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SEEKING ENVIRONMENTAL JUSTICE AND POLICY MEASURES FOR IMPROVING BIOLOGICAL DIVERSITY IN KOREA

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ABSTRACT

The biological diversity issue is generally one of the most important environmental justice issues. Environmental justice leads us to think about equity. The value of biological diversity is closely related to equity issues. Action for conserving biological diversity is based on equity issues. For improving biological diversity, various policy tools may be needed and government should do something. Policy tools such as incentives must be adopted. The Korean government should consider introducing the lease and management contract program, management contract programs for special activities such as adopting environmentally-friendly farming, leaving summer crops without harvest, and providing resting areas, and a set-aside management contract program. The introduction of these programs make us our stride for achieving environmental justice.

Ⅰ. Introduction

Discussions on biological diversity[1] can be initiated by those on

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[1] Meaning "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity

environmental justice. The biological diversity issue is one of the most important issues in environmental justice.

The issues of environmental justice are different from the issues covering the procedures used to determine the allocation or distribution of other economic factors. Many environmental ethics issues are different in the sense that, unlike policy issues in most other policy arenas, they involve the measurement or manipulation of enormously complicated ecosystems that are dynamic, interrelated to other systems, dependent upon projections well into the future, and subject to a large degree of scientific uncertainty. The decision rules and processes that are currently used may be wholly inadequate and thus require a creative forms of decision-making.

One of the most important components of biological diversity in Korea concerns migratory birds during winter. There are serious conflicts between the interests of farmers and environmentalists. Any kind of action should be taken to resolve these conflicts. In particular, the government should not only consider farmers' harvest losses that migratory birds destroyed, but also ensure the protection of ecologically valuable birds.

This paper discusses some of the general features of how environmental justice systems respond or do not respond to these issues and analyzed the relationships between biological diversity and environmental justice, and finally recommends a policy measure for improving biological diversity in Korea.

II. Equity Issues on Environmental Justice

Environmental justice is one broad concept of environmental ethics that are a set of norms concerning how human beings should behave toward the natural world. These norms may be morally-based (concerned with what is good) or rationally-based (concerned with what is reasonable and practical). On moral

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within species, between species and of ecosystems" (Article 2 in Convention on Biological Diversity).

grounds, philosophers disagree whether we simply owe responsibilities to other humans, or whether we also have direct responsibilities to plants, animals, and especially ecosystems based on their own moral claims (DesJardins 1993, 13-14). The gamut of belief systems runs from conservationism, in which natural systems are valued primarily for what they can produce for human use, through biocentrism, in which natural systems are valued for their own sake, to deep ecology, a belief system which values the natural world for its own sake and sees human needs as secondary and subordinate. The rational basis for an environmental ethic is the recognition of a broadly defined and conceived self-interest, which may be bolstered by but does not depend upon moral reasoning. An appeal to reason is at the center of the rational approach: specifically, the argument that healthy ecosystems will continue to serve mankind in perpetuity and are a necessity for serving all of the various values any of us might have -- material, aesthetic, and spiritual. Both moral and rational formulations of environmental ethics depend upon extending our thinking to take in the needs of something that is beyond ourselves: mankind, the diversity of animal or plant life, natural ecosystems, the land, biotic mass, mother earth, or the planet.

Environmental justice concerns the harmful effects of environmental hazards and especially attempts to address disparities in the distribution of these harmful effects and related benefits. The term also extends to the unequal distribution of influence in the decision-making process in the environmental arena. In contrast to the term environmental equity, it is more focused upon the realities of injustice and concerned with groups and individuals gaining a just share of scarce resources and burdens.

The question, "what is justice?" is one which commands a great deal of attention and arouse passion among philosophers and will only be mentioned here in a broad outline. The only principle based on an agreement is the proposition that each should receive according to what each is due. The debate, of course, rages around the question of how to determine, in a

particular society and at a particular point in history, exactly what is due. On this question, justice philosophers may be arrayed politically on the basis of how much redistribution of resources is envisioned or condoned in their theory construction, or they may be distinguished on the basis of whether the appropriateness of means or ends is prior. There is another school of thought that looks for justice in the process and arrangements for reaching a decision or agreement.

