

ISSUES OF GENDER AND BIODIVERSITY IN NBSAP*

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SUMMARY GUIDELINES

A. Basic Principles

Gender is a social construct and not synonymous with 'women'. A focus on gender implies not viewing women's concerns and needs in isolation but understanding them and addressing them in the context of the power relations between men and women within households and within communities.

Gender analysis of issues of biodiversity would examine the processes and interventions of women in using and preserving biodiversity, as well as the effect of biodiversity on women's lives and livelihoods. [eg. does disappearance of a medicinal herb affect women and/or children? or does dwindling of wild mushrooms mean there is less food security at home?]

Gender equality can be examined at various inter-related levels: biodiversity ensuring material welfare of a woman and her family; equal access to, and control over, resources, information, benefits and opportunities; a value system promoting gender equality; and equal, or meaningful participation in decision-making w.r.t. biodiversity.

Biodiversity strategies and action plans would take into account economic and socio-cultural realities of women belonging to different communities.

B. Operatively, gender concerns in biodiversity would

- Recognise the gender dimension of biodiversity concerns
- Analyse the ways in which women and girls are affected by biodiversity
- Focus on areas where women and girls help preserve biodiversity
- Understand the connections between different eco-systems – the fields, forests and water availability – that are important for women's role in preserving biodiversity
- Identify the impact of consumerism and macro-policy on women's concerns regarding biodiversity
- Analyse the potential for government, development agencies, communities, women's groups and media in addressing gender concerns in biodiversity
- Ensure women equal space in decision-making on issues regarding biodiversity
- Draw out links between biodiversity, health, nutrition and environment degradation
- Identify laws that need to be amended/created to enhance women's role in biodiversity preservation

C. Developing a gender sensitive NBSAP would yield:

- Improved gender-disaggregated data and research to provide a more accurate assessment of biodiversity problems, needs and priorities.
- Adoption of differentiated monitoring and evaluation mechanisms for impacts of interventions on men and women.
- Development of effective benefit sharing mechanisms which give due consideration to women biodiversity experts in the wake of the Intellectual Property Rights (IPRs) regime. Gender-disaggregated data would facilitate sharing of benefits with the actual producers and innovators of biological diversity

INTRODUCTION

Just as economists have traditionally ignored intra-house power equations and assumed that men and women exercise equal decision-making power over the household economy, policy-makers, academics and development workers in the field of ecology have assumed that women's biodiversity interests are aligned with men's interests. As the following sections reveal, women and men play different roles in securing goods and services for the household. Thus, their biodiversity-related concerns, needs and knowledge base vary, though these are not necessarily contradictory. Gender equality in biodiversity means equal focus on women at various levels: to ensure their material welfare, equal access to resources, information, benefits and opportunities, a value system that respects equality of the two sexes, equal participation in decision-making, and equality control over resources and benefits. These levels form a circle without any hierarchical order or any value attached.¹

THE CONCEPT OF 'GENDER'

The word 'gender' is not a synonym for 'women' though it is often used interchangeably. It is, in fact, not exclusive to women. 'Gender' is a social construct, encompassing biological and socio-cultural characteristics of men and women. It is 'the condition of being male or female.'

Gender concerns in biodiversity would encompass the complementary roles played by women and men in conserving and managing bio-resources. Women are primarily responsible for fetching fuel and fodder and thus prefer a mix of agro-forestry that would also ensure availability of these. Men, more concerned with earning cash incomes for the house, usually prefer cash yielding crops/trees. Though more women are involved in gathering, in communities where gathering is a major activity, men's share in gathering is substantial (Krishna 1996). An ideal situation would ensure availability of both cash and high biomass plant species for fuel and fodder which are generally too expensive to buy. A gender sensitive approach would aim at satisfying the needs of both women and men but not at the cost of one sex.

