Abstract: Today in many countries around the world there are growing linkages among poverty, resource decline, and ecological degradation. The burdens to which these linkages give rise are likely to fall most heavily on women in poor households. Moreover, the numbers of poor women-managed households are actually increasing.

The gender variable 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. Analysts must conceptualize gender for the purpose of desegregating and interpreting information about the functioning of individuals, households, and community organizations in managing their natural resources.

This paper situates such analysis in the literature from political and cultural ecology and from institutional and community organization. It identifies issues and themes relevant to understanding the role of gender in managing natural resources and argues that a new integrative approach must emerge to conceptualize the ecological and organizational complexity. It also argues that attention to gender is central to increasing the equity and effectiveness of local-level management and natural resources.

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Essential Connections: Linking Gender to Effective Natural Resource Management and Sustainable Development

by

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ESSENTIAL CONNECTIONS: LINKING GENDER TO NATURAL RESOURCE MANAGEMENT AND SUSTAINABLE DEVELOPMENT

A Rationale For Incorporating Gender into a
Framework for Analyzing Natural Resource Management

Linkages: Poverty, Resource Decline, and Ecological Degradation

The growing linkages among poverty, resource decline, and ecological degradation constitute a formidable challenge to development policy and practice. 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. Poverty forces families to cultivate increasingly fragile, non-productive lands, addressing short-term needs for survival while putting off concerns about tomorrow (Kates and Haarmann 1992).

Approximately 80 percent of the world's poor live in rural areas, and of these, nearly 60 percent are in regions of low agricultural potential and high ecological vulnerability (Durning 1991; Leonard 1989:20; World Bank 1989). In these communities, the processes of 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. The effectiveness of institutional responses is linked to the roles of both women and men within the local community. Thus, gender--a key factor in the division of labor, rights, and responsibilities--affects the management of local systems for sustainable livelihoods and equitable development.

Factoring in the Gender Variable

Gender is a social construction which shapes the roles and relationships of human beings across all dimensions of activity. It is also one of the key variables defining access to, and control over, natural resources as first noted more than a decade ago by Williams (1983) and Hoskins (1982). In communities around the world, women--as well as men--are resource users and managers who have different roles, responsibilities, opportunities, and constraints in managing natural resources both within the household and in the community (Fortmann and Rocheleau 1985; Rocheleau 1988; Thomas-Slayter 1989).

Conceptualizing gender is essential for desegregating and interpreting information about the functioning of households and community organizations in natural resource management. Using the gender variable clarifies the indefinite boundaries of household and family and the complex ways in which family, household, community, and ecosystem are linked.

Gender 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. Today, in many countries, there are not only growing numbers of landless among the rural poor, but there are increasing numbers of women and women-headed households among the poorest (Folbre 1991; Paolisso and Yudelman 1991; Stichter and Parpart 1988). There is also a growing awareness that the burdens of natural resource destruction may fall most heavily on women in poor households (Agarwal 1988; Fortmann and Rocheleau 1985; Kabeer 1991; Kates 1990; Leonard 1989).

Regardless of wealth and social class, women in many areas are legally landless, which limits their options for independent land-use innovation (Rocheleau 1985). In Kenya, for example, where privatization of land is well underway, women rarely have ownership rights to land, and hence, are not eligible for credit, cooperative membership, or other benefits made possible by land ownership. Given the importance of land resources for rural livelihoods, there is a clear need for attention to the resource base and to gender roles, particularly in ecologically vulnerable regions. With the growing numbers of women-headed households throughout the world and the increasing role of women as household providers in declining rural economies, it is essential to incorporate gender into the discussion of resources and sustainable development.

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 distinct 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. We ultimately need to understand the ways in which changes in the environment and in community structures affect both men and women across all social categories. Gender is a useful concept for analyzing the rural production system as a whole in order to understand men's and women's separate, overlapping, and shared labor, responsibilities, and accountability. In so doing, we can better understand rural responses to ecological degradation.

In sum, powerlessness, marginality, and dispossession are found in all corners of the world. Gender is one of the factors shaping these conditions. It is imperative to examine the role of gender in matters of access to and control over natural resources. It is these resources which constitute the basis of rural livelihood systems around the world and the key to effective empowerment of rural men and women.