Environmental equity issues arise over those things that are in short supply relative to the demand for them. The concern about the fair allocation of these things is translated into arrangements and institutions to allocate them among those who want or need them. These general truths are subject to two qualifications: 1) those sharing the scarce good must care enough about what they receive to desire their fair share; and 2) arrangements or institutions designed for allocating scarce things make sense only for those things that people are able to distribute.

A prudential approach to environmental justice and environmental ethics calls for developing an understanding of the elements and processes of natural systems, appreciating the contributions of the science of ecology, and broadening our decision-making on environmental matters to include cultural and political phenomena. Such transformative thinking would help to build a common reference base making the reaching of agreement embodying our special and collective interests more likely.

The distribution that concerns those seeking justice leads us to consider four types of equity: 1) equity across nations (inter-national equity), 2) equity across groups and individuals within a nation (intra-societal equity), 3) equity across generations (inter-generational equity), and 4) equity across species (inter-species equity) (Leopold, 1968). Environmental equity overlaps with environmental justice, but is more centered on the nature of justice and principles for using the earth's resources.

The logics of production and natural ecosystems inevitably collide and create human conflict, necessitating the use of justice

systems. Environmental equity issues fall into several categories of group conflicts. Understanding the faces or characteristics of equity issues is an important task to seek environmental justice as a starting point for protecting biological diversity.

1. Inter-national equity issue

Major environmental and developmental issues tend to separate the nations of the north from the nations of the south, developed nations from underdeveloped nations, and rich nations from poor nations. The international recognition of these worldwide environmental problems has led from time to time to worldwide conferences on the environment, leading to the articulation of environmental management principles, prescriptions from legislation within constituent nations, environmental monitoring systems, and funding for research efforts. Included in this list are the 1972 Stockholm Conference on Human Environment, the 1992 Rio de Janeiro United Nations Conference on Environment and Development (UNCED), and the 1987 Montreal Protocol on Substances Deplete the Ozone Layer. Two types of environmental problems have served as the backdrop for the conferences. The first generation of environmental problems are pollution of water, air and soil by industrial activities associated with poverty and underdevelopment. The second generation environmental problems are preservation of bio-diversity, acid rain, depletion of ozone, global warming, etc..

For people in the south (economically underdeveloped countries), development is generally a more important issue than the environment. Protectors of natural systems are mostly northerners. They can be utopian and elitist in their proposals for reform, often calling for education and consciousness-raising for the southerners instead of reforming their own consumptive practices that drive the production that is at the root of the ecological damage. Global environmental protection will necessarily require a redistribution of wealth from rich to poor nations. This will produce conflict as industrialized nations attempt to preserve their privilege and power, and developing

nations attempt to bring living standards up from bare subsistence levels (Schnaiberg and Kenneth 1994, 234).

Another distributional inequity lies in the fact that developing countries are likely to be infused with products from industrialized nations that are banned or restricted in the latter, particularly agrochemicals and hazardous waste.

2. Intra-societal equity

Within nations, sharp differences and conflicts frequently arise among and between groups over the distribution of environmental resources and burdens. Most intra-societal equity issues spring from inherent contradictions between economic growth and environmental protection. Given the logic of economic growth, the interests of production enjoy clear advantages over those desiring environmental protection. Nevertheless, although grassroots environmental interests lose the majority of confrontations with economic interests, there is evidence that they become politicized by their efforts and harden into effective players in the long term(Cable and Cable 1995).

Even when environmentalists successfully push government to regulate industry or development interests, associations of firms may effectively counterattack to resist regulation.

3. Inter-generational equity

Ecosystem dynamics not only cross international boundaries and demand concerted action of international bodies; they bring about an interdependence of generations, in which the past, present, and future are tied together, thus expanding the ethical horizons of public officials. Decisions made before have shaped the policy issues we face today, and the choices we make today will influence the lives and governance of tomorrow's people. Governments and public officials are being called to stretch their ethical lenses to take in more of the future, and more of the eventual impacts instead of just the immediate impacts.