At another level, biodiversity strategies and action plans should also aim at addressing the power relations between men and women, both within households and in communities, and not remain limited to improving women's living conditions by ensuring access to fuel and fodder. In other words, women's 'practical needs' of material wellbeing are often easier to address than issue pertaining to their empowerment, or what are termed as women's 'strategic' needs. Meeting strategic needs helps women gain more self-confidence, an enhanced status, access better economic and political opportunities and play a greater role in decision-making vis-a-vis the men in the community. *While it is necessary to address women's 'practical' needs, these are only pre-conditions for women's empowerment which gives them more power to influence, and act upon, decisions which affect their livelihood. Women's strengths in conservation can be augmented, and benefitted from, if the biodiversity and agricultural policies involve as well as empower them.* This requires a political recognition of women in their own right.

¹ Macdonald et al (1997)

In collecting information on biodiversity conservation in forests, for instance, information on sexual division of labour should include description of differential access to and control over resources and benefits. Customary law recognises women's right to the income from forest products collected by them and any curtailment of their daily access to essential non-timber forest products (NTFPs) could wipe out avenues of their income. Again, without land tenure or ownership rights, women are less likely to invest in long-term conservation practices. This is especially because women without such rights are excluded from the decision-making sphere where (male) land owners, and those with ownership rights on forest produce, take decisions which affect women's work on these lands (see, for instance, the Panchmahals example below). Also, access to other productive resources is often linked to ownership of, or rights to, land. For instance, access to credit often requires land as collateral. On forest lands too, if women have no assurance that they would have long-term rights to harvest what they plant, or regenerate, they may not be willing to put in much effort in conservation. Ownership and control of property contributes immensely to women's economic well-being, social status and empowerment (Agarwal 1994), thereby increasing their efficiency in implementing conservation programmes.

In the Panchmahals district of Gujarat, for instance, women own little land or property and so decision-making concerning land is almost an exclusive preserve of men. Women have found it difficult to break this barrier. It has been difficult for most women to undertake environmental regeneration and biodiversity conservation on private lands. They have directed their energies to common lands though there is an acute scarcity of common lands. Yet, despite a "no objection certificate" and panchayat resolutions supporting their right to work on the land and use its usufruct, the legal validity of this arrangement is uncertain. The biggest problem the women's groups face is how to legally secure their rights to the produce of the land they are developing with so much effort (Sarin and Khanna, 1993). This would require legal literacy, effective political voice on decision-making bodies at various levels and advocacy campaigns. All these are possible when *women's strategic needs are integrated into 'women-focused' policies and programmes from the very beginning.*

'Gender' is often conceptualised as being homogenous. This excludes all other factors, such as caste, class, age, religion and ethnicity which divide and sub-divide society and which influence women's interests. *Biodiversity strategies and action plans need to take into account economic and socio-cultural realities of women belonging to different communities.*

The uniform way of looking at 'gender' is largely due to the initial advocacy done by eco-feminists who hold that 'nature is the embodiment of the feminine principle' and identify women with nature, and men's exploitation of nature with men's exploitation of women (Shiva 1988). Women are seen to be 'just like nature', caring, nurturing, sharing and life-giving. This ideology, however, ignores the fact that socially ascribed gender relations are neither universal nor static but vary across, and within, cultures, time and space.

Gender roles are influenced by economic, political and environmental factors. "The link between women and the environment lies in the interactive effects of ideology and material conditions, rather than being rooted mainly in ideology or women's biology" (Agarwal 1995). For instance, upper class, urban-based women, can be as exploitative of natural resources as the men. Within a village too, women belonging to different communities can be at cross purposes because women's economic roles are determined by their caste, class and religion. The worst

victims of the environmental crisis and those //who are bereft of control over resources are mainly women dalits, tribal women and lower caste women.

Caste and ethnic divides, however, can also help preserve biodiversity because different species are valued differently by women of different communities. In Panchmahals district, Gujarat, for instance, the tribal Naik women collect gum from the *Dhawra* (*Annogeisus latifolia*) tree. The gum is nutritious and fetches a good market price but women from other castes look down upon collecting gum. Instead, they collect and sell the leaves of the *Timru* tree for rolling *bidis* (Sarin in Guijt and Shah 1998) Even the kinds of livestock reared and managed, or types of grain varieties grown and eaten, differ for different communities.