Shaping the Question: Views from the Literature

This paper identifies issues that are relevant to increasing our understanding of gender as a key variable affecting institutional responses in sustainable resource management. We hope to clarify how gender affects the social, economic, and ecological processes at work in rural communities around the world. We believe that attention to gender can increase the equity and effectiveness of natural resource management programs.

The term "natural resources" encompasses a vast array of materials and processes. In this paper we focus on those resources most directly relevant to rural, agricultural and pastoral communities in Asia, Africa and Latin America. These include forests, trees, and related plant and animal products for fuel, food, fodder, building materials, medicines, and other purposes; rangeland, livestock, and wildlife; and river systems, irrigation systems, and other water resources.

Resource management encompasses the relations between a wide array of social and physical processes. For example, watershed management might include upstream and downstream cultivators, focusing on overall management of vegetation and soils within a catchment area, as well as soil conservation and cropland management. An analysis of gender is central to an understanding of the ways in which resource users relate to all of these resources and to each other.

The literature dealing with questions of gender, resources, and institutional responses at the community level comes largely from three distinct fields: women in development, community organization, and environment and resources. Rarely have the approaches been integrated, and only within the last several years have there been scholarly works which begin to bridge the gaps (e.g., Agarwal 1988, 1992; Carney 1988; Collins 1991; Dankelman and Davidson 1988; Davison 1988; Fortmann and Rocheleau 1985; Hoskins 1983; and Rocheleau 1987a).

A new framework linking these fields is needed to explore the relationships among gender, resources, and sustainable development. Such a framework would incorporate perspectives from feminist political economy, recent conceptualizations of local ecological science and practice, and models emerging from farming systems research in regard to gender. The new feminist political economy (Antrobus 1987; Heyzer 1989; Sen and Grown 1987; Shiva 1989; Stamp 1989) focuses on gender issues within the context of women's specific historical and cultural experience. These scholars analyze the powerful underlying structures which operate to the benefit of certain classes and groups across international boundaries. They focus on the ways in which site-specific ecological and livelihood systems are linked to national and global environmental, economic, and political systems which shape the opportunities and constraints occurring at the local level.

Second, such a framework would be informed by recent conceptualizations of rural peoples' science in regard to resource management (Blaikie 1985; Domen 1989; Jiggins 1989; Richards 1985; Rocheleau 1988, 1991; Shiva 1989; Stamp 1989; Thrupp 1989). This literature emphasizes not only the value of indigenous knowledge, but also the need to re-evaluate the research process. Drawing on an exchange, as opposed to a technology transfer model, this research approach focuses on the resource user and attempts to increase his or her resilience and flexibility over time in the face of uncertainty and risk. In the 1990s, that user is more likely than ever to be both poor and female. Moreover, as part of the social fabric, knowledge is gendered (Jiggins 1988; Rocheleau 1991). As Norem, Yoder, and

Martin (1989:93) point out "gender differences influence the structure of the overall knowledge system."

Third, the model emerging from research linking farming systems research and gender analysis (Feldstein, Flora and Poats 1990; Feldstein and Poats 1989) is relevant. This inter-disciplinary approach to problems of great ecological and social complexity contributes conceptually, methodologically, and pragmatically to new explorations in the area of gender, natural resources management, and sustainable development.

Two sets of issues shape this discussion. First is an ecological focus on the interaction of the environment and human beings in a diversity of complex land use systems. Our emphasis is on human interests, values, and activities as they relate to the ecosystem, as well as on sustainable production in the context of specific ecosystems. An ecological approach allows us to see land-use and technology change as a dynamic, interactive process rather than one of incremental and unilinear movement.

Second is a community orientation based on the assertion that strong, viable local institutions and organizations can form a foundation for effective resource management, increased agricultural productivity, and improved livelihood systems. In addition, many see local organization and grassroots movements as the key to effective social change and the empowerment of women.

Institutional analysis and cultural ecology both provide frameworks for investigating multiple uses and multiple users of resources, which are key to understanding the role of gender. We argue in this paper that men and women have varying responsibilities for local resource management at the community level, and that there is need to explore the relationships among local production systems, local organizations, and resource management and the ways in which all three are structured by gender. This matters for women's interest in changing economies and ecologies, as well as for those who would work with women and resources used and/or managed by them.