What duty of care does the current generation owe to succeeding generations? The Stockholm Declaration[2] proclaimed

the solemn responsibility to protect and improve the environment for present and future generations. Since Stockholm Declaration whole theory of the rights of future generations has developed[3]. Concerns about environmental protection, especially when they go beyond human health considerations to embrace species preservation and protection of ecosystems, are almost by definition inter-generational. We clearly have in mind existing generation when we make environmental policy. The key question is how far out in time do we extend our benevolent intent?

4. Inter-species equity

The debate here takes place over whether decision-makers owe a responsibility to non-human animal species and plant species above and beyond their potential for serving human needs. The debate is framed as a conflict between anthropocentric values (concern with humans) and biocentric value or ecocentric values (concern with all life forms, or ecosystems).

Non-human animals and plants are residents of the biosphere. They are affected by our treatment of them and by our treatment of the earth. Although the actions of animals may lack moral significance, their existence has real, instrumental value. Humans use some of them to make their lives more comfortable and healthier. Our ignorance of ecological relationships hides from us both 1) the future potential of any particular species to human welfare, and 2) the role that a species plays in maintaining the health of ecosystems, upon which humans are ultimately dependent. Therefore, extending protection to animal

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[2] The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

[3] Campiglio, et al. eds. The Environment After Rio, p. 58. The Rio Declaration extends the notion to development, in Principle 3: The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations. Similar language is used in drafting Article 3.1 of the Rio Declaration's Convention on Climate Change: the Parties should protect the climate system for the benefit of present and future generation of humankind..

and plant species, as well as the non-biotic elements in ecosystems[4], is justified on prudential grounds and does not necessarily have to seek moral justification. This argument may be referred to as ecocentric holism.[5]

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III. Arrangements and Institutions for the Distributio of Scarce Environmental Goods.

All of the equity issues and conflicts noted above must be addressed in a sound national environmental justice policy. Fact-finding, risk assessment, and decision-making processes must be carefully designed so as to bring appropriate knowledge, procedures, decision criteria and participants to bear on attempts to resolve them. There appear to be several theoretical options for environmental justice arrangements and institutions(Wenz 1988, 7-18).

The first option is free-for-all. It means allowing the stronger, quicker, better educated, and most determined to get bigger shares of the resources and smaller shares of the burdens. This is more likely arrangement in a political system that lacks accountability to the people, as in a totalitarian political system or in an unregulated market economy. Such systems permit a tragedy of the commons[6] in the distribution of several kinds of

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[4] Land is not mer ely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. Food chains are the living channels which conduct energy upward; death and decay return it to the soil (Leopold 1986, 216).

[5] The only implication of Ecocentric Holism is that we should try to avoid degrading ecosystems and causing the extinction of species. Since we will inevitably impair ecosystems to some extent, we should make restitution through special efforts to protect some biotic communities and restore others to health (Wenz 1988, 309).

[6] A tragedy of the commons occurs when individuals are free to use a

environmental resources.

The second option is coordinated restraint, where people are limited by rule to the use of the resource or to the amount of pollution discharge. This may solve the tragedy of the most common problems, but leaves the question of the fairness of the distribution of the effects of the restraint. Perception of injustice typically abound in such systems.

The third option is that government can force people to reduce their environmental abuse and to utilize better technology, through a system of fines and punishments. Measures considered fair by policy-makers can be enforced. There may be resentment, but the government controls the effects. However, resentments can aggregate into destabilizing social/political movements of dissent and alienation. The modern social order requires the voluntary compliance of the vast majority, especially in a relatively free society. In order to receive this cooperation, the social order must be perceived as tolerably just. Discussions of the nature and principles of justice are a practical necessity(Wenz 1988, 16).

The fourth option is voluntary cooperation among groups. There are incentives for compliance with the rules worked out in the agreement. Compliance is based partially on the practical need for reciprocity, but also on enhanced respect for the interests of others that is gained through the process of face to face negotiation. If the scope of participation is broad and inclusive, the majority of the people will perceive the distribution of benefits and burdens to be reasonably just. There seem to be two major weaknesses in this arrangement: decisions based on mutual agreement will be more difficult to reach; the decisions

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common pool resource such as fishing grounds, pasture land, or the atmosphere without restriction. It is rational for each individual, under these circumstances, to exploit the resource as much as possible in order to maximize personal gain. Even though the collective effect will be exhaust the resource, causing everybody to suffer, there is no real likelihood that the voluntary forbearance of any individual will be replicated. There is no incentive to save the resource. It does not matter if everybody respects the rights and property of others.

that are reached do not necessarily serve inter-generational or inter-species equity. They simply accommodate the needs of a variety of currently significant political and social groups.