THE RATIONALE FOR TAKING A GENDER PERSPECTIVE IN BIODIVERSITY

Women are critical for biodiversity conservation because they do substantial work on the land, in the forests and with the livestock. Over the generations, handling soils, flora and fauna, women have acquired a wealth of knowledge and experience about the various complexities associated with biodiversity. As a first step, this fact should be recognised. Secondly, women's knowledge, experiences and perspectives should inform biodiversity strategies, policies, laws and programmes at the national, state, sub-state and eco-regional levels.

Women play a strategic role in preserving biodiversity because the bushes, creepers and wild food plants that meet their everyday needs comprise vital components and links in the biodiversity system. A forest comprising different levels of plants ensures richer overall biodiversity. Women perform much of the harvesting, seed selection, sowing, storage and other processes which conserve and enhance crop diversity (Kothari 1997). Women often undertake inter-cropping of food crops and cash crops to ensure household food security. This allows continuation of a wide variety of agricultural crops as well as of soil micro-organisms.

Ironically, women who are very often the most affected by depletion of biodiversity, have little power to do anything about it. Their voices are muted in their own households and within communities. Also, such help, advice and communication that does come from the outside is usually directed at men. Special skills will have to be developed and adopted in order to understand and validate rural women's rich biodiversity knowledge and create conducive conditions which enable them to preserve and enrich biodiversity.

Rapid natural resource depletion, dwindling biodiversity and displacement due to industrialisation and inappropriate `development' are all eroding women's elaborate knowledge about seed varieties, forest herbs and other plant species, aquatic life, and other biodiversity components; and their time-tested technologies for the processing and preservation of these products. Modern technologies like irrigation and high-yielding seed varieties have reduced area under traditional crops and methods of seed selection and preservation (MSSRF 1997). Displacement of agricultural, forest and fishing communities in the wake of mega dams, setting up of industries and other `development' projects have taken women away from their natural resource and knowledge base. Agricultural policies encouraging cash crops with no incentives available for cultivating traditional varieties, and promoting consumption of just a few cereals, mainly rice and wheat, through the Public Distribution System, have led to erosion of women's knowledge of diverse plant species. Fisherwomen have been adversely affected by

mechanisation of the fishing sector, water scarcity and drying up of breeding grounds of fish. *Thanks to macro economic policies and policies on agriculture, forestry and fisheries, women's biodiversity knowledge, and their livelihood base itself, is under threat.*

Interestingly, gender and biodiversity issues have traditionally been dealt with separately by academics, researchers, policy-makers, technologists and activists. For instance, 'The Organic Farming Source Book' (Alvares, ed 1996) details the traditions of producing and processing food in India but has nothing specific on the role of women in agriculture. While a lot has been written on biodiversity in recent years, particularly after the United Nations Conference on Environment and Development held at Rio in 1992, women's role in biodiversity management has continued to be neglected (MSSRF 1997). This has happened despite a growing concern with, and much work done on, people's participation in environmental regeneration and resource management.

Literature on gender too has not focussed on the active role that women play in biodiversity conservation. Arguments have been given on the close 'nurturing' relationship women have with ecology (Shiva 1988), the need for women to control productive resources like land (Agarwal 1994) and how forest policies exclude women (Sarin 1995) but *exactly how women nurture their relationship with biodiversity still requires in-depth research and action.*

Even the government's National Perspective Plan for Women (GOI 1988a) and 'Shramshakti' (GOI 1988b) view women as passive recipients of government policies and programmes which seek to satisfy their need for fuel and fodder. The government's country report (GOI 1995) for the fourth United Nations conference on women views women as a target group which needs training, skills and knowledge to increase agricultural productivity. *There are no policy-level mechanisms, or programmatic schemes, for recognising, identifying and building on women's own knowledge-base, experiences, needs and desires regarding biodiversity.*

Gender and biodiversity are alien for both environmental NGOs and those working on women's issues. Most NGOs working on women's issues deal with domestic violence, health & sanitation, education, political empowerment and income-generation programmes but not with issues of biodiversity. For environmental NGOs, gender concerns are ignored (Kapoor 1999) and even where women are involved, their role in conserving and managing biodiversity is not addressed.

