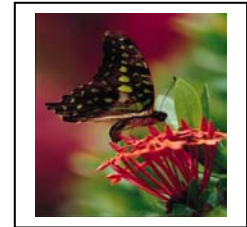


# Managing Biodiversity: Women's Role and Participation<sup>1</sup>

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Our world's environment is suffering. Human's neglect and abuse of our once-rich natural resources had reached an alarming state of danger. Every year, the earth's genetic wealth is irrevocably reduced by up to 10,000 species. It is in dire need of protection.

We all heavily depend on biological diversity for our food, clothing, medicine, fiber, timber and pharmaceuticals. But, this is especially true for the rural poor who need the biological diversity for their consumption as well as livelihood. In view of the growing population, the need for these resources will steadily increase. However, the loss of the biological diversity had never been greater than in recent decades. First and foremost, poor women in developing countries are the ones hardly affected by the damage to biodiversity because their livelihood and household needs heavily and directly depends on natural resources.



This paper attempts to provide an understanding on the implications of the loss of biodiversity to the women in developing countries. But first a brief introduction to what is biodiversity and its issues and concerns to level on concepts and terms. Second, the state of Philippine biodiversity will be presented to situate the discussion. Towards the end of the paper, the women's role and participation to biodiversity conservation along with the issues affecting them will be discussed. Also, there is an attempt to propose actions to ensure that gender perspective is address in biodiversity conservation.



## Part 1: Introduction to Biodiversity

**What is Biodiversity?** Biodiversity is defined as the variety and variability of all living organisms including the ecological complexes in which they occur, and the ways in which they interact with each other and their environment. It encompasses all species of plants, animals and micro-organisms and the intricate ecosystems and ecological processes of which they are part. It is the total variety of life on earth.

**Levels of biodiversity.** Biodiversity can be subdivided into 4 levels which are:



**1. Genetic Diversity.** This defined as the variability within species expressed as distinct varieties or differences in traits within the population of a variety. Example of genetic diversity is the wide array of rice and maize varieties. Genetic diversity is vital in the production of improved varieties of crops, timber trees and domesticated animals.

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**2. Species Diversity.** The variability between species refers to species diversity. Examples of this are the different types of species, types of plant and animals. The total species diversity around the world is estimated at 5-10 million (or possibly more than 30 million). Only 1.7 million are named and scientifically described. The Philippines has more than 1000 species of land mammals, birds, reptiles and amphibians.

**3. Ecosystem Diversity.** Ecosystem diversity refers to the differentiation in types and nature of physical environment or habitats. It is the variety of ecosystem within a geographical boundary. There are 94 classified ecosystems worldwide. The combined economic value of 17 ecosystem services is estimated at US\$16-54 trillion per year. The Philippines has 9



diverse ecosystems in terrestrial, marine and other aquatic ecosystems. Examples of ecosystems are tropical forests, swamp/marsh lands, marine, coral reef, lowland agricultural farms, upland farming areas, mangroves and urban.

**4. Cultural Diversity.** One of the most important parts of biodiversity is the cultural diversity. This refers to the diversity of people and communities that manage and use biodiversity. The diversity of people from different race, ethnic groups, and gender contributes to the diversification of biodiversity.



### **Some examples of different types of biodiversity**

**1. Agricultural biodiversity.** Agricultural biodiversity or agrobiodiversity refers to the biodiversity mainly utilized for agricultural purposes. According to FAO statistics, about 75% of human food-consumption is derived via agriculture. The impoverished rural population is 80% dependent on using biological diversity for survival. They extract from it domesticated plants, wild food plants, fuel, fodder, fiber, medicinal plants and raw materials for building or making handicrafts.

**2. Biodiversity in dry and sub-humid lands.** The use of agricultural biodiversity and natural resources differs sharply in dry and sub-humid lands. These ecosystems represent the areas of origin of most domesticated plants and animals.