Justice systems must be expanded. The practice of environmental justice will improve inter-nation and intra-societal equity, but it will not directly advance inter-generational or inter-species equity. It is also necessary to achieve agreement on a set of principles that give some promise of promoting or at least sustaining natural systems and ecological health in the long term. In other words, it is necessary to broaden the concept of justice to corporate in those who are not normally included as participants in human forums -- future generations of unborn humans and all non-human species and non-life matter that contribute to healthy ecosystems.

Humankind ultimately derives its sustenance and wealth from natural ecosystems. It is in the nature of all living things to take from the earth what they need to fulfill their needs. Something more must be done than to convince the participants that a fair distribution has been made. Cooperative action must be undertaken to protect the ecosystem in its present form or to manage the ecosystem in a careful and rational manner such that its long-term yield for human purposes will be increased. Human intervention into ecosystem management may violate the ethical value systems of some,[7] but the plain truth is that most or all natural ecosystems have already been intruded and irrevocably changed by humans. It is now necessary for us alter our institutions and culture and behaviors so as actively maintain their integrity.

The scope of equity issues to be considered within our justice systems should be broadened to recognize the rights and interests of future generations as well as other species. One of the efforts is government action for improving biological diversity like a management contract program for biological diversity.

[7] Biocentric ethics entail ascribing intrinsic value and status to ecosystems without making reference to their human uses (Taylor 1986).

Government needs to lead people to protect biological diversity voluntarily by establishing incentive systems.

Ⅳ. Policy for Improving Biological Diversity in Kore

Based on theoretical backgrounds discussed above, what government must do is important in enriching the ecosystems. Improving ecological diversity depends upon humankinds' efforts.

1. Rationale for Biological Diversity Protection Policies

1.1. Commitment to International Agreements

These efforts by humankind have been manifested in international agreements for protecting biological diversity. There are three international agreements for protecting biological diversity. Here, two agreements, Convention on Biological Diversity and Ramsar except Convention on International Trade in Endangered Species of Wild Fauna and Flora, are reviewed:

1) Convention on Biological Diversity

Objectives

The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

Duties of Contracting Party

Duties of the contracting party are comprehensive. The Convention on Biological Diversity proscribes them in detail. In reading, each contracting party shall cooperate with other parties, develop national strategies, identify and manage components of

biological diversity, etc.. Table 1 shows the detailed proscriptions about contracting parties' duties: cooperating among contracting parties in Article 5; developing national strategies, plans or programs for the conservation and sustainable use of biological diversity in Article 6; identifying and monitoring the components of biological diversity in Article 7; in-situ conservation through establishing and managing protected areas in Article 8; adopting measures, establishing facilities for ex-situ conservation in Article 9; sustainable use of components of biological diversity in Article 10; and adopting economically and socially sound measures that act as incentives for the conservation of biological diversity. Detailed proscriptions are in Apendix 1.

2) Ramsar(Convention on Wetlands of International Importance especially as Waterfowl Habitat (Amendments of 1987)

Objectives

The convention aims to conserve wetlands which are important in maintaining biological diversity.[8]

Duties of Contracting Party

Articles two and five prescribe the duties of the contracting party. Included are the designation of suitable wetlands, formulation of planning, establishment of nature reserves on wetlands, encourage research and consult with each other. Detailed proscriptions are in Appendix 2.

1.2. Conserving Values of Biological Diversity and Ecosystems

Ecological conservation is currently a very critical issue because ecosystems have been destroyed in accordance with rapid

[8] For the purpose of this convention wetlands are areas of marsh, fen, water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters. For the purpose of this Convention waterfowl are birds ecologically dependent on wetlands (Article 1 of Ramsar).

industrial development, especially the increasing use of fossil fuel use. Pollution threatens humankind's welfare because it destroys harmony with nature. Ecosystems have not only consumptive value but non-consumptive value, contributing to the quality of life of the populace.

