

GENDER AND BIODIVERSITY: A FEMINIST POLITICAL ECOLOGY PERSPECTIVE

Dianne E. Rocheleau

1 GENDER, BIODIVERSITY AND SEGMENTED SUSTAINABILITY

After two decades of 'women and development' and 'environment and development' the nineties promise to be the decade of 'women and environment' or, perhaps, 'women and sustainable development'. Development planners have 'discovered' both women and the environment and have addressed each separately as special issues within development theory and practice. There is now widespread discussion of the role of women in the global work of sustainable development (Braidotti *et al.* 1994). There is also a parallel discussion of the effects of 'sustainable' development on women (Jackson 1993; Mies and Shiva 1993; Women, Environment and Development Organization 1992). Recent works by ecofeminists (Shiva 1988; Merchant 1989), feminist environmentalists (Agarwal 1991; Dankelman and Davidson 1988) and feminist political ecologists (Fortmann and Nabane 1993; Hoskins 1981; Leach 1992; Thomas-Slayter 1992; Rocheleau 1991) have all posited a direct link between gender, environment issues and the development process. Much work remains to clarify the nature of the relationship and the implications for women's and men's lives and the diversity of life-on-earth.

Most sustainable development efforts, including biodiversity initiatives, derive from a gendered vision of segmented sustainability that divides home, habitat and workplace into separate domains, with women at 'home', men in the 'workplace' and protected 'habitats' devoid of humans. Conservationists have drawn lines on maps to exclude people from parks and wilderness reserves meant to maintain biodiversity (or special species) in special spaces. Meanwhile, across the fence, in the lived-in side of the landscape, sustainable development often means biologically correct factory farming in increasingly homogenized landscapes (Rocheleau *et al.* 1994).

Croll and Parkin (1992) note specifically that sustainable development agencies have created new landscapes through daily practices based on their erroneous assumptions about the boundaries between farm and forest, home and workplace. Many of the urban and international planners live, or have

been raised in urban, industrial societies or even suburban and post-industrial settings in circumstances where home, habitat and workplace seem neatly divided and segmented into separate places. Yet, this represents a spatial dismemberment of everyday experience, a radical departure from life as many people know it. The overall spatial and conceptual separation of biodiversity and production, and the alienation of both from 'home', has undermined the biological basis of rural peoples' livelihoods.

In many rural communities throughout the world women are responsible for the reproduction of the work force, the production of daily subsistence, and the maintenance of the complex ecosystems and particular species that support agriculture, livestock and forest production. Yet, most women are legally landless and not officially part of the work force. Their work does not 'count' in the calculation of GNP, GDP or most other measures of productivity (Waring 1988). Women's work, women's resources (including complex assemblages of plant and animal species), and women's land use are often invisible to the technocratic lens of the forester, the agronomist, the economic planner, the land surveyor, the conservation biologist and the environmentalist.

The gender division of rights, responsibilities, work and knowledge is also changing rapidly. Where men are preferentially drawn into cash crop production, local wage labour, and the urban work force, women are increasingly responsible for the use and maintenance of complex rural landscapes and the plant and animal life that they support. Where men have migrated to urban areas, rural women may take charge of subsistence and commercial production as well as much of the community and environmental 'maintenance' work formerly shared with men. Throughout much of the world women are simultaneously farmers, herders, forest gatherers, drawers of water, food processors, market vendors, construction crews, soil conservationists and keepers of the natural and built environment. They face increasing production demands with less adult labour, and are often hampered by restricted rights to the resources that they need to meet their growing responsibilities.

2 A GENDERED LAND-USER FOCUS FOR BIODIVERSITY CONSERVATION

Any biodiversity conservation programme that hopes to address such complex realities and to create viable alternatives to simple 'preservation' or 'development' options must recognize both women and men and a myriad of other groups in their daily use and experience of the living environment. Recent attempts to address this connection have ranged from private sector and government genetic diversity programmes that include women (Ashby 1987), to ecofeminist proposals to 'feminize' environmental science and policy (Mies and Shiva 1993), to poststructuralist studies of biological science and practice (Haraway 1989).