**3. Forest biodiversity.** Forest biodiversity is important to people and communities for fuel, fodder, shelter and raw materials for medicinal preparations as well as wild and gathered food for consumption.

**4. Marine and coastal biodiversity.** Three to five hundred million people in developing countries depend either directly or indirectly on fisheries for their economic well being. Around 80% of the population living from fisheries are among the poorest part of society. About 60% of people in developing countries supply their need of protein through fish.

## How much biodiversity do we have?

The estimated biodiversity worldwide is 10-100 million species. There are 1.7 million scientifically named and classified with 80% of species have yet to be scientifically described. Biodiversity is not evenly distributed. These are due to ecological effects, evolutionary factors and human impacts. The tropical areas have higher species diversity than in the polar regions. The tropical forest ecosystem is the most-rich species. Although, it covers only 10 percent of the world's surface area, it contained 90% of the world species. The coral reefs and Mediterrean heathland are also species-rich with 1.7 million species named by taxonomists. The total number of species recently estimated is 14 million, although this is highly uncertain, due to lack of information about a number of insect, nematode, bacteria and fungus species.

Table 1. Estimated number of described species

Kingdom	Described Species
Bacteria	4,000
Protoctists	80,000
Animal: vertebrates	52,000
Animal: Invertebrates	1,272,000
Fungi	72,000
Plants	270,000
<b>Total described species</b>	<b>1,750,000</b>
<b>Possible total including unknown species</b>	<b>14,000,000</b>

Source:UNEP-WCMC 2000

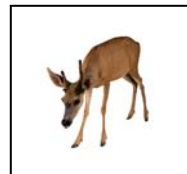
## **Part 2: State of the Philippine Biodiversity**

The Philippines is one of the earth's biologically wealthiest nations and is included in the elite class of the "**Megadiversity Countries**" because of its biographic isolation and high level of endemism and diversity. Megadiversity countries include among other China, USA, Brazil, Australia, India, Democratic Republic of Congo, Mexico, Indonesia, Peru, South Africa, Colombia, Venezuela, Madagascar, Papua New Guinea, Malaysia and Ecuador.

It is fifth among the megadiversity countries in terms of **endemism**. Endemism is defined as wherein species are found only in a particular region. Philippine wetlands harbour a rich variety of plants and animal life estimated at 1,616 species of flora and 3,308 species of fauna.

Human cultural diversity is also quite high. There are 111 ethnolinguistic groups in the country with some language subdivided into a great many local dialects.

However, the Philippines is also consider as one of the "**Biodiversity hotspots**", with the most severely endangered among the megadiversity countries. It is 19 in the list of biodiversity hotspots. There is only 6-8% of the natural vegetation still remaining. Only 5 % of the coral reefs are in excellent condition. Eighty percent of the mangroves lost in the last 75 years. There are 86 species of birds, 51 species of mammals and 10 species of reptiles are threatened while 18 Philippine species are endangered with extinction.



## Fauna

The status of the total number of wildlife species as well as endemic and threatened species in the Philippines is shown at Table 2 while the marine biodiversity in the Philippines is shown at Table 3.

Table 2. Total number of wildlife species in the Philippines

Major Taxa	No. of Species	Endemic Species	Threatened Species
Amphibians	83++	58++ (70%)	2 (2%)
Reptiles	253	167 (66%)	10 (4%)
Birds	556	177 (32%)	86 (15%)
Mammals	202	110 (61%)	51 (25%)
<b>Total</b>	<b>1094++</b>	<b>512++ (47%)</b>	<b>168 (15%)</b>

Source: PFEC

Table 3. Status marine biodiversity and ecosystem

Marine/Ecosystem	No. of Species
Coral reefs	500
Fishes	2000++

Source: PFEC



## Flora

There is some uncertainty as to the number of plants in the Philippines. The most recent estimate is in the order of 10,000-12,000 species with up to 50% endemism. Palm diversity and endemism are especially high with 157 species, of which 109 (69%) are endemic.

