenous knowledge as science and treatment of rural people as research partners (Rocheleau, 1987).

Research relevant to development planners and practitioners attempting to understand relationships among resources, community organization, and gender, must take into account the insights of the ecological perspective in its various manifestations. These insights lead us to examine historical, ecological and structural factors shaping gender relations, resource use, and local institutional change. Finding the link between long-term sustainability and small-scale adaptation to local ecological conditions involves understanding the larger political and environmental context, the particular environment, the details of the local production system, and the strategic roles of women in these processes.

**ECOGEN looks at:**

1. **The "five C's" of natural resource management:** Within or between households, for example, people may cooperate in soil conservation by digging bench terraces, complement one another in the use of a boundary tree for fodder, fuel, or fiber, co-exist in the use of a nearby spring, compete over land for grazing, cash or subsistence crops, and conflict over rights to sand or to river water for irrigation.
2. **Boundaries and borders which are porous and flexible,** not fixed and sharply defined for household, community, and ecosystem, emphasizing flexibility in selecting the relevant unit or scale or analysis.
3. **The multiple uses of resources, the multiple users of these resources, and the relevance of indigenous knowledge.**

---

### III. Institutions: Local Organization, Participation, and Empowerment

Processes for achieving sustainable livelihoods require attention to the particularities of the local ecosystem. By definition this includes people and their institutional structures as well as the landscape which they both create and inhabit. Central to improving livelihood systems are the capacities of local institutions to respond to challenges within these ecosystems. Moreover, the effectiveness of institutional responses is linked to the roles of both women and men within the local community. Gender, as a key factor in the division of labor, rights, and responsibilities, affects the management of local systems for sustainable livelihoods and equitable development.

Strong, viable local institutions and organizations can form a foundation for effective resource management, increased agricultural productivity, and improved livelihood systems. However, we need to know a great deal more about the kinds of social groups and institutions which play key roles in determining access to and control over resources. Organizations operative at the local level help rural households increase their agricultural productivity

and their income-earning capabilities. They play a catalytic as well as managerial and planning role. Further, rural residents can often improve their access to external inputs through participation in local organizations and can reduce levels of risk and uncertainty by collaborative management of some resources.

Most analysts of the development process now recognize the important role of local organizations and would concur that the area of local participation and local decision is one of the most critical in the whole development process (Korten, 1984; Thomas, 1985; Uphoff, 1986; Nyoni, 1987; Tisdell, 1988). Local organizations include both informal networks and formal associations or organizations to which

---

---

*We need to know a great deal more about the kinds of social groups and institutions which play key roles in determining access to and control over resources.*

---

---

men and women belong in order to enhance access to resources, to public and private goods and services, and to centers of power and decision-making. Both formal and informal structures are relevant to the development process and link the state, public policy, external agents, and the rural household. Understanding how they function and their impact on the women and men who participate in them is central to determining appropriate development interventions.

There is no doubt that evolving institutions, as well as changing economic opportunities and constraints, are affecting relationships within and between households, with implications both for the access of households to resources and for stratification patterns within communities. One consequence of these changes is that new patterns of cooperation, reciprocity, and exchange among households are evolving - and old ones are being adapted - in order to ensure household survival and to promote well being. These are shaped, in part, by the structure of local men's and women's roles as they evolve through the gender system of allocating authority and responsibilities.

Evidence suggests that networks and associations are increasingly important to female-headed households, whose numbers are growing around the world. They are valued not only for economic reasons but as a means of empowering the vulnerable. Networks and associations help manage uncertainty and stress in rural households and production systems. In many places these uncertainties are growing, as ecological deterioration increases and productivity and incomes decline. Site-specific investigation of networks and

associations helps to clarify the ways in which they help empower local residents.

Bromley (1987) and Cernea (1988) note that development interventions must explicitly address the

The ECOGEN framework for understanding gender in natural resource management analyzes:

1. **Interactive processes** in gender, resource and environmental issues.
2. **Linkage of micro and macro structures** in social and ecological systems.
3. **Diversity of ecosystems and communities**, with distinct analyses and options for a variety of particular sites, circumstances, and land-user groups.
4. The relevance of strong **viable local institutions and organizations** to effective resource management, increased agricultural productivity, and improved livelihood systems.
5. The ways in which local organizations and their resource management activities are **structured by gender**.

social arrangements among people as they interact with each other and with the natural resource base. This cannot be accomplished without attention to the way gender shapes labor, rights and responsibilities in rural livelihood systems. Moser (1989), observes that women around the world have triple responsibilities -- for production, for reproduction and for

management of a range of activities at the community level. Yet, most planners have not recognized the different roles women and men play at the community level, and they have not adopted conceptual frameworks and methodological tools for incorporating gender into planning. Nowhere is this more important than in the area of community organization and natural resource management.