With the recognition of women's links to environmental issues, scientists, environmentalists and industrialists have recruited women, across cultural and class boundaries, as volunteers and 'natural' allies to serve the interests of biodiversity preservation as well as genetic prospecting. They have mobilized the skills, experience and concerns of women to preserve and protect wilderness, to catalogue the entries in 'nature's library' and to write the pharmacopoeia that hold the keys to future cosmetics, foods, pharmaceuticals and other commercial products. However, the selective use of women in this context is opportunistic and does not address their interests; nor does it deal with the material and ideological connection between gender and biodiversity.

Ecofeminists address both questions directly and posit a close connection between women and nature, based on a shared history of oppression by patriarchal institutions and dominant Western culture as well as a positive identification by women with 'nature' (Merchant 1980; Shiva 1988). Some ecofeminists attribute this affinity to intrinsic, biological attributes of women (an essentialist position) while others perceive the women/nature connection as a social construct to be embraced and fostered (Merchant 1989; Plumwood 1993). Both ecofeminist perspectives view environmental conservation through a lens of gender identity which privileges women as a group as nurturers, environmental caregivers, and allies of 'nature' (Jackson 1993) whose interests and values are at stake in the struggle to preserve biodiversity.

In contrast, a number of feminist poststructuralists and critics of science have turned our attention to the nature of objectivity and the possibility of partial

yet powerful objectivities (Harding 1986; Haraway 1991), exhorting us to embrace the 'privilege of partial perspective' (Haraway 1991). These scholars further encourage us to expand our respective and partial situated knowledges through a politics and a science that go beyond identity to affinities and then work from affinities to coalitions. Those coalitions, they suggest, can build and enlarge a shared body of knowledge derived from very distinct experiences. There is a sense in these works of separate realities nested within shared worlds which derive their coherence from conscious efforts at mutual understanding. This builds on an appeal to a higher level of objectivity that recognizes difference and the necessity of a subsequent struggle to synthesize a broader understanding within an explicitly social (and political) context.

What does this imply for the daily practice of science and the development of practical alternatives that incorporate gender into the science of biodiversity? To incorporate gender fully, in the sense implied by a feminist poststructuralist analysis, is not to 'add women' but rather to redefine biodiversity in broader, more inclusive and even fluid terms. It implies a definition based on the diverse experiences and the distinct sciences of many different groups.

Rather than a fixed definition of biodiversity, we require a process for defining it in context. A feminist political ecology includes a strong but not exclusive focus on gender and seeks to deal with difference of all kinds, informed by feminist critiques of science and poststructuralist critiques of development. This approach applied to biodiversity recognizes complexity in both social and ecological spheres and acknowledges the uneven relations of power embedded in the use, perception and control of 'resources'. It 'reads', interrogates and interprets the expression of those relations of power in the structure of biotic assemblages, landscapes, livelihoods, sciences and social organizations.

In practical terms this approach starts by identifying:

- 1 the multiple uses or values at stake;
- 2 the multiple actors, the relations between them and the diverse organizations that mediate people's relations with the surrounding ecosystem;
- 3 the physical and spatial relation of both to the landscape; and

4 the distinct sciences of life that guide various groups in their daily land use practices.

Finally, there is a need to question and define the situation of researchers and their relation to the people and place in a given context.

These elements constitute a social checklist that can guide any effort to understand existing structures and dynamics of gendered environmental interests and to plan for more socially just and ecologically viable futures. All of these are gendered and otherwise shaped by various poles of identity and difference and operate within complex fields of affinity and power. A brief summary and example of each is applied to gender and biodiversity issues in the context of forestry.