Ecological Perspectives: Gender, Resources, and Development

Our ecological perspective as it pertains to issues of gender, community organization, and natural resources draws on the theoretical work of cultural and political ecologists (e.g., Blaikie and Brookfield 1987; Richards 1985; Watts 1988), ecofeminists (e.g., Merchant 1980, 1989; Shiva, 1989), and biological ecologists (Lovelock 1988; Margulis 1982; E.P. Odum 1983; H.T. Odum 1971), as well as a growing body of policy-oriented applied research on gender issues in resource management (e.g., Agarwal 1986; Carney 1988; Fortmann 1985; Jiggins 1989b, 1986; Rocheleau 1987a, 1987b, 1990; Talle 1988; Thomas-Slayter 1988). Through a combined focus on multiple land users and gender (Rocheleau 1988) we seek to link apparently disparate ecological, economic, and equity concerns with the social and political context in which resources are allocated and managed and in which policy decisions are made.

Ecology

An ecological approach "challenges the mechanistic tradition by focusing on the interchange of energy, materials, and information among living and nonliving things in the natural environment" (Merchant 1989:7). Such an approach views change as dynamic, interactive, and dialectical, as opposed to linear or incremental (Levins and Lewontin 1985). Ecology, by definition, emphasizes process and relationships as well as the context in which interactions take place. Increasingly, ecologists also treat people, their "resources," and their habitats, as parts of a unified whole. Human beings are thus regarded as a part of nature, not separate from it. This integration of humans into the ecosystem represents a real departure from the technocratic, managerial approach to environmental science which places people outside of nature or casts them as a "disturbance."

The key concepts to an ecological approach are those of 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.[1] The work of several eminent ecologists has emphasized co-evolution, that is, the simultaneous mutual adjustment among organisms that use and inhabit the same environments. Coevolution of separate species within comensual and mutualistic relationships has been described by several prominent ecologists over the last two decades. Daniel Janzen (1966) documented a now famous example of an Acacia tree in Costa Rica which produces nodules that are inhabited by ants. The ants, in turn, protect the tree from other insects that might otherwise harm the tree. This and similar examples have rendered visible the relations of mutual dependency and positive synergy which have previously been invisible to many evolutionary and ecological scientists.

Likewise, some have postulated the co-evolution of living organisms and their physical environments. This concept could be described as the mutual adaptation of inhabitants and habitat to promote the continuation of both. For example, the ability of early life forms to evolve further was contingent on their own life-sustaining processes (feeding, breathing, growth). A smaller scale example of this phenomenon is the ability of many forest trees to re-cycle their detritus rapidly and produce effective canopy and soil cover against erosion during the rainy season, thus protecting the resource on which they and their progeny depend.

Many ecological scientists now work from the hypothesis that the earth is a super-ecosystem controlled in large part by the living organisms which both adapt to it and simultaneously create the proper conditions for the continuation and proliferation of life. Margulis and Lovelock (1989) suggest that the planet's microbial life and life forms in general are capable of regulating the larger planetary environment and have done so for millennia to sustain and promote life within the context of a global system. While initially greeted with skepticism, this approach has gained credibility in international scientific circles, and provides an alternative to the prevailing mechanistic and reductionist approach (E.P. Odum 1983).

This "new" ecology lends itself well to the inclusion of people, because it can incorporate both competing and cooperating groups and their respective use of space and resources in a given place. Ecology provides a broad array of conceptual approaches to complex interactions between resource users. While ecological theories and methods pertaining to resource utilization have dealt primarily with populations of plants and animals, they can be expanded for human ecology to include multiple resource user groups defined by gender, class, and ethnicity, as well as by species.

Ecological concepts relevant to rural resource management may range from predator-prey relations, to resource "partitioning" between potential competitors, to mutual resource "creation" by symbiotic groups, to exchange of mutually beneficial services or products. The concept of ecological niche allows us to focus on the ways in which organisms sub-divide space, resources, and functions within complex ecosystems. Systems models allow us to "track" energy flows and material cycles in ecosystems, to understand the amount and the movement of energy and material between living organisms and their physical environment. The latter provides a theoretical basis for analyses that combine biological and economic elements of human land use systems, as well as an accounting system to evaluate the relative merits of particular resource management alternatives.