The losses of biological diversity have great impacts on people's culture, welfare, and their entire lives. Most humankind's basic needs have been gained from biological components. Humankind have especially gained more than 80 percent of medicines from biological diversity components. In the agricultural sector, we have used biological diversity for improving items genetically. Also, biological diversity has played an important role in purifying air and water and maintaining appropriate climate conditions.

Wetlands are very valuable places for maintaining or improving biological diversity. Wetlands have fulfilled an important role throughout history. Historically wetlands have been closely related to human lives such as health, welfare safety, hunting, agricultural practices, etc.. Wetlands purify water, protect underground water, control flood, protect the food chain, and produce biological resources.

1.3. Needs for Changing the Ways of Ecosystem Conservation

Unplanned development of the planet has destroyed the ecosystems. In particular, land use has destroyed environment by for example allowing the large scale exploit of forests, over-production of animals and plants, the destruction of wetlands, destructive fishing, water pollution resulting from industrialization, and over-use of chemical fertilizers and pesticides. Until now, the most common method, the management of the ecosystem has been through regulations. However, these regulations have inevitably raised residents' veto points and have been vulnerable to pressure from development. Also, on a very small scale, the government has purchased locations that are valuable for their biological diversity. But management by purchasing land has its limitations. All responsibily for

conserving the ecosystem have been attributed to governments. This management style is passive, however, without people's participation. Government should adopt more positive policy tools like offering incentives to residents for conserving the ecosystem and providing sufficient compensation for the loss of property resulting from regulations.

2. Feasible Programs for Biological Diversity in Korea

2.1. SSSI and ESA in the United Kingdom

The United Kingdom is a model state for adopting a positive management scheme for ecosystems. There are two important policy schemes: the Environmental Sensitive Area (hereafter ESA) scheme and Sites of Special Scientific Interest (hereafter SSSI) scheme. The ESA scheme was launched by MAFF in 1987 with the aim of pursuing environmental objectives in designated areas of high environmental value, through the encouragement of appropriate agricultural practices. ESA agreement holders receive an annual payment in return for adopting measures designed to conserve and enhance the landscape, historic and wildlife value of the land under agreement. There are now 22 ESAs in England covering 1.1 million hectares. Under this scheme, farmers and agricultural land managers with land within designated ESA boundary are able to enter a 10 year management agreement. The government provides compensation based on existing income and incentives for changing management approaches.

The environment objectives of the ESA are (1) to maintain and enhance landscape quality by retention of existing permanent grassland and by increasing the area of permanent grassland, (2) to maintain and enhance the wildlife conservation value of permanent grassland without detriment to the landscape, (3) to maintain and enhance the wildlife conservation value of dykes and ditches without detriment to the landscape, (4) to enhance landscape quality through management of characteristic landscape elements, and (5) to maintain and enhance archaeological and historic features (MAFF, Environmentally Senstive Areas Scheme,

2001).

Second, SSSI is the term used to denote an area of land notified under the Wildlife and Countryside Act 1981 as being of special nature conservation interest. In the United Kingdom the SSSI is implemented by the agencies: English Nature(EN) and the Countryside Council for Wales (CCW). EN have already notified over 4,000 SSSIs in England and nearly 950 in Wales, covering a range of habitats and species, and including sites of geological and physiographical as well as bioligical importance. In recent years the agencies have increasingly sought to conclude agreements which pay to encourage positive management, rather than merely prevent damage. EN and CCW offer owners and occupiers financial incentives to undertake activities which directly support and enhance the special interest, within a simplified structure of standard payments. Most SSSIs provide examples of complex, semi-natural 'ecosystems' dominated by natural process. Government recognizes the importance of biodiversity within the wider countryside and in our urban areas, and the potential impact of environmental change, the identification and protection of the most scientifically-important sites remain central to the effective achievement of nature conservation objectives in England and Wales. The selection of sites is based on several criteria: best examples of the full range of natural and semi-natural ecosystems with their essential natural processes; encompass the full range of nationally and internationally important geological and physiographical sites; include sites necessary to support viable populations of vulnerable, endangered or nationally scarce species in natural surroundings; embrace all sites worthy of European and international recognition, alongside other sites which are nationally important; and include under these criteria, sites with a broad comparable value for nature conservation. Notification must be confirmed within nine months, during which four months are allowed for objections or representations. Decisions are made by the agencies' council. The Secretaries of State appoint members of the Councils, who have a wide range of experience, including