2.1 Multiple uses

Most rural landscapes include cash crops, subsistence food crops, livestock, and gathered products, and a myriad of plant and animal species not directly used by people, as well as houses, fences, and other infrastructure and practices to protect soil, water and natural vegetation at a given site. In contrast to single commodity production approaches or special species protection programmes, integrated forest management can meet a wide range of rural people's priorities for fulfilment of basic needs (Raintree 1984). Among the needs that are affected by rural forestry practices are: food, water, fuel, fibre, medicine, cash income, shelter and infrastructure, savings/investment, resources to meet social obligations, and cultural and religious connections to 'nature'. Sustainable development research and action must address the multiple use values as expressed by various groups of rural women and men, as assessed by scientists from observation, and as understood by all parties based on open discussion.

2.2 Multiple users

Along with the multiplicity of uses and meanings comes an equally diverse list of users, which could encompass several social groups defined by gender, class, age, ethnicity, locality, occupation or other poles of identity. The multiplicity of user groups in any given place may be identified according to which groups use specific land areas, plant and animal species, products or services, as an indicator of their stake in any land use change. The identities and affiliations of rural people can all affect access to and control over labour, land, plant and animal species, and their products. Livelihoods, land tenure (terms

of access, use and ownership), and social unit of organization (individuals, households, ethnic groups, village associations) help to clarify the social and economic division of interest, use and control between user groups. Participation in particular social networks and membership in specific organizations may also differentiate stakeholders. All of these criteria may combine to define distinct user groups, according to specific site and circumstance (Rocheleau 1987a; 1987b). Sustainable development and biodiversity conservation initiatives must deal with both women and men and should be held accountable to them separately as well as together within a variety of other constituencies.

2.3 A sliding scale of analysis

Segmented sustainability has imposed a gender-polarized template on the rural landscape which separates 'wild' and 'commercial' species into separate spaces. In contrast, for most rural people, and many of their companion species, the surrounding landscape is part of a single continuum. They walk (or otherwise move) with impunity across permeable boundaries that many planners would turn into impenetrable barriers. Farmers in many regions depend on the forests and savannas beyond their farms for food, water, fodder, wood and fibre for both cash income and domestic uses. They may also revere certain places as sacred shrines or cultural sites. Conversely, places normally classified as 'not-forest' such as patio gardens in agrarian landscapes may actually be home to more tree species and forest products than nearby 'forests'.

Planning and design across multiple scales from plot to farm to river basin requires an integrated social and ecological approach that addresses the spatial patterns of labour, control, responsibility, expertise and interest at the intra-household, inter-household and community levels. To capture this complexity of landscape use and management, research and development workers need to address the distinct spatial patterns of activity and resource use of a diversity of land user groups. There is substantial scope to map the footsteps, the daily lives and the life stories of women and men with respect to resource use and management, as well as the gendered values and meanings written into women's and men's landscapes. In addition to land uses, land users and landscape patterns, we must also understand the relations of power embedded in the hierarchies of use and access in order to make sense of the present landscape and to promote realistic and equitable

biodiversity conservation programmes within the evolving landscape.

2.4 Local sciences

The international scientific and development communities have tended to ignore rural peoples' science or to relegate local experts to the status of guides, collectors and informants. When outsiders do 'discover' the value of local science they often separate it from the larger context of daily life, labour and livelihoods and treat it as ethnographic artefact or as an 'unconscious ecological wisdom.' Even these very partial and objectified views of rural peoples' science have not often been studied and understood as gendered knowledge and practice. Feminist political ecology faces a double challenge to reshape the terms of discourse about popular, local ecological science (Thrupp 1989; Bebbington 1990) and to introduce women's science and women's interests into the larger domain.

Ethnobotanical research in several countries over the last decade has uncovered a rich store of local knowledge and practice concerning the use and management of food and medicinal plants, with gender-specific use and knowledge of particular plants and source areas (Ferguson 1994; Fortmann and Nabane 1993; Jiggins 1988; Moore and Vaughan 1987; Shiva 1988). In practical terms, gender division of knowledge may be based on particular places whether by ecozone or by land use type. Men's and women's knowledge may also be divided by plant and animal species, products, particular uses or particular activities. Men's and women's distinct knowledge of particular environments, plant species, their ecology and their uses can be invaluable for identifying species or management practices for agricultural, forestry and pharmaceutical uses (Rocheleau *et al.*, 1989). Gender-specific knowledge about the existing ecosystem and land use practice, as well as distinct skills for innovation and criteria for evaluation can substantially strengthen biodiversity conservation and sustainable development initiatives, as well as protecting local women's and men's interests. Beyond specific local or global interests, the opportunity exists to share in the cross-pollination of a multiplicity of sciences, defined by gender, ethnicity, class and locality.