Cultural, Human and Political Ecology

When we seek to understand human land-use systems, however, these biological models cannot stand alone. These systems are created through an interaction of culture and environment, and culture is taken here to include values that shape social, political, and economic systems. The ways that people divide and share knowledge, access, use, and control in rural resource management reflects the social, political, and economic context at the local and national level. These factors influence the character and condition of the physical landscape as well as the roles of men and women as resource users, owners, managers, and caretakers.

The theories and methods of cultural and political ecology provide a basis for the other half of 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. Among the useful insights from this tradition are the concepts of land-use intensification, the interdependence of population, land-use systems and landscape (Boserup 1970; Geertz 1963), the development and evolution of local ecological science (Geertz 1983; Richards 1985), human adaptation to the environment through technological innovation, and the role of humans in transforming the local, regional and global environment (Turner 1990). Cultural ecology also provides us with detailed descriptions from the field of the ways in which people use and manage resources and the division of rights and responsibilities between groups of people that inhabit or use the same ecosystems. While most of these descriptions tend to idealize "traditional" systems and take for granted the current division of labor by gender, we can

apply the theory and methods of cultural ecology to studies of gender, resource management and community development under changing social and environmental conditions.

Political ecology, a recent off-shoot of cultural ecology and political economy, provides several good examples of a more critical approach to rural resource management using many of the field methods and concepts of cultural ecology. Landmark studies in Africa (Bassett 1988; Blaikie 1987; Watts 1983; Wisner 1988) and the Amazon (Hecht and Cockburn 1989; Schmink and Woods 1987) have documented the related impact of national and international economic policy on fragile ecosystems and vulnerable groups of people. Most political ecologists focus on the uneven distribution of access to, and control of, resources by class and ethnicity. Several researchers have, however, expanded their analyses of poverty, powerlessness, and environmental degradation to focus increasingly on gender-based conflicts over natural resources (e.g., Agarwal 1986, 1988; Carney 1988; Talle 1988; Watts 1989). Yet others have applied an essentially critical and feminist cultural ecology perspective to develop alternative approaches to rural development and resource management (e.g., Fortmann 1985; FAO 1992; Rocheleau 1987a; Thomas-Slayter 1992). A gender-focused land user approach derives from all of these cultural ecology traditions and innovations, emphasizing multiple uses of resources, multiple users, a sliding scale of analysis from individual to nation, recognition of local knowledge as science, and treatment of rural people as research partners (Rocheleau 1987a, 1988).

Ecofeminism

While the latter constitutes a pragmatic feminist approach to applied research on resource management, ecofeminism presents an alternative theoretical perspective on the relation between gender, culture, and ecology. Ecofeminists connect the oppression of women and the domination of nature within political and economic hierarchies (e.g., Merchant 1989; Mies 1986). Some scholars working on gender, environment, and development link ecological concerns with feminism, and question fundamental Western modes of development and change. Shiva (1989:2) takes issue with what she calls "maldevelopment" and dispossession which have "aggravated and deepened the colonial processes of ecological degradation and the loss of political control over nature's sustenance base." The costs of resource destruction are borne largely by the poor. This crisis of poverty touches women most severely. In sum, these scholars argue that the exploitation of both women and "nature" is exacerbated as societies of the South come into commercial production and the global cash economy.

The Ecological Overview

An ecological approach to sustainability is predicated on the continued capacity of nature to renew forests, fields, rivers, lakes and the life-supporting atmosphere, as well as the multiplicity of species which inhabit distinct ecosystems throughout the world. Many ecologists now seek to promote sustainable, non-dominating relations with nature. Cultural and political ecologists treat human decision-making and resource allocation as essential

factors in environmental quality, and emphasize the social, political, and economic context as determinants of resource policies and practices. For the ecofeminist, there is a critical linkage between problems of domination and exploitation as experienced by women and nature. Ecofeminists see promise in fostering "female" concepts of interdependence and connection, as well as hope in the transformational politics of rural women's ecology movements and women's environmental health organizations throughout the world. Feminist cultural ecologists and applied ecologists seek insight and pragmatic solutions from all of these traditions, to address the related crises of rural women's deepening poverty and natural resource degradation.