Diversity in agriculture is estimated at 1,210 species of plants used for food, feed, medicine, or ornamental values.

## Ecosystem

The remaining 8,000 sq km of original forest and the marine ecosystems is in excellent condition that is considered as the most valuable real estate of the country. However, the destruction is evident on our ecosystem. Only 5% of the coral reef is in excellent condition. Eighty percent of the mangroves were lost in the last 75 years while seagrass beds lost is 30-50% in the last 50 years.



## Part 3: Why do we need to conserve biodiversity? Issues and concerns

**What is the importance of biodiversity?** The benefits and functions derived from biodiversity can be classified into: direct benefits and indirect benefits.

### A. Direct benefits

#### 1. *Biodiversity sustain needs of people for food, fiber, shelter, and medicine*

##### FOOD

- ☞ Around 5,000 plant sources are used as food worldwide
- ☞ 103 species contribute to 90% of world food needs
- ☞ Only 3 crops - rice, maize and wheat - contribute nearly 60% of calories and proteins obtained by humans from plants.
- ☞ Animals provide some 30% of human requirements for food and agriculture and 12% of the population live almost entirely on products from ruminants.



##### FIBER

- ☞ Clothing fibers are derived from diverse plant species like cotton, abaca, pineapple and maguey.
- ☞ Clothing materials and accessories are derived from animals include leather or hide, wool, fat and silk.

##### SHELTER

- ☞ Materials for house construction are derived from various plant sources like guijo, yakal, lauan, apitong, narra, almaciga, coconut, molave, rattan, bamboo, nipa, etc.

##### MEDICINE

- ☞ At least 858 Philippines plant species are used for medicines
- ☞ Three billion people are estimated to depend on traditional medicine. Traditional medicine systems, such as Ayurveda in India, are based on pure plant extracts.

#### 2. *Biodiversity provides livelihood*

- ☞ Natural resource products provide livelihood activities like farming, animal raising, hunting, rattan and bamboo gathering, logging, fishing, shellfish collecting, honey gathering, charcoal making, fuelwood gathering, cogon collecting, medicinal herbs gathering and orchid gathering.



#### 3. *Biodiversity contributes to commercial and industrial uses, and trade*

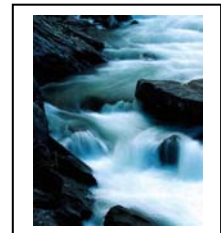
- ☞ Plants provide industrial and commercial products such as natural cellulose, rubber, gums, resin, tannin, dyes, wax, oils, fuelwood, timber and forage
- ☞ Animals provide oils, feeds, silk, feathers, and leathers
- ☞ Genetic resources from developing countries contribute US\$10.2 billion annually to US maize and soybean production

#### 4. Biodiversity provides the building blocks for future crop and animal improvement

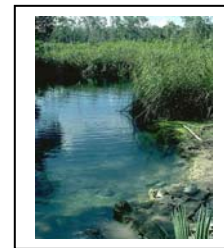
- ☞ Plant biodiversity provide important genes for breeding and improvement of crop varieties
  - Genes from wild tomato of Peru contribute \$8 million per year to US tomato processors
  - ¾ of rice harvest in US is based on IRRI germplasm
  - Maize germplasm from Mexico, the Caribbean and Brazil has been used to develop a commercial maize variety with genetic resistance to army worm damage that causes up to \$30 million in crop losses to US farmers annually
- ☞ Wild animal species are important to improved livestock production of cattle, pigs and poultry

### B. Indirect benefits

**1. Maintenance and stabilization of water functions.** Biodiversity is important in maintaining the quantity and quality of river, lakes, groundwater and other water bodies. It is important in facilitating and regulating the flow of the water bodies and its tributaries to avoid disasters such as flooding.



**2. Regulation of climate.** Biodiversity is important in the maintenance of air quality, climate variability and vulnerability to climate change. Impacts of biodiversity degradation affects climate changes, and in return affects the natural resources and people's lives.