2.5 Land users as research colleagues and co-workers

The knowledge, priorities and inventiveness of rural women and men can and should play a predominant

role in processes of conservation planning and land use change. On practical grounds, the complexity and scope of changes already in progress exceed the capacity of formal research institutions to conduct in-depth studies under controlled conditions and rural people have the capacity to experiment and innovate both independently and in collaboration with research institutions. On ethical grounds the poor rural majority, particularly women in most developing countries, should direct any process that will transform the landscape and with it the biological basis of their livelihoods (Rocheleau *et al.*, 1989). Most community-based research and development programmes can incorporate some collaboration between local land users and outside researchers or planners. Where fieldworkers fail to see and understand the gender division of land use, knowledge and interests in biodiversity at the outset, they are likely to learn from collaborative work and experience, and from critical evaluation of new procedures and practices with the community.

3 CASE STUDY: GENDER, BIODIVERSITY AND LAND-USE CHANGE IN KENYA

The story of gendered knowledge and resource management in Kathama, a dryland farming community in Machakos District, Kenya chronicles the changing gender division of labour, knowledge, rights and responsibilities under conditions of rapid ecological transformation. This process has accentuated women's use and understanding of a shrinking but still diverse range of plants from forests, grasslands, croplands and the spaces between (fencerow, gullies, clumps of trees, roadsides). Although production has shifted from agropastoralism to mixed farming over the last 50 years in this densely settled community (285 persons/km²), women in poor households still depend on nearby shared lands (both privately and publicly owned) for 50 to 90 per cent of their fodder and fuelwood needs (Rocheleau *et al.*, 1989). Moreover, much of the on-farm fuelwood production comes from a mix of wild and domesticated plants in in-between spaces such as boundaries, roadsides and living fences, rather than from discrete blocks or plots (Rocheleau and Hoek 1984; Rocheleau *et al.* 1988).

The urban migration of wage labourer men has created a new spatial division of labour, forming split households with rural roots and urban branches. Women farmers are increasingly responsible as caretakers and knowers of the ecosystems that provide

food, fuel, water, shelter and a cultural umbilical cord to their communities. Where women are left to manage rural farms and landscapes they have expanded upon traditional gender-divided systems of work and knowledge, and they have incorporated knowledge, work, responsibilities and species formerly part of men's domains. This has resulted in a feminization of rural environmental science and of food production. In the last decade this has extended to a feminization of famine as well as famine response and prevention.

For example, during the 1984-85 drought in this community, whole extended families took to the woodlands, bush lands, and in-between places (fence rows, roadsides, and stream banks) in search of possible fodder sources. Some people tested leaf samples of several tree species on their cattle. The elders in the community made a concerted effort to recall which tree leaves had served in the past as drought reserve fodder. However, unlike the last drought and fodder shortage of similar magnitude in 1946, there was less grazing land, less flexibility of livestock movement within the region, and in over 60 per cent of the households women, not men, were responsible for livestock management (as supervisors or directly, as herders). Women relied heavily on their prior knowledge of wild foods and acquired new knowledge about fodder plants through discussions with elder men. They also engaged in widespread experimentation with tree and shrub fodder from range and woodlands (Rocheleau 1991).

A collaborative ethnobotanical survey of men and women in the five villages started with the 'general public', proceeded to the specialists and went back again to the women's group and their children (Rocheleau *et al.* 1995; 1989; Wanjohi 1987; Munyao 1987; Wachira 1987). Together they identified 118 indigenous or naturalized wild plant species used for medicine and 45 for food. Of these, participants selected five fruit trees, three vegetables and three medicinal plants for potential domestication in agroforestry systems or small gardens. They also named several fruits, vegetables and medicinal plants as candidates for special protection in place, although women were quite cynical about their ability to enforce management rules in public and shared lands.