Institutional Perspectives: Linking Gender, Community Organizations, and Development

Local organizations and institutions are widely regarded as critical ingredients in the development process (DAI 1975; Hunter and Jiggins 1976; Korten 1984; Love 1991; Nyoni 1987; Olowu 1989; Tisdell 1988; Tripp 1989; Uphoff 1986). We focus here on collective activities of a formal or informal nature, not the broad recurring patterns of behavior, which also constitute a definition of institutions in a non-organizational sense. Given the preceding discussion of ecological perspectives, gender, and resources, it is essential to consider how organizations work at the community level and to ascertain the ways they are shaped by gender-defined roles and relations.

Most of the literature on local organization and development has emerged as a response to top-down, centralized, large-scale, growth-oriented development models of the 1960s and 1970s which clearly have not met the needs of most rural people around the world. The response to this failure has spawned widespread networks of alternative development theorists and practitioners, many of them inspired by the works of Paolo Freire (1970), E.F. Schumacher (1973), and Ignacy Sachs (1976). In the last two decades analysts have looked closely at local-level organizations to ascertain what they can contribute to the development process, whether in national and international "mainstream" initiatives or in alternative strategies. In the United States, the Cornell Rural Development Committee pioneered both theoretical and empirical research in an effort to understand local organizations and local institutional development (e.g., Uphoff 1986; Uphoff, Cohen and Goldsmith 1979; Uphoff and Esman 1974). Since 1980, scholars working in a number of countries including Ethiopia (Griffin and Hay 1985), Kenya (Holmquist 1984; Thomas 1985), Nepal (Rahman 1984), Zimbabwe (Bratton 1986), Paraguay (Bray 1991), Nigeria (Trager 1989), and Mexico (Fox 1988) among others, have demonstrated with considerable empirical data the value of local organizations for increasing productivity, mobilizing labor, and leveraging resources from the state. Others have focused more on local self-reliance, independence, technical assistance institutions, and ways to strengthen Third World non-governmental organizations (e.g., Bratton 1989; Brown 1990; Clark 1991; Fowler 1985; Korten 1989; Nyoni 1987; Olowu 1989).

In addition, the organizational literature has investigated women's groups and associations with emphasis on the roles of these organizations in providing access to resources, increased independence, political voice, and security for their members (e.g., March and Taqque 1986; Mwaniki 1986; Nelson 1981; Staudt 1986; Thomas 1988; Wipper 1984). Yet, in 1989 Stamp noted that there has been little emphasis in the development literature and in development policy on distinguishing between those organizations generated from within a community's own customs and needs and those imposed from outside. Nor has there been much attention to the relationships between local organizations and the ways in which gender shapes access and participation (Stamp 1989:95).

Organizational Frameworks: Formal and Informal

Formal associations or organizations may be divided into two broad categories: those based on ascriptive characteristics such as language or ethnicity, and those based on common interest such as cooperatives, peasant associations, or self-help groups. Membership in the former derives from ascribed characteristics such as religion, ethnicity, gender, clan, or language. In some cases, all persons with a given characteristic are automatically members; in other instances, membership is not automatic, but the most fundamental requirement for joining is a particular attribute. Common interest associations include groups which have their origin in historic, ecological, political, and social structures and material conditions of the particular setting, as well as those which have been introduced recently by outsiders, most typically the state, and occasionally donor agencies. Membership is based on common interest and is obtained simply by joining (which may assume a certain level of resources if there are membership fees). Such organizations are primarily accountable to their members and work largely by consensus and persuasion.

Informal networks are diverse but fall largely in four categories. First, there are patron-client networks involving bonds based on uneven reciprocal obligations and private accountability. These networks are usually inegalitarian but mutually beneficial arrangements in which one party offers services or support and the other largesse or various resources. Second, there are familial relationships of an extended family or clan which may vary greatly in size and complexity. Third, there are rural-urban, largely familial, networks. They may, however, involve unrelated members of a rural community or ethnic group who are prepared to help "kindred spirits" obtain jobs, permits, and the like. Finally, there are inter-household labor and resource exchange networks. These networks may be quite small and informal, organized on an ad hoc basis, or they may be formally structured collectivities. They may range from egalitarian to highly uneven relations of power.