GOVERNMENT PROGRAMMES, WOMEN AND BIODIVERSITY PROJECTS

Government biodiversity conservation projects have not only been consistently gender-blind but also promoted policies which have been detrimental to women's interests and are resulting in erosion of their knowledge about biodiversity. Benefits from the government's social forestry programmes, for instance, were cornered by the better-off farmers rather than by smaller farmers and the land-less (Chen 1993) in a society where almost 50 per cent of rural female workers are classified as land-less labourers. Social forestry also promoted timber species rather than those which gave women fuelwood and fodder (Chen 1993, Saxena 1993).

Most Rural Women are Economically Productive

About 84 per cent of all economically active women in India are engaged in agriculture and allied activities like livestock, forestry and fisheries, compared to 63 per cent of all economically active men (GOI. 1995). Of the women workers, majority are cultivators or work on the fields as agricultural labour. The rest are engaged in livestock, forestry and fisheries. Among forest communities, women and girl children are the main gatherers of forest produce for subsistence and sale. Two of the main cash earners among NTFPs, sal seeds and tendu leaves, are collected primarily by women (Sarin 1994).

In economic terms, agriculture contributes over 30 per cent of the GNP and accounts for 60 per cent of employment. Women's substantial contribution to agriculture means their expertise and needs should inform macro agricultural policies and entitle them to benefits from major state-sponsored programmes by providing them access to productive resources such as land, credit, research & development. Women's participation in agricultural extension, training and research should also be expanded. Currently, women extension workers constitute a mere 0.59 per cent of farm extension workers (GOI 1995) and interactions between women farmers and male extension agents is severely restricted due to social norms.

Almost 30-35 per cent of rural households are estimated to be headed by women. These households are dependent almost exclusively on their income, in cash and in kind. Even where there is a male earner, women's earnings contribute in a major way to the household's survival (GOI 1995). Women's contribution to the household economy, both in cash and kind, tends to be higher in villages within or near forest areas compared to those in the plains (Chambers et al 1989).

Nationalisation of NTFPs appropriated women's customary rights over forest produce and exposed them to increased harassment (at times sexual) at the hands of forest officials and private contractors. It also reduced their collection and income (Saxena 1993) apart from threatening their traditional livelihood. (Lesser number of) men were similarly affected, but because men are more mobile than women are, there were more job opportunities for them.

Joint Forest Management programmes, now operating in 23 states, have been criticised primarily for two reasons: for not providing for women's representation and participation in the village organisation; and for their focus on sharing benefits from timber production rather than usufruct species, thereby barring women's access to NTFPs from the protected forests (Sarin 1995). Women face shortage of fuelwood, fodder and earnings from other NTFPs where forests are degraded.

The Global Environment Facility-funded Eco-development plans for biodiversity conservation in selected National Parks and Sanctuaries too are not gender sensitive. These plans do not recognise local traditional knowledge (Kothari 1997) and do not question structural imbalances such as the power equations between the state and the local people and the gender gap in access to, and control over natural resources.