While men's and women's priorities varied they knew many of the same places, classes of eco-

systems and plant associations. They tended to know and use different species, or in some cases, different products from the same species. Whereas men's widely shared traditional knowledge of indigenous plants had been most developed in rangeland food and fodder, their out-migration, sedentarization and formal schooling had all militated against the transmission of this gendered science and practice to the young. Some men knew a great deal about specific classes of wild plants for specialized purposes (charcoal, brick-making fuel, carving, local timber, bee fodder, and medicine), but the knowledge was unevenly dispersed and decreased markedly among the younger men in the community. Women retained a widely shared, high level of general knowledge about wild food, craft and medicinal plants, with an overall reduction in the scope and depth of proficiency among younger women. However, the knowledge gap between generations of women was not nearly as pronounced as that for men (Rocheleau 1991).

Some members of the community attributed the persistent decline in indigenous knowledge to formal schooling and a rejection of 'primitive' tradition by the young. Perhaps more important, men's out-migration had simultaneously removed adult men as tutors and created a labour shortage and double workload for women, leaving little time for traditional education in multi-generational groups of either sex. Moreover, women had different rights and responsibilities than in the past and had to acquire and maintain an ever broader range of new knowledge and skill. The differential erosion of local ecological science among men and women may also reflect their respective rights, responsibilities and opportunities in farm versus wage labour sectors. While women maintain livelihoods and retain rights of access to land through residence and agricultural production, many young men aspire to leave home and to succeed as wage labourers in nearby cities and towns, without fear of sacrificing their long-term access to land (Rocheleau 1991).

The ethnobotany survey also confirmed that most women normally drew upon fodder, fuelwood and sometimes wild food sources beyond the boundaries of household land, as did their children. However, those most reliant on resources outside their own land stated that their children were unlikely to enjoy the same facility of access to shared lands¹ (see following page for footnote reference) in the future. They noted that community level land tenure, land

use and vegetation changes proceeded on their own momentum, outside the control of individuals and small groups. Their access and the broader pattern of biodiversity in the landscape were both controlled by a combination of property rights, relations or reciprocity and population change. They noted that the shared gathering areas of 1985 were likely to be converted into cropland for the owners' children within a generation.

Poor women's new and traditional knowledge of ethnobotany was necessary but not sufficient for coping with drought and famine. They also required access to resources controlled by men at household and community level. Women's groups and individuals had to mobilize substantial political skill to legitimize and tap their 'social credit' at household, group and community levels. The fact that men actually owned most of the private plots and formally controlled the public lands set the stage for a gendered struggle for access to resources no less serious for its finesse and skilful manipulation by individual women and their self-help groups.

Poor and legally landless women focused on social strategies to secure and maintain access to wild plants or pursued alternative ecological strategies for meeting contingencies. They often gained permission to gather wood, wild food and fodder based on affiliations with 'the woman of the house', usually a member of the same self-help group or church. Beyond the drought itself, their future access to these resources on shared lands would depend on careful cultivation of social and political networks, as would their influence on soil, plant and water management decisions taken by large holders and male owners of family plots. Poor women's experience during the drought exemplified the careful interweaving of social and ecological knowledge to survive under uncertain terms of resource use, access and control.

The feminization of famine and drought response and the requisite social and ecological science of survival reflects the new spatial division of labour between men and women into rural and urban domains. These changes demonstrate that the boundaries of gendered knowledge are neither fixed nor independent. The content and distribution of

gendered knowledge influences and is influenced by the nature of the biotic assemblages in the landscape as well as the gender division of rights and responsibilities in national, regional and local contexts. Experience in Kathama also demonstrates that gendered local sciences of biodiversity extend well beyond the confines of botany and agriculture, and well into the domain of practical political economy.