Berry (1989) has explored relationships between social institutions, largely the informal networks, and access to resources. She asserts, "People's ability to generate a livelihood or increase their assets depends on their access to productive resources and their ability to control and use resources effectively. Access depends, in turn, on participation in a variety of social institutions, as well as on material wealth and market transactions" (1989:41). While Berry writes specifically about Africa, these phenomena are observed in

other parts of the world, from the Philippines (Shields and Thomas-Slayter 1993), or Malaysia (Hart 1991), to the United States (Hanson and Pratt, forthcoming) Thus, involvement in these networks has importance and value well beyond the immediate task at hand.

Examination of individual and household involvement in local networks and associations offers several insights. First, a variety of resource transfers take place among households. Inter-household exchanges of labor, goods, or services are often critical to the viability of the rural household. Networks may also be used to gain access to resources of the state (Berry 1989; Holmquist 1984). They may be used to hold both state and market at bay (Glavanis 1984; Hyden 1986), or they may co-exist with institutions of market and state in a complementary way (Thomas 1988). They may also disintegrate as traditional relationships give way to market relations and the demands of the state (De Janvry 1993; Hecht 1984). Alternatively, increased levels of formal cooperation may be a consequence of the intrusion of colonialism, the market economy, and an increase in male out-migration (Collins 1991; Jiggins 1986; Safilios-Rothschild 1985; Shields and Thomas-Slayter 1993; Thomas 1985).

Local associations, as well as informal networks, have been important for purposes of common property resource management, including management of water points, grazing lands, and forests. In the last several decades, there has been increasing pressure to privatize common resources. In many rural communities, poor women are particularly dependent upon access to the commons for fuelwood and other forest products (Agarwal 1986; Hoskins 1983; Rocheleau 1990; Shiva 1989). With a decline in common property resources and increasing privatization, they have been among the first to suffer losses. In the face of this decline, networks and associations are proving valuable instruments for providing households with increased access to productive and exchange resources. They become key elements in individual and household strategies for survival, accumulation, and mobility. In addition, networks may enable their constituents to address community problems on an ad hoc basis. Associations, on the other hand, may offer a means to deal formally with the political system because they have an explicit structure, sustained and visible membership for political leverage, and a clear purpose and mandate.

The Realities of Gender and Community Organization

Three issues are central to a discussion of community organization and gender:

1) Community Organization: Access, Control and Benefits

First, what are the lines of access and control and who determines allocation of benefits and obligations in these organizations? What structures and processes shape patterns of control and determine commitment (time, labor, and financial resources) and accountability? How are these differentiated by gender?

Evidence around the world indicates that rapidly changing economic opportunities and constraints are affecting relationships within and between households. 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 individual well being. These changes are shaped, in part, by the structure of local gender roles as they evolve through the gender system for allocating authority and responsibilities.

These patterns of cooperation, reciprocity, and exchange include both informal networks and formal associations or organizations to which 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. They have implications not only for the access of individuals and households to resources but also for stratification patterns within communities. These organizations may lead, in some instances, to increased equity or democratization and, in others, to increased social stratification. The consequences have important implications for distinct groups of people based on differences in race, ethnicity, age, class, and, of course, gender.

2) Women-Headed or -Managed Households

Second, what is the relevance of networks and associations to women-headed or managed households? Evidence suggests that networks and associations are increasingly important to women-headed households, whose numbers, as noted earlier, are growing around the world. The reasons may be economic, a response to problems noted above, such as loss of access to common property resources. They may relate to the acute poverty which forces some women to combine efforts in order to maximize the few resources they have, namely their labor (Dankelman and Davidson 1988; Thomas-Slayter and Ford 1989). Organizations are also a means of empowering the vulnerable (Bhatt 1989; Everett 1989; Hart 1991). That is, networks and associations help manage uncertainty and stress in rural households and their 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 associations provide support for local residents. Decreasing vulnerability--whether to the forces of nature, to the greed of individuals, or to the injustices of political, social, and economic systems, at all levels--is an objective of development. Analysis of the process must include gender as a variable.