Even environment regeneration projects such as afforestation, wastelands development, water harvesting systems, mechanisation of fisheries and Joint Forest Management have either ignored the gender dimension or focused on women in an extremely limited fashion, more as objects to be used as instruments for achieving externally defined objectives. Even in the more successful women-focused initiatives, women's role as experts on biodiversity has not been explicitly recognised and, therefore, not built upon (Datar, 1998; Proffenberger and McGean, eds, 1996; Singh and Ballabh, eds, 1996; Singh and Burra, eds, 1993). This, for instance, is true of the Panchmahals illustration described elsewhere. *Policy interventions need to integrate biodiversity conservation in all environmental programmes with due focus on creating space for the recognition, documentation and validation of women's knowledge about biodiversity.*

In the inland fishery sector, contracts to fisher-'men's' societies and fisher-'men's' development agencies are displacing women from their traditional rights over the small catch and in the processing operations. The very terminology used structures women's exclusion. Fishing contracts in ponds and tanks in small towns and villages are also affecting the common resource base of the fisher-women. Fisherwomen are primarily involved in fish processing (Kurien 1996). With their remarkable knowledge, women can benefit the marine industry as experts on marine diversity.

With regard to state-level and national-level decision-making bodies, few women occupy senior positions in scientific research institutions or in the bureaucracy. In the National Academy of Agricultural Sciences, for instance, less than 3% of the 225 elected Fellows, skilled in plant breeding, genetics, soil conservation, etc., are women. Further, most of the women are from social sciences or are nutritionists (MSSRF 1997). The Indian Forest Service started recruiting women only since 1980 and since then not more than five women join each year. During 1995, less than 3% of the total cadre strength of 2,576 were women; and women rangers and foresters constituted less an 1% of the total employees at this level (MOEF 1995 & 1996). The orientation of these institutions and the working conditions therein need to be made more gender-responsive. This may, for instance, require change of rules to allow two rangers to share a 'beat' (forest area) rather than make one woman officer responsible for a tract of protected forest.

What is to be Achieved by Incorporating a Gender Perspective in NBSAP?

- Improved gender-disaggregated data and research to provide a more accurate assessment of biodiversity problems, needs and priorities.
- Adoption of differentiated monitoring and evaluation mechanisms for impacts of interventions on men and women.
- An expanded role for women in decision-making with regard to biodiversity issues from the local to the national and global levels.
- Greater understanding and use of women's knowledge and skills relating to biodiversity conservation and sustainable use.
- An equitable distribution of costs and benefits associated with biodiversity conservation and uses between women and men at the household and community levels.

- A reduction in the burdens on women for accessing bio-resources through independent entitlements.
- An improvement in the status of women leading to a more equitable and just society.
- Develop effective benefit sharing mechanisms which give due consideration to women biodiversity experts in the wake of the Intellectual Property Rights (IPRs) regime. Gender-disaggregated data would facilitate sharing of benefits with the actual producers and innovators of biological diversity.

GENDER DIFFERENCES IN BIODIVERSITY PRIORITIES INCLUDE:

- *Household Responsibilities:* Women are almost universally responsible for managing fuel, food, water and fodder for the household from the resources available around them. Domestic needs may conflict with commercial uses of different varieties of crops, trees and plants. This creates tensions for women and needs to be addressed.
- *Productive uses of biodiversity:* Women use bio-resources which have commercial uses. These include, for instance, medicinal herbs, non-timber forest products, small livestock small fish catch and vegetables from kitchen gardens sold in the local markets. Men usually 'manage' (with lots of labour inputs from women) commercial agriculture, logging and fisheries. These different roles of men and women have to inform biodiversity programmes.
- *Access and control over resources:* Although women have access to certain resources, it cannot be assumed that they have or retain control over their use or allocation. Women formally own hardly any of the resources they use and often their access is mediated through the men in their families or the community.
- *Priorities for the development and management of bio-resources:* For instance, in community protection of forest lands, women's needs may be overlooked by the men who decide how to protect the forest. Often women's homestead lands are ignored for carrying out soil and water conservation measures. Agricultural programmes generally focus on main fields (where women's concerns are not addressed) rather than on kitchen gardens. Again, women usually care for livestock and may prefer certain species not because of higher milk yields or because they fetch higher prices in the meat market. Species which require less labour in caring and/or require fodder/bedding that is easily accessible may be preferred.
- *Bargaining power and decision-making:* Women play a less public role in community-decision making constrained by many social norms. For instance, they may be reluctant to speak in meetings where men are present. Or where higher caste men/women are present. This requires different approaches to be evolved to ensure their participation.
- *Control over their knowledge:* Male members in the public sphere often usurp women's biodiversity knowledge and control over it. For instance, while women have traditionally protected many trees for fodder or fuelwood, forest officers' knowledge, gained through training institutions, about the same trees does not acknowledge that many forest women possess similar knowledge through experience. Again, many of the home remedies passed