4 CONCLUSION

Throughout the world, as in the farms and forests of Kathama, men and women have developed joint, separate and interlocking arts and sciences of survival in complex ecosystems. Women's rights of access and control over local resources and national policies do not, in most cases, match their increasing responsibility for food production and 'landscape midwifery'. As the bearers of knowledge and the practitioners of the science of survival women contribute to and have a major stake in protecting the biological basis of all our future lives and livelihoods. Through daily experience, not biological imperative, they hold, in many parts of the world, the threads to distinct domains of knowledge about biodiversity and the skills to weave a shared future that can integrate life-on-earth with human livelihoods.

However, recognizing women's work and knowledge does not imply that women alone should protect and restore the rural ecosystems so important to us all. The experience of people in Kathama illustrates the complex gender division of 'niches' in rural landscapes and production systems. The gender imbalance between rights and responsibilities influences all rural peoples' abilities to apply their ecological knowledge and constrains their efforts to provide for their families and protect the complex ecosystems on which they depend. The success of equitable biodiversity conservation in communities like Kathama will depend on our collective ability to restore diversity and complexity to life support and livelihood systems from local to global level, and to learn from and support both the women and men who live within the living landscape.

¹ The term shared lands is used as an alternative to common land since the formal definition of the latter (Bromley 1989) excludes the complex pattern of use, access and control described here.

REFERENCES

- Agarwal, B., 1991, **Engendering the Environment Debate: Lessons from the Indian Subcontinent**, East Lansing, Michigan: Centre for the Advanced Study of International Development, Michigan State University
- Ashby, J., 1987, 'The effects of different types of farmer participation on the management of on-farm trials', **Agricultural Administration and Extension**, Vol 24: 235-252
- Bebbington, A., 1990, 'Farmer knowledge, institutional resources and sustainable agricultural strategies: a case study from the eastern slopes of the Peruvian Andes', **Bulletin of Latin American Research**, Vol 9 No 2
- Braidotti, R., Charkiewicz, E., Haulser, S. and Wieringa, S., 1994, **Women, the Environment and Sustainable Development: Towards a Theoretical Synthesis**, London: Zed Books
- Bromley, D., 1989, 'Property relations and economic relations: the other land reform', **World Development**, Vol 17 No 6: 867-877
- Croll, E. and Parkin D. (eds), 1992, **Bush Base, Forest Farm: Culture, Environment and Development**, London: Routledge
- Dankelman, I. and Davidson, J., 1988, **Women and Environment in the Third World: Alliance for the Future**, London: Earthscan Publications
- Ferguson, A., 1994, 'Gendered science: a critique of agricultural development', **American Anthropologist**, Vol 96 No 3: 540-552
- Fortmann, L. and Nabane, N., 1993, 'The fruits of their labours', **Working Paper**, Harare: Centre for Applied Social Sciences, University of Zimbabwe
- Haraway, D., 1989, **Primate Visions: Gender, Race and Nature in the World of Modern Science**, London: Routledge
- _____, 1991, **Simians, Cyborgs and Women: The Reinvention of Nature**, New York: Routledge
- Harding, S., 1986, **The Science Question in Feminism**, Ithaca: Cornell University Press
- Hoskins, M., 1981, **Household Appropriate Technologies for Women**, Washington: Office of Women and Development, United States Agency for International Development
- Jackson, C., 1993, 'Environmentalisms and gender interests in the Third World', **Development and Change**, Vol 24: 649-677
- Jiggins, J., 1988, 'Problems of understanding and communication at the interface of knowledge systems', in S. Poats, M. Schmink and A. Spring (eds) **Gender Issues in Farming Research and Extension**, Boulder: Westview Press: 49-60
- Leach, M., 1992, 'Women's crops in women's space: gender relations in Mende rice farming', in E. Croll and D. Parkin (eds) **Bush Base, Forest Farm: Culture, Environment and Development**, London: Routledge: 76-96
- Munyao, P., 1986, 'The importance of gathered food and medicinal plant species in Kakuyuni and Kathama areas of Machakos', in K. Wachira (ed.) **Women's Use of Off-farm and Boundary Lands: Agroforestry Potentials**, Nairobi: International Council for Research in Agroforestry: 56-60
- Merchant, C., 1980, **Ecological Revolutions: Nature, Gender and Science in New England**, Chapel Hill: The University of North Carolina Press
- _____, 1989, **The Death of Nature: Women, Ecology and the Scientific Revolution**, San Francisco: Harper and Row
- Mies, M. and Shiva, V., 1993, **Ecofeminism**, London: Zed Books
- Moore, H. and Vaughan, M., 1987, 'Cutting down trees: women, nutrition and agricultural change in the north eastern province of Zambia, 1920-1986', **African Affairs**, Vol 86: 523-540
- Plumwood, V., 1993, **Feminism and the Mastery of Nature**, London: Routledge
- Raintree, J., 1984, 'A diagnostic approach to agroforestry design', in K. Wiersum (ed.) **Strategies and Designs for Afforestation, Reforestation and Tree Planting**, Wageningen: PUDOC
- Rocheleau, D., 1987a, 'Gender, resource management and the rural landscape: implications for agroforestry and farming systems research', in S. Poats, M. Schmink and A. Spring (eds) **Gender Issues in Farming Systems Research and Extension**, Boulder: Westview Press: 149-169
- _____, 1987b, 'The user perspective and the agroforestry research and action agenda', in H. Gholz (ed.) **Agroforestry: Realities, Possibilities and Potentials**, Dordrecht: Martinus Nijhoff, pp 59-87
- _____, 1991, 'Gender, ecology and the science of survival: stories and lessons from Kenya', **Agricultural and Human Values**, Vol 8 No 1: 156-165
- Rocheleau, D. and Hoek, A., 1984, 'The application of ecosystems and landscape analysis in agroforestry diagnosis and design: a case study from Machakos District, Kenya', **Working Paper**, No 11, Nairobi: International Council for Research in Agroforestry
- Rocheleau, D., Khasiala, P., Munyao, M., Mutiso, M., Opala, E., Wanjohi, B. and Wanjuagna, A., 1985, 'Women's use of off-farm lands: implications for agroforestry research', Project report to the Ford Foundation, Nairobi: International Council for Research in Agroforestry
- Rocheleau, D., Weber, F. and Field, A., 1988, **Agroforestry in Dryland Africa**, Nairobi: International Council for Research in Agroforestry