**3. Soil regeneration and conservation.** Land resources, including soil, are finite, fragile and non-renewable. Diverse biological resources are important in regeneration and conservation of soil needed for plant and animal life support system as well as human habitat and welfare.

**4. Recreational, scientific, educational, spiritual and aesthetic values.** Biodiversity is important for human's recreation, scientific studies and inquires, educational activities, spiritual and for aesthetic values.

### Key issues on biodiversity loss

**1. Extinction is forever.** When a species cannot change quickly enough as their environment changes, they are lost forever. It is predicted that extinction may occur when:

- ☞ not only a single species disappear but groups of species that are interdependent on other disappear
- ☞ most of the remaining forests will be cut down
- ☞ as few as 30% of plant and animal species will survive
- ☞ mudslides flowing over denuded fields and silt washing into rivers and lagoons will destroy fisheries
- ☞ longer and vigorous typhoon season will play havoc with rice crops
- ☞ guerrilla warfare, disease and hunger will eventually drive down the birth rate by 2050, the population will sink to 55 million, 35% lower than it is now

In the Philippines, there is only 6-8% of the natural vegetation still remaining. Only 5 % of the coral reefs are in excellent condition. Eighty percent of the mangroves lost in the last 75 years. There are 18 Philippine species endangered with extinction.

**2. Genetic Erosion.** Genetic erosion is the loss of crops and plants from their habitats and farmers' field. Genetic erosion greatly affects food security.

- ☞ 75% of plant genetic diversity has been lost since the 1900s as farmers worldwide have left their multiple local varieties and "landraces" for genetically uniform, high-yielding varieties
- ☞ 30% of livestock breeds are at risk of extinction
- ☞ Six breeds of animals are lost each month

**3. Environmental collapse.** Environmental collapse occurs when the environment fails to provide the services it normally gives. The abuses of man are heavily contributing to the degradation of the environment. For example, logging and inappropriate land use for short-economic gain is one of the factors promoting mudslides and landslides. An example is the Ormoc tragedy where mudslides and landslides brought by torrential rains on heavily denuded forests caused damage to properties as well as loss of people's lives. More than 110 million people were affected and more than 6 million people were displaced as community infrastructure, including housing, food storage, transport and communication systems, were lost during storms. It is estimated that worldwide direct economic losses exceeded US\$34 billion.

### Root causes of biodiversity loss

**1. Habitat destruction.** Changes in the habitat lead to losses of biodiversity. The destruction of habitats is caused by agricultural intensification, deforestation, population pressure and urbanization, and climate change.



### **2. Monocropping of agriculture through the Green**

**revolution.** Green revolution is the introduction and use of high yielding varieties packaged with chemical fertilizers and pesticides aimed to increase crop yield. This was introduced in 1970s had resulted to replacement of local varieties by modern varieties and crop uniformity. In the Philippines, over 3,500 rice varieties were known to be planted before the Masagana 99 program (Philippine program for Green Revolution) in 1970s. These traditional varieties were forever lost because they are no longer planted by farmers. At present, around 90% of irrigated ricelands are planted to modern varieties.

### **3. Demographic changes such as migration and urbanization.**

Urbanization process is taking place at an unprecedented rate. Nearly half of the world's population is living in cities and the rate is increasing by 2 percent per year. The accumulation of people, their consumption patterns, travel behaviour and their urban economic activities have a large impact on the environment in terms of resource consumption and waste discharges. At the rural communities, when people stream to cities they lose their connection to the land. Human's interaction with enhancing biodiversity is lost.



**4. Policies and legislation that support modernization of agriculture.** As earlier mentioned, monocropping such as the Green Revolution program leads to biodiversity losses by replacing diverse genetic materials with a few varieties. Government policies and legislation that only addressed increasing crop yield for economic gains had resulted to problems in biodiversity loss which has further marginalized and impoverished farmers and further intensified food insecurity. Examples are the Philippine government agriculture program to introduce high value crops such as pineapples and banana, and hybrid rice.

