

Discussion Paper I

***Satoyama*-like Landscapes targeted by “Initiative”**

So that biodiversity might be conserved and utilized in a sustainable manner, the international community remains focused on the balance between development policies and conservation and for this