biological and earth sciences, framing, land management and local government. When notified of the SSSI designation of their land, owners and occupiers receive a letter detailing their legal obligations; a description of the special interest; a map of the whole site, and a list of operations likely to damage the special interest. The legal obligations require owners and occupiers to consult the agency before undertaking any of the listed operations. At the time of notification agency staff seek agreement on the management of the land. If such an agreement has not been made, the operations cannot be undertaken unless the agency consents or four months have passed.

2.2. *Management Contract Programs for Conserving Biological Diversity*

According to rational thought, plus various UK cases, there is a clear need for the Ministry of Environment to take some action. One alternative that can be considered may be a management contract policy. Beside internationally designated areas, important areas for preventing biological diversity are not prevalent in Korea. Among them, the places where migratory birds arrive every year are the most critical places because birds damage agricultural produce and farmers do not want to conserve birds nesting areas.

Various management contract programs can be considered, but this paper is focused on feasible programs under current situation. Detailed aspects such as the objectives, procedures, monitoring, obligations, and levels of incentives for program adoption are not discussed here, but the basic idea of possible programs are:

1) State's Lease and Management Contract Program

The State's Lease and Management Contract Program (hereafter SLMCP) is a positive management system for positively protecting migratory birds. This program is one in which the government make a contract with farmers who grow winter crops such as wheat and barley in the designated areas during winter,

usually November to early April. Farmers grow winter crops and leave them as feed for the migratory birds. The government provides full compensation for damage.

2) Special Activity Management Contract Program

The Special Activity Management Contract Program (hereafter SAMCP) is the system by which the government gives some incentives to farmers in the designated areas. The SAMCP is to induces farmers' voluntary participation for migratory birds. Migratory birds have been endangered by the use of pesticides, the shortage of foods, and the lack of resting areas. Farmers who make a contract with the government are obligated to commit to the conditions of contract. This program covers farmers' positive activities for caring for migratory birds.

There are three options for contract. The first option is that farmers introduce environmentally-friendly farming practices in related areas. The second option is to leave some degree of summer crops without harvest for feeding migratory birds. The third option is to provide resting areas for the birds. The resting areas are paddy fields containing a proper level of water in which birds can comfortably recuperate.

These activities aim at securing food safety and sufficient food, and providing rest areas for migratory birds. The government gives incentives to farmers for compensating their efforts to make resting areas, harvest losses, and the costs for adopting environmentally-friendly farming methods.

3) Set-Aside Management Contract Program

The Set-Aside Contract Program (hereafter SACP) is designed to conserve the ecologically important areas without farming and to compensate for losses resulting from set-aside in these areas. Set-aside in this program includes permanent set-aside areas or short-term set-aside areas. Short-term set-aside refers to a certain period of time, generally two or three years, for establishing substitute sites. The areas involved in this program may be very important wetlands for conserving biological diversity. Also,

when government recognizes some areas are very important ecologically and desires some actions like creating substitute wetlands, some areas are designated as set-aside ones for that period in the short term.

V. Conclusions

The issue of biological diversity is generally one of the most important environmental justice issues. Seeking environmental justice leads us to think about equity: inter-nation equity; inter-generational equity; inter-societal equity; and inter-species equity. The value of biological diversity is closely related to inter-nation and inter-species equity and the improvement action for conserving biological diversity is related to inter-nation and inter-societal equity issues.

There are arrangement options for distributing scarce environmental goods including biological diversity. Included are free-for-all, restrictions, government regulations, and voluntary cooperation. For improving biological diversity, various policy tools may be needed and government should do something. There are several rationales for introducing policies or programs to protect biological diversity. A state which adheres to international agreements such as convention on biological diversity and Ramsar should take action. Second, the destruction of biological diversity has a great impact on humankind's welfare obtained by biological diversity in the ecosystem. Third, it is necessary for us to change our ways of conserving the ecosystem. Government regulations that have been imposed are not inadequate or very difficult because of residents' veto. Therefore, more positive policy tools such as incentives must be adopted. The most well-known examples are ESA and SSSIs in the United Kingdom.