**5. Development of Biotechnology.** Biotechnology is the technical sophistication that allows the selective manipulation of genetic material and the transfer of genes, not only between varieties but also between all plant, animal and microbial species. Proponents of biotechnology argue that it will solve mankind's food, energy, medical and environmental problems. However, concern focus on the fact that transnational food, pharmaceutical and chemical corporations (TNCs) now control biotechnology research.

Since 1996, TNCs has spent some US\$34.3 Billion to ensure control of seed market which is currently worth US\$30 billion. Moreover, the quest for better production methods such as genetically modified organisms (GMOs) sometimes produces unanticipated consequences such as health risks (development of allergies, development of resistance to cancer, increased susceptibility to cancer, unknown health effect of foreign genes in the body) and environmental concerns (faster development of pest resistance, development of “weedier weeds”, genetic pollution, adverse effects on non-target and friendly insects, increased dependence on herbicides, unknown effects on the food chain, unknown effects on the soil organisms). Furthermore, modern biotechnology has revolutionized the global food system. In order to restrict the use of farmers of seeds, the “killer seeds” are being produced via the terminator technologies. The International Seed Federation is expecting a global turnover of US\$ 2 billion for the year 2000 alone. GMOs and killer seeds are destroying and controlling the biodiversity wherein the livelihood of many farmers and communities are highly dependent. Food transportation and distribution systems are often ignored as scientific solutions are sought to increase crop yields. The overall gains can mask the need for adequate food production in poor rural areas.

**6) Biopiracy, IPRs and patenting of genetic resources.** Biopiracy is the use and claim of legal rights to indigenous knowledge and genes from biodiversity rich countries by the companies and researchers from the industrialized countries. Intellectual property laws encourage the development of new products and technologies but often exploit traditional knowledge without compensation and without considering important equity and sustainability issues. The extension of patent law and intellectual property rights (IPRs) to GMOs and other new technologies has enhanced the position of supremacy enjoyed by TNCs vis-à-vis farmers in developing countries. Patenting encourages privatization of genetic resources, not benefit-sharing. It has also increased farmers’ dependency on non-regenerating seeds. Specifically, the effects on genetic resources are: they stifle the flow of information and germplasm, promote uniformity in breeding and exclude farmers from the commercial seed market.



**7. War and armed conflicts.** The environmental consequences of armed conflicts are serious obstacles for maintaining peace and building sustainable development. Not only can environmental stress and scarcity form an important cause behind the occurrence of conflicts, bombing and the use of land mines cause a direct destruction of forests, land, and water systems. Spraying with toxic chemicals has a devastating effect on ecosystems, as the Vietnam war showed. Widespread fires and purposeful pollution of water resources are devastating war tactics, effecting communities and the environment. Often it is the environmental consequences of conflict, rather than the conflict itself, which leads to the forced displacement of people.

## **Impacts of biodiversity loss**

**1. Food insecurity.** Food diversity is threatened as traditional genetic materials are replaced and natural resources that act as reservoirs of biodiversity are affected. This trend poses a particularly dangerous threat to people who depend on natural resources for survival for several months of the year. Food insecurity might lead to scarcity of food, malnourishment and hunger.

**2. Genetic vulnerability of crops to environmental stresses, climate change, and pests and diseases.** Genetic vulnerability refers to the condition when a widely planted crop is uniformly susceptible to pest and environmental hazard as a result of its genetic constitution, thereby increasing a potential for widespread crop losses. This occurs when only a few genetically uniform or related varieties are planted over significantly wide area. Examples are: The Philippines and Indonesia in 1970 was badly hit by Tungro virus epidemic when modern rice varieties were rapidly spreading and displacing traditional varieties. In Cuba in 1979-1980, the rust attack on sugar cane variety planted to 40% of the country resulted in the loss of 1 million tons of sugar.