through generations of women are ignored by male 'inventors' or researchers who evolve drugs based on these remedies. This also applies to fish processing or seed storage which have traditionally been women's responsibility. Recognising and endorsing women's knowledge will help bridge this gap.

SOME STRATEGIES FOR INCORPORATING GENDER ISSUES IN BIODIVERSITY

Viewing and working with women as partners and recognising their wealth of indigenous knowledge, experience and the significant role they play in biodiversity conservation and management. For instance, government and externally-initiated community-level afforestation and conservation programmes claim to form 'new' rules which bar villagers from cutting trees for fuelwood but permit gathering of fallen leaves, twigs and branches for their use. Traditionally, women have observed these very norms while gathering firewood. Even today, 75 per cent of firewood for rural domestic use in Northern India conforms to this unwritten rule (Agarwal 1995).

Not assuming things but consulting women. For instance, higher crop yields or milk yields are usually considered positively. For women this may involve more labour, difficult tasks, lower fuel/fodder yields and greater dependency on the market. It is important to find out why particular varieties are grown or kinds of animals kept. A cost-benefit analysis including non-economic costs and benefits usually gives a realistic picture on bio-resources. Facilitating a SWOT² analysis on the role women play in conserving biodiversity lets women analyse their own role in biodiversity conservation.

Giving due recognition to women's knowledge of biodiversity. For instance, including women's knowledge in the various Community or People's Biodiversity Registers under preparation. Recording of names of the women seed conservers and seed producers, women's knowledge about the various forest species of flora and fauna, their utilization and the value-addition technologies used are all necessary to make women more visible in biodiversity policies and programmes. Also, unless women's knowledge is scrupulously included, these data collections may become another tool in the hands of village men who may appropriate women's traditional knowledge and deny them benefits resulting from these.

Respecting the value women give to different uses of bio-resources. This will ensure equitable development because stressing only the financial or economic value of bio-resources can mask the social, health and other benefits of improved management and conservation systems. If priorities for biodiversity programmes acknowledge the relative values accorded to productive and domestic uses by both women and men users, more equitable management structures can be established.

Re-defining biodiversity programmes from a women's perspective, preserving and enhancing their knowledge. Even in the rare cases where 'ask the women first' dictum is followed, 'participation' is limited to consultation, planning and management while political, economic and technical questions of women's control are ignored (Krishna 1996). Dominant patriarchal

² A management analytical tool meaning Strengths, Weaknesses, Threats & Opportunities

interests have failed to provide viable spaces for women to participate in economic, technical, political and social activities on their terms. It is generally believed that women are not able to think, plan or act on their own; are not able to identify their problem areas and propose solutions; are shy of participating in public affairs and so do not want to take on decision-making roles. Yet, for instance, women can, with a little capacity building, function as taxonomists or be responsible for preparing and maintaining community biodiversity registers.

Considering women's perspectives on biodiversity. For instance, choice of grains, viewed from a gender perspective, often takes into account factors like cooking time, fuel and fodder generated from the crop wastes, taste, health and nutritional properties, use in religious or cultural rituals and amount of labour involved. Women might, therefore, prefer to preserve and continue with planting some of the traditional varieties of grains rather than adopting the latest in hybrid seeds from the market. Maintaining higher agro-biodiversity for enhancing food security by minimising risk and spreading availability across seasons is often a priority for rural women which is overlooked by mono-crop productivity enhancement.