Incentive policies encourage residents to voluntarily conserve biological diversity. Management contract programs for conserving biological diversity should be considered. The Korean government should consider introducing the lease and

management contract program, management contract programs for special activities such as adopting environmentally- friendly farming, leaving summer crops without harvest, and providing resting areas, and a set-aside management contract program. The introduction of these programs will help us advance toward achieving environmental justice.

APENDIX 1.

Rule	Major Issue	Contents
Article 5	Cooperation	Each contracting party shall, as far as possible and as appropriate, cooperate with other contracting parties, directly or, where appropriate, through competent international organizations, in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological diversity.
Article 6	Strategy Development	Each contracting party shall, in accordance with its particular conditions and capabilities, develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes
Article 7	Identification and Monitoring of biological diversity	Each contracting party shall, as far as possible and as appropriate, (a) identify components of biological diversity important for its conservation and sustainable use having regard to the indicative list of categories; (b) monitor, through sampling and other techniques, the components of biological diversity identified; (c) identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity; and (d) maintain and organize, by any mechanism data, derived from identification and monitoring activities

Rule	Major Issue	Contents
Article 8	In-situ Conservation*	Each contracting party shall, as far as possible and as appropriate: (a) establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity; (b) develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity; (c) regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use; (d) promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings; (e) promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas; (f) rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies; (g) establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health; (h) prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species; (i) endeavor to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components; (j) subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices; (k) develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations; (l) where a significant adverse effect on biological diversity has been determined pursuant to Article 7, regulate or manage the relevant processes and categories of activities; and (m) cooperate in providing financial and other support for in-situ conservation outlined.

(continued)

Rule	Major Issue	Contents
Article 9	Ex-situu conservation**	Each contracting party shall, as far as possible and as appropriate, and predominantly for the purpose of complementing in-situ measures: (a) adopt measures for the ex-situ conservation of components of biological diversity, preferably in the country of origin of such components; (b) establish and maintain facilities for ex-situ conservation of and research on plants, animals and micro- organisms, preferably in the country of origin of genetic resources; (c) adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions; (d) regulate and manage collection of biological resources from natural habitats for ex-situ conservation purposes so as not to threaten ecosystems and in-situ populations of species, except where special temporary ex-situ measures are required under subparagraph (c) above; and (e) Cooperate in providing financial and other support for ex-situ conservation outlined in subparagraphs (a) to (d) above and in the establishment and maintenance of ex-situ conservation facilities in developing countries.
Article 10	Sustainable Use	Each contracting party shall, as far as possible and as appropriate: (a) integrate consideration of the conservation and sustainable use of biological resources into national decision-making; (b) adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity; (c) protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements; (d) support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and (e) encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources.
Article 11	Incentive Measure	Each contracting party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.

* "In-situ conservation" means the conservation of ecosystems and natural habitats and the maintenance and recovery of valuable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

** "Ex-situ conservation" means the conservation of components of biological diversity outside their natural habitats.

APENDIX 2.

Rule	Major Issue	Contents
Article 2	Disignation of suitable wetlands	Each Contracting Party shall designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance. Each contracting party shall consider its international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl, both when designating entries for the List and when exercising its right to change entries in the List relating to wetlands within its territory.
Article 3	Formulation and Implementation of Planning	Each contracting party shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory. Each contracting party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the list has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the organization.
Article 4	Establishment of Nature Reserves on Wetlands	Each contracting party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands. Where a contracting party lies in its urgent national interest and where it deletes or restricts the boundaries of a wetland included in the list, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat. Fourth, the contracting parties shall encourage research and the exchange of data and endeavor through management to increase waterfowl populations, promote the training of personnel.
Article 5	Consultation among Contracting Parties	Each contracting party shall consult with each other about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. They shall at the same time endeavor to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna.

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