**3. Contribute to ecosystem imbalance.** Ecosystem imbalance leads to the loss of genetic and species biodiversity. The agricultural intensification, deforestation, population pressure brought by urbanization and climate change are just some of the causes affecting changes in the ecosystem. At present, wetlands and other wild, uncultivated regions are rapidly disappearing.

**4. Loss of sources of medicines and shelter.** Loss of medicines and shelter from forest ecosystems due to the habitat destruction and biopiracy can pose great losses to people who depend on it. There are 3 billion people estimated to depend on traditional medicine. It is estimated that 100 billion US \$ worth of medicinal products made from wild plants and animals are produced every year.

**5. Loss of local knowledge, including systems, about genetic resources.** Along with the loss of genetic diversity, knowledge associated with these genetic materials on conservation and use is also being lost. Farmers and communities will have no control of their biodiversity.

**6. Threat to people's livelihood.** The economies of many Third World communities depend on biological resources for their sustenance and well-being. In these societies, biodiversity is simultaneously a means of production and an object of consumption. The survival and sustainability of livelihood is ultimately connected to conservation and sustainable use of biological resources.



### Why farmers and communities are important in biodiversity conservation?

1. Farmers are responsible for creating diversity of crops, including the local/indigenous knowledge
2. Farmers select, cultivate, develop and maintain diversity of seeds and varieties
3. Farmers' seed supply system provides high quality seeds comparable or even better than the formal system
4. Most of the genetic resources are in the hands of farmers and communities



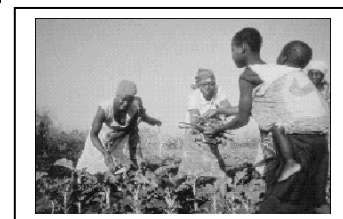
## **Part 4: Women and Biodiversity**

### How about women farmers in biodiversity conservation?

The loss of biodiversity is alarmingly increasing in recent decades. Women, particularly the poor in developing countries, are hard-hit by the damage to biodiversity. Historically, women were the world's first farmers and plant domesticators but they were still often NOT seen as farmers and plant domesticators in their own right! The marginalization of women and the destruction of biodiversity go hand in hand. Loss of biodiversity is the price paid in the patriarchal model of progress which pushes for inevitably towards monoculture, uniformity and homogeneity.

### Women's role and participation in biodiversity conservation

**1. Women as food providers.** Women had significant role in household food security and seeing to the family's needs: they produce 80% of food in Africa, 60% in Asia and 10% in Latin America. Women often cultivate seed, tend fields and kitchen gardens, gather fuel and fetch water, fodder and wild fruits from forests.



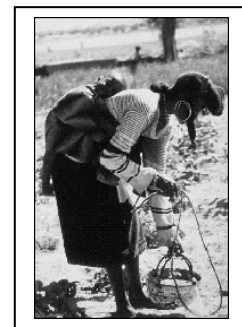
**2. Women as healers.** Women are mainly responsible for the health and well-being of her family. In India, rural women know the medicinal properties of 300 types of trees.



**3. Women as animal custodians.** Women's knowledge has been a mainstay of the indigenous dairy industry. In India, women have been experts in the breeding and feeding of farm animals, including not only cows and buffaloes, but also pigs, chickens, ducks and goats. In African villages, women use and conserve up to 120 types of animals.

**4. Women as seed keepers, plant selectors and breeders.** Women are often the ones that use, cultivate and conserve biodiversity. In Kenya and the Amazon, women bring seed into the family of the husband when they marry. With women daily contact with natural resources, it can be said that women built an extensive knowledge and experience on how to use biodiversity. Older women pass their knowledge to younger women, a process that is becoming more rare among men.

**5. Women as forest gatherers.** Since poor women usually do not own land, they tend to depend on forest products for consumption and source of income. The tribal women in Andhra Pradesh, India live from sale of forest products such as mushrooms, tamarinds and cigarette made from wild tendu leaves. Women's knowledge in forestry is crucial to the use of biomass for feed and fertilizer. Knowledge of the feed value of different fodder species, the fuel firewood types and of food products and species is essential to agriculture-related forestry in which women are predominantly active.