---

---

*Species choice, spacing, and location of trees all vary according to gender derived priorities. Traditionally a male responsibility in many parts of Kenya, women's groups are now actively involved in seed production, tree propagation, nursery management and planning.*

---

---

---

## IV. The Challenges

In the past decade there has been a growing dissatisfaction with technocratic, top-down methods of development which ignore priorities and interests of the people involved. No doubt, many efforts, such as the introduction of hybrid seeds, fertilizer and pesticide packages, have been effective in some areas. Yet the benefits have often bypassed the rural poor, and, in some cases, have had negative effects.

Failures of this top down or blueprint approach to rural development are well documented in volumes

### New Tools for Gender Analysis

An important challenge is that of designing more accessible tools of gender analysis which not only ascertain the differences in roles, rights, and responsibilities, but also permit investigation of gender at the intersection with other key variables. A tool such as Socio-economic Status Analysis (SSA) permits us to explore ways in which gender roles vary by class position. A seasonal activities calendar can be generated to help project planners, and managers discern the gender-based division of labor and respon-

such as the recent Brundtland Commission report on the state of the world environment, *Our Common Future*. Project failures are especially dramatic in areas of environment and natural resources where adverse impacts and resource degradation have weakened Third World countries' long-term ability to provide viable livelihood systems for growing populations. The Brundtland report calls for alternative ways to halt environmental decline and to introduce sustainable rural development.

sibilities in agriculture and resource management. This tool also permits a focus on the ways in which gender-based responsibilities are tied to specific occupational groups. In-depth household interviews as well as focus surveys can be adapted to disaggregate information on gender.

Focus group discussions are useful for generating information about community life. New perspectives on relationships among members of the community,

and new viewpoints about various organizations and community-level activities can be obtained through the interactions of community members in focus group discussions. Such tools permit the analysis of gender in different household types and in different socio-economic settings, offering the flexibility to capture nuances of changing roles and expectations.

---



---

*ECOGEN research explores alternative approaches to resource management, identifies changing forms of community organization, and clarifies the importance of gender in community-level management of resources.*

---



---

## Approaches for Linking Participatory Methodologies and Gender Analysis

ECOGEN research explores alternative approaches to resource management, identifies changing forms of community organization, and clarifies the important gender-based variables arising in community-level management of resources. To this end, ECOGEN investigates various approaches to community mobilization and organization and ways to link participatory methodologies and gender analysis.

Initially, the focus is on Participatory Rural Appraisal (PRA) (1990), an approach to community-based rural development derived from the work of Gordon Conway (1985, 1988), Robert Chambers (1983, 1985) and others on Rapid Rural Appraisal (RRA). RRA provides a methodology for gathering data rapidly and flexibly, drawing on interdisciplinary expertise and indigenous knowledge, using the

principle of triangulation whereby more than one method or source is used to obtain the same data.

The specific purpose of Participatory Rural Appraisal (PRA) is to enable rural communities to participate in designing and implementing more effective approaches to sustainable resource management. To date, PRA has not addressed questions concerning exactly who within a community participates in the exercise. This question is relevant across class, occupational, gender and ethnic lines. ECOGEN explores these questions in terms of gender, linking the gender variable in resource management and community organization to the PRA methodology. It draws on past experience in gender analysis from agricultural, agroforestry, and forestry applications of similar RRA methods.

## Policy Applications

Approximately 80% of the world's poor live in rural areas, and, of these, nearly 60% are in regions of low agricultural potential and high ecological vulnerability (Leonard, 1989:20; World Bank, 1988). In these communities, the processes of achieving sustainable livelihoods require attention to the particularities of the local ecosystem. Central to improving livelihood systems are the capacities of local institutions to respond to challenges within these

ecosystems. The effectiveness of institutional responses is linked to the roles of both women and men within the local community.

Case studies investigating the role of gender in rural livelihood systems in diverse ecological and institutional settings will provide a firm basis for strengthening development policy in regard to equitable and effective management of natural resources.

---

Drawing on a variety of analytical tools. They will provide the basis for improved understanding of community dynamics, institutional change, and gender roles.

The knowledge which emerges from the research should be integrated into rural development policies in order to increase the effectiveness of development interventions. It should also be relevant to non-governmental organizations for improving their strategies, programs and projects in rural development. Given a strong linkage, noted at the outset, between

gender, poverty, and ecological decline, it is imperative to examine the role of gender in matters of access to and control over natural resources. It is, after all, these resources which constitute the basis of rural livelihood systems around the world and the key to increased food production, and effective, equitable and sustainable development.

ECOGEN explores these questions in terms of gender, linking the gender variable in resource management and community organization to the PRA methodology.

## **A New Framework for Analyzing Gender in Natural Resource Management**

ECOGEN asserts 1) that both men and women are natural resource managers; and 2) that gender is important in structuring rights and responsibilities in regard to land, water, and vegetation. ECOGEN's framework emphasizes analysis of patterns of cooperation, and complementarity, as well as competition and conflict or co-existence, in unraveling the relationships of resources users to the resource and to each other. It focuses on the multiple uses of resources, the multiple users of these resources, and the relevance of indigenous knowledge.