- Rocheleau, D., Wachira, K., Malaret, L. and Wanjohi, B., 1989, 'Local knowledge for agroforestry and native plants', in R. Chambers, A. Pacey and L. Thrupp (eds) **Farmer First: Farmer Innovation and Agricultural Research**, London: Intermediate Technology Publications: 14-24
- Rocheleau, D., Steinberg, P. and Benjamin, P., 1994, 'A hundred years of crisis? Environment and development narratives in Ukambani, Kenya', **Working Paper**, No 189, Boston: African Studies Centre, Boston University
- Shiva, V., 1988, **Staying Alive: Women, Ecology and Development**, London: Zed Books
- Thomas-Slayter, B., 1992, 'Politics, class and gender in African resource management: the case of rural Kenya', **Economic Development and Cultural Change**, Vol 40 No 4: 808-828
- Thrupp, L., 1989, 'Legitimizing local knowledge: from displacement to empowerment for third world people', **Agricultural and Human Values**, Vol 6 No 3: 13-24
- Wachira, K. (ed.), 1987, **Women's Use of Off-Farm and Boundary Lands: Agroforestry Potentials**, Nairobi: International Council for Research in Agroforestry
- Wanjohi, B., 1987, 'Women's groups' gathered plants and their agroforestry potentials in the Kathama area', in K. Wachira (ed) **Women's Use of Off-Farm and Boundary Lands: Agroforestry Potentials**, Nairobi: International Council for Research in Agroforestry: 61-104
- Waring, M., 1988, **If Women Counted: A New Feminist Economics**, London: Macmillan
- Women, Environment and Development Organization, 1992, **World Women's Congress for a Healthy Planet, Official Report**, Miami: Women, Environment and Development Organization
-