Giving women their space in decision-making bodies. Whether these bodies are at the village -, regional or national level, women's voices need to be heard and acted upon. Token representation does not enable women to participate meaningfully unless their participation is pro-actively facilitated, at least in the initial stages. Women are also more vocal when they participate in groups rather than as individual voices. In fact, the now mandatory 33% representation to women on some representative bodies does not enable women to voice their concerns. Social norms hinder their participation in a body where 70% of the members are men. A more representative decision-making body would induct women and men in equal numbers.

Exploring the links between forests, fields and water sources. For women (as for all eco-system-dependent villagers), forests, fields and water sources are interlinked though each is a separate subject for government agencies and even non-governmental organisations. Identifying and preserving these links is important for biodiversity. For instance, extensive plantation of pine forests by the forest department on the slopes of Garhwal in Uttar Pradesh has led to the disappearance of a variety of tree species in the mountain forests. With them have vanished a variety of mountain birds, say Garhwal women. One of these bird species were good predators for *kurkula*, an insect that thrives on crops in the fields below the forest. Today the fields are full of *kurkula* and crops are being destroyed (Kapoor 1999).

Developing strategies and action plans for bio-regeneration which are in tune with local needs of different agro-climatic zones. For instance, hardy crops in dryland areas and local varieties of livestock that adapt to hilly terrains have traditionally been popular with women because they require less water and less tending. These varieties need to be identified and their importance in biodiversity promoted by macro policies and programmes. Local livestock breeds in the hills are also better adapted to the terrain than those introduced recently through government programmes.

Re-designing methodologies of 'rapid rural appraisal' and 'participatory rural appraisal' to adequately tune into women's needs and aspirations. Being gender sensitive in RRA and PRA, for instance, requires not forgetting women as independent human beings, time, patience, and

an ability to 'listen' and understand rather than just hear them. It also means learning to appreciate the categories and language women use to describe their worldview.

Mainstreaming or separating women's concerns? Biodiversity policies, laws and programmes may need to be designed keeping in view concerns that are expressed exclusively by women. In forestry, for instance, fodder, food and fuel species may be given priority even though protection by state agencies may be difficult. This, in turn, may require new forms of community management where women take on new responsibilities. Fisherwomen may want to breed smaller varieties that are nutritious and have a local market rather than bigger or rarer varieties for export markets. This may require changing current laws. At another level, decision making bodies may legally marginalise women as, for instance, in Bihar. Here, only one block-level fishing cooperative society is allowed to be registered. Thus, even where women strive, as in district Muzaffarpur, fisherwomen are not allowed to register their cooperatives (Kapoor 1999). This is true for many blocks in northern Bihar, even where the registered fisher 'men's' societies are now defunct. Membership norms, and institutional structures need to be designed with care to ensure that they do not exclude women from eligibility.

Encouraging women to come with solutions to improve their bio-resources and stake a claim in the benefits. For instance, women can become 'grassroots' doctors, teachers, trainers, researchers and planners in the area of medicinal plants and/or establish forward linkages with markets. Interestingly, gram panchayats in Himachal Pradesh had the powers to levy collection fees for harvesting medicinal plants till as late as 1971 when it was constituted as a full state (Gadgil 1998). Real decentralisation of political power through panchayati raj would enable women to protect their biodiversity base and knowledge and free them from the current top-down decision-making system for extraction of medicinal herbs.

Respecting cultural norms. For instance, sericulture has been successfully adopted by many women farmers across the country but vegetarian women of Banaskantha district, Gujarat, rejected the activity because it involved killing the silkworms. In Kachchh an NGO is trying out another way of getting the silk without killing the worms. Again, some herbs or crops are preferred because they are used in religious rituals or have social significance.

Sensitising all the actors involved in biodiversity programmes. Gender sensitisation of the various stakeholders, men and women is a necessary, but not a sufficient condition, for ensuring incorporation of gender concerns in the NBSAP. This, for instance, would include agriculture extension workers and the scientific community. It would mean sensitising the district and state bureaucracy so that women can seek information fearlessly and negotiate as equals. Significantly, most NGOs too are male dominated and require sensitisation to gender issues.

LESSONS FROM NGO EXPERIENCES

While government-initiated biodiversity projects have been gender blind, a few NGO-initiated programmes have some lessons on how conservation strategies can be made more gender sensitive, thereby creating space for women to play a more effective role in biodiversity conservation.

Social Action with Rural and Tribal Inhabitants of India (SARTHI) has *integrated community women's knowledge about medicinal herbs, plants and nutritionally important trees into the wastelands development programme involving women's groups* in the Santrampur block of Panchmahals district, Gujarat. Significantly, however, the recording of women's local knowledge of medically useful flora was not part of the original project design. The need for such a step came to the fore at a training programme conducted by SARTHI for *dais* (midwives, both traditional and modern) in response to the women's demand for access to improved health services (Sarin and Khanna 1993). The inherent link between health, nutrition and environmental degradation is obvious from a gender perspective of biodiversity management. Recognition of these links not only ensures holistic biodiversity conservation, but also enables fulfillment of women's practical and strategic needs as was proved in the SARTHI's programme. While availability of medicinal herbs and plants from forests and home gardens increased, there was improved satisfaction of, the local women and children's health and nutritional needs and, most importantly, trained cadres of village women skilled in health and para-veterinary care emerged.

Women of the Aravalis in Rajasthan have similarly integrated revival of traditional water harvesting system with biodiversity conservation leading to their empowerment. Catalysed by a local NGO, Tarun Bharat Sangh, village women from Gopalpura, Gujjaron Ki Losal, Bhaonta-Kolyala and Hamirpur in Alwar district, have come out from their isolated, veiled existence into the open - joining hands with their menfolk in building *johads*, the old water harvesting check-dams. These have led to regeneration of the forest cover in the villages. They have organised themselves into informal women *Gram Sabhas*, undertaken employment generation activities such as weaving of baskets from the indigenous varieties of 'Champurua' grass replenished in abundance in the village forests and *revitalised the Ayurvedic health system by regenerating many indigenous species of roots and herbs. Women are serving as Ayurvedic doctors in their own villages (GPF & FAO 1998).*

Navdanya is an *in-situ* genetic resources conservation initiative of the Research Foundation for Science, Technology and Natural Resource Policy, a New Delhi-based NGO. It is popular with marginal farmers and peasants in economically 'backward' but resource-rich areas of the Garhwal Himalayas and the Western Ghats, and some drought-prone areas in Karnataka where women have been primarily responsible for agriculture because of the extensive out-migration of adult males. Conserving agricultural diversity for these women not only secures food for their families but also enlarges their options for meeting their non-food bio-mass-based needs such as fodder, fuel, thatch for the house and raw material for marketable crafts.

Navdanya inherently gives due importance to women farmers. It recognises farmers' as breeders of seeds, strengthens farmer-to-farmer, farmer-to-scientist and farmer-to-consumer linkages by locating these in the farmers breeder rights.

Another successful gender-sensitive biodiversity conservation effort that has lessons for public policy is being coordinated by the Bangalore-based NGO, Foundation for Revitalization of Local Health Traditions (FRLHT). The project aims at conserving and sustainably using medicinal plants for Primary Health Centres (PHCs). The project has set up a network of over 55 medicinal plant conservation sites in Kerala, Karnataka and Tamil Nadu in collaboration with state forest departments, local NGOs and research institutes. The Foundation recognises that women are perhaps the biggest single group to possess knowledge about home remedies from

medicinal plants. This knowledge is mainly inherited by daughters and is thus preserved over generations. Women's groups are one of the village-level organisations targetted by the Foundation for conservation and use of medicinal plants. Women are trained in growing medicinal plants extracts of which are used in PHCs. These plants are grown in kitchen gardens by the women since women have direct access to, and control over, this patch of land. Kitchen gardens have multiplied through self-help training groups Some women's groups are also growing medicinal plants on marginal lands and field bunds.

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