## Key issues regarding biodiversity from a gender perspective

**1. Livelihood insecurity and time constraints.** Women's livelihood, especially in developing countries, and that of their children depend on natural resources directly. Land degradation, desertification and loss of biodiversity affect the supply of water, firewood, food and medicine which women are responsible for. This detracts from the amount of time they can dedicate to other productive and reproductive tasks.



Furthermore, soil degradation and desertification mean reduced agricultural productivity causing *Environmental Refugees*. According to UN, 135 million people are at risk of becoming environmental refugees. Due to the demand for natural resources as energy, food and shelter, the pressure on natural resources in areas where refugees are settling often increases enormously, causing conflicts over resources with the local population.

**2. Unequal access to resources and benefit options.** Uncertain rights of access to and ownership of natural and economic resources makes women at danger of losing out even more in distribution of commercial benefits arising from the use of biodiversity. It is not just that women's work is valued unequally, material equality is also difficult to achieved. Women lack access to the resources for farming such as land, inputs, credit, extension facilities, etc. and they tend to rely on common property resources. Land, which forms the basis of the organisation of rural communities, is generally controlled by men. Privatisation of land through so-called progressive agrarian policies, has further resulted in transferring community land into the hands of private owners. Forest land that has been contracted out to private contractors is suffering the same fate. The privatizing of water bodies and forest resources has also greatly curtailed women's access to important resources such as water, fuel and fodder. Privatization, one of the engines driving economic

globalization, has intensified some of the existing gender, class and race-based inequalities to which poor women farmers are subjected.

**3. Unequal rights and entitlements.** Women's livelihood is under threat due to excluding women from land ownership and use. In developing countries, titles of land are usually granted to males as head of households.

Women also received little support in the way of advice, credit, technology and research. An example is forest domain, development projects usually concentrate on commercially useful trees, neglecting the 5 F's vital to women: food, fodder, fuel, fiber and fertilizers.



**4. Knowledge gap.** The contribution of women in terms of labor and skills, and to an even greater extent their knowledge of how to use and manage natural resources to satisfy multiple household needs, continues to be overlooked. Women's knowledge and priorities concerning the use and conservation of biodiversity are often disregarded in environmental decision-making processes.

In addition, a knowledge gap is widening between men and women. Men's knowledge are becoming lost and integrated when they leave their villages to work in cities or in modern agriculture. In such cases, women and children are left to take care of the farm fields and animals.



In most societies in Africa, Asia and Latin America, the care of seeds has traditionally been in the hands of women, who have developed a broad spectrum of well-adapted crop varieties. However, the transformation of agriculture to meet the needs of a globalized market economy is contributing to the gradual erosion of their biological resources and knowledge systems. The opening up of trade in agriculture has resulted in hardships for small farmers to compete in the world market, and increased dependence on monoculture production, fertilizers and genetically engineered seeds.

## Part 5: Proposed Actions

### How do we ensure there is gender perspective in biodiversity conservation?

**1. Action at international level.** The legal implications of the ownership and use of genetic resources are extremely complex in an increasingly globalized market. In this context, basic questions of ethics and equity arise. As large number of treaties and declarations in the past years reflect the change of policy environment in which the management and control of biodiversity takes place. In an attempt to understand the issues and concerns of biodiversity conservation at the international level, some of the international treaties and declarations will be worth looking at its gender perspective. It is suggested that women have to be involved and participate in all decision-making processes in consultations and negotiations of international agreements and treaties during all stages.