Effective solutions to ecological problems must be based on recognition of the diversity that exists in rural settings around the world. ECOGEN focuses on the household, the community, and the ecosystem, finding their boundaries to be porous and flexible, not fixed and sharply defined. Yet, national and international, as well as local, contributions are essential to the definition and solution of rural ecological problems. There are critical linkages between local communities and ecosystems and the larger structures which shape the political and economic environments

in which they exist. These structures must be part of the analytical framework.

At no time in recent history have we been more concerned about the fate of the world's environment and the linkages between declining ecosystems, degraded resources, and increasing poverty. We need to understand the close relationships between resource management and food production, as well as the ecological issues pertaining to water, soils, forests, and land use that have critical impact on food production, and on rural livelihood systems. Understanding the role of gender in these processes is more important than ever. Bringing this understanding into the policy arena and into program implementation is essential. The ECOGEN framework can contribute to this endeavor.

---

---

*Solutions to ecological problems must be based on recognition of the diversity that exists in rural settings around the world.*

---

---

---

# Bibliography

Berry, Sara, J. Guyer, P. Peters, A. Issacman, A. Moore, A. Richard, and M. Watts. 1983. The Food Crisis and Agrarian Change in Africa. Social Science Research Center, National Research Council, Washington, D.C.

Eromley, Daniel W. 1987. "Resources and Economic Development." Journal of Economic Issues, Vol. XIX (3).

Bruntland Commission. Our Common Future, World Commission on Environment and Development. New York: Oxford University Press, 1987.

Cernea, Michael M. 1988. Non-governmental Organizations and Local Development. World Bank Discussion Paper #40.

Chambers, Robert. 1985. "Shortcut Methods of Gathering Social Information for Rural Development Projects," in Cernea, M. Putting People First. London: Oxford University Press.

\_\_\_\_\_. 1983. Rural Development: Putting the Last First. London: Longman.

Conway, Gordon R. 1988. Rapid Appraisal Techniques for Sustainable Development. London: International Institute for Environment and Development.

\_\_\_\_\_. 1985. "Agricultural Ecology and Farming Systems Research," in Remenyi, J. V. (ed.). Agricultural Systems Research for Developing Countries. Canberra: Australian Center for International Agricultural Research.

Korten, David. 1984. "Strategic Organization for People-Centered Development," Public Administration Review, Vol. 44, No. 4, 341-352.

Leonard, Jeffrey. 1989. Environment and the Poor: Development Strategies for a Common Agenda. Washington, D.C.: Overseas Development Council.

Merchant, Carolyn. 1989. Ecological Revolutions: Nature, Gender and Science in New England. North Carolina: The University of North Carolina Press.

National Environment Secretariat, World Resources Institute, Egerton University, Clark University. 1990. Participatory Rural Appraisal Handbook: Conducting PRAs in Kenya. World Resources Institute, Washington, DC, USA.

Nyoni, Sithembiso. 1987. "Indigenous NGOs: Liberation, Self-Reliance and Development," World Development, October.

Okeyo, Achola Pala. "Daughters of Lakes and Rivers: Colonization and the Land Rights of Luo Women," in Mona Etienne and Eleanor Leacock (eds). Women and Colonization. New York: Praeger Publications, 1980.

Rocheleau, Dianne. 1987. "The User Perspective and the Agroforestry Research and Action Agenda," in Gholz, H.L. (ed.). Agroforestry: Realities, Possibilities and Potentials. Dordrecht, The Netherlands: Martinus Nijhoff/D. R. Junk Publishers.

Thomas, Barbara P. 1985. Politics, Participation, and Poverty: Development through Self-Help in Kenya. Boulder, CO: Westview Special Studies in Social, Political, and Economic Development, Westview Press.

Tisdell, Clem. 1988. "Sustainable Development: Differing Perspectives of Ecologists and Economists, and Relevance to LDCs," World Development, Vol. 16, No. 3.

Uphoff, Norman. 1986. Local Institutional Development: An Analytical Sourcebook with Cases. West Hartford, CT: Kumarian Press.

World Bank. 1989. Kenya: The Role of Women in Economic Development. World Bank, Washington, DC, USA.

World Commission on Environment and Development. 1987. Brundtland Commission Report: Our Common Future. Oxford: Oxford University Press.

\*These works are cited in this condensation. A comprehensive bibliography on the topic accompanies the original paper.

## ABOUT THE AUTHORS

Dianne Rocheleau, Assistant Professor in Clark University's Graduate School of Geography, has served with the International Council for Research in Agroforestry and the Ford Foundation in Kenya. Her research has emphasized ecology, resources, and gender in agroforestry and soil conservation in both East Africa and Central America.

Mary Rojas, Acting Director of the Office of International Development at Virginia Polytechnic Institute and State University, has long experience in project design, gender analysis and training activities in agriculture, community forestry, and women's roles in Latin America, East Africa, and the United States.

Dale Shields, Research Assistant for the ECOGEN Project, has extensive field experience in agriculture and development in the Philippines and a long-term interest in gender issues.

Barbara Thomas-Slayter, Associate Professor in Clark University's International Development Program, has worked extensively in the area of community organization and local institutional development in both East Africa and South Asia, as well as focusing on gender issues.