3) Gender, Organizations and Development Interventions

What is the gender-basis for involvement in the organizations that are the most critical to managing the resources in a given community? Are both men and women participating in them, and, if so, in what ways? Both formal and informal structures are relevant to the development process and link the state, public policy, development plans, 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. Development policies, programs, and projects must explicitly address the 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 (Alsop 1993; Rocheleau 1988).

Examining multiple sources of community-level data, Moser (1989) observes that women the world over are active in community management. Yet, most development planners have not recognized the different roles women and men play at the community level, nor have they adopted conceptual frameworks and methodological tools for incorporating gender into planning. Nowhere is this more important than in community organization and natural resource management. If sustainable management of resources is a development objective, gender analysis must be part of the planning process. It is essential to identify changing forms of community organization, and to clarify the important gender-based variables arising in community-level management of resources. This matters for men's and women's own distinct interests, as well as for the objectives of outside agents of social, economic, or environmental change.

ECOLOGICAL AND INSTITUTIONAL CHALLENGES: BRINGING GENDER IN

A focus on local organizations, and both the men and women in them, is critical to address ecological decline and restore both productivity and sustainability to rural communities. Observers have found, time and again, that project performance is better and sustainable development more likely to occur when local residents identify needs, and design and implement programs for their own community (Cernea 1987; Chambers 1983, 1990; Morehouse 1989; Rocheleau et al 1988; Sandbrook 1985; Wunsch and Olowu,1989). Efforts to engage local residents nevertheless run the risk of neglecting the poor, the marginalized, and the powerless who may be "invisible," inaccessible, and silent. Even when organized, their voices may be muted by more powerful interest groups. In many communities, these categories include the majority of women.

Analysis must establish and improve understanding of the connections among ecological and environmental concerns, gender-based responsibilities and opportunities, and community organizations for purposes of improving policy, program, and project design. Gender, as a key variable shaping rights, roles, and responsibilities, must be factored into these processes. During the course of the past decade there has been a tremendous outpouring of research on topics related to women. One of the accomplishments has been the legitimation of concern about women and development. It is now widely recognized that gender hierarchy is as serious an obstacle as questions of class, race, and ethnicity in the struggle to achieve human justice and freedom.

At no time in recent history have we been more concerned about the fate of the world's environment and linkages among declining ecosystems, degraded resources, and

increasing poverty. We strive to understand the 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. Grasping the role of gender in these local-level processes is more important than ever.

Finding the link between long-term global and regional sustainability and local co-evolution of culture, economy, and ecology involves understanding the larger political, cultural, economic, and environmental context, the particular social and biophysical environment, and the details of the local production system.2 It also means understanding the strategic roles of women, particularly in poor households, in food production, household labor, family income, and as the "daily managers of the living environment" (Dankelmann and Davison 1988).

Gender is not, however, just a women's concern. It is a social construct through which all human beings organize their work, rights, responsibilities, and relationships. Its meaning derives from specific historical and material conditions. Understanding the gender variable in particular contexts will enable us to find more effective--and equitable--ways to manage our natural resources for building productive rural livelihood systems.

Notes

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1. For example, recurring discussions of territoriality and competition for turf have invoked visions of one-on-one struggles within and between species in single fixed territories. However, there is increasing attention to the multi-dimensionality of the worlds inhabited by various individuals and species which happen to be in the same place at the same time. While two species of migratory herbivorous mammals (wildebeest and zebra) might well compete for some of the same food sources, they are simultaneously involved in both creating and destroying the worlds of various micro-organisms in the soil beneath their feed and in the labyrinth of habitats within their own bodies. Likewise, they may each provide food for predators (lion, leopard) and their different feeding habits may cause distinct changes in the herbaceous cover that will be available as food for the herbivores that will graze the same range later in the season.

2. For more detailed discussion of methods as well as case studies and policy recommendations derived from case studies, see papers by Thomas-Slayter and by Rocheleau listed in the bibliography. See also the following ECOGEN publication, Tools of Gender Analysis: A Guide to Field Methods for Bringing Gender into Sustainable Resource Management. This guide (Thomas-Slayter et al. 1993) focuses on ways to use gender analyses to increase the effectiveness of development programs and projects for sustainable resource management. It has emerged from the research and analysis of colleagues associated with the Ecology, Community Organization, and Gender (ECOGEN) research project of Clark University and Virginia Polytechnic and State University launched in 1990.

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