#### Convention on Biological Diversity

The Convention on Biological Diversity (CBD) was signed in 1992, in the wake of the United Nations Conference in Environment and Development held in Rio de Janeiro. Currently, some 170 countries plus European Union adhere to this convention. The objectives of the CBD are the conservation and sustainable use of biodiversity and benefit-sharing arising from its use. These objectives are to be achieved through a range of general, flexible obligations that emphasize the national sovereignty of each country over its own genetic resources. The CBD explicitly recognizes in its preamble "the vital role that women play in the conservation and sustainable use of biological diversity" and affirms "the need for the full participation of women at all levels of policymaking and implementation for biological diversity conservation".

### Action Programme contained in Agenda 21

The Action programme contained in Agenda 21 endorsed at the 1992 Earth Summit points to the contribution that women make to safeguarding biodiversity, in its comments in the recognition of traditional practices and knowledge. Governments are called upon to ensure that local and indigenous groups shares in the commercial benefits accruing from the use of traditional methods and knowledge. Chapter 24 -Global Action for Women towards Sustainable and Equitable Development - is devoted to new development paradigm. It begins by observing that equal status for women is vital for the successful implementation of Agenda 21. In section 24.2 (c) governments are called upon: “To consider developing and issuing by the year 2000 a strategy of changes necessary to eliminate constitutional, legal, administrative, cultural, behavioural social and economic obstacles to women’s full participation in sustainable development and in public life”.

### Global Plan of Action for Conservation and Sustainable Utilization of Plant Genetic Resources

Section 2.1 draws attention of the international community to the fact that the role played by women in the conservation and development of plant genetic resources has “occasionally” not been recognized. The Leipzig Declaration expressly points to the contributions of rural men and women, and of local and indigenous communities, to the conservation and improvement of plant genetic resources. This document affirms that an equitable distribution of the benefits accruing from the use of traditional knowledge. The International Undertaking has been reviewed and revised to ensure it conforms to the Convention of Biological Diversity. In November 2001, this task was completed with an adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture. The IU clarifies and regulated the following: Access to plant genetic resources for food and agriculture in multilateral systems, Recognition of the role of men and women farmers and plant-breeders, and of indigenous and local communities, on the basis of “Farmers’ Rights”, and Mechanisms for the fair and equitable distribution of the benefits of use.



### Global Biodiversity Strategy

The GBS is also of relevance to CBD implementation, although it is not legally binding. It as jointly formulated by Work Resources Institute (WRI), the International Union for Conservation (IUCN) and the United Nations Environment Programme (UNEP). Within the framework of the Plan of Action for the Conservation of Biodiversity, governments and international organizations are summoned to strengthen the role of women. Activity 26 cites “the participation of women in all political decision-making processes relating to the environment; the involvement of women in the planning and conduct of projects; access to property rights and ownership rights; greater account to be taken of women in all types of training measures”.



**2. Action at national level.** Men and women should have equal access and opportunities to participate in national consultations and policy-making, especially on translations of international treaties and agreements. Capacity building such as

environmental education that reflects different roles of men, women and children in biodiversity protection should be implemented. Support to organization and networking with gender-balanced representatives of local and indigenous communities.



**3. Action at local level.** Provide support to gender-sensitive projects and organization. Encourage and establish networking with gender-balanced representatives of local and indigenous communities. Provide capacity-building for grassroots women on biodiversity conservation. Facilitate exchanges of experiences among women on this issue. Documentation and publication on gender and biodiversity based from grassroots initiatives.

## Part 6: Conclusion

The state of the world's environment is vital for global food security. It was once believed that natural resources had an unlimited capacity to meet humanity's needs. It is now more widely understood that the environment is under threat and in need of protection. The loss of biodiversity had never been greater than in recent decades.



Farmers and communities as well women had played an important role in conserving and managing biodiversity and it has been recognized worldwide. However despite such recognition, women who had contributed to the enhancement and development of the world's biological diversity are still undervalued. We need to act now. Initiatives and actions should be done to address and change this situation.

Let me end with a quote: "The capacities of women as biodiversity managers cannot be fully realized until women are freed from legal and social discrimination - a tasks still before many countries".  
(Source: WRI, IUCN, UNEP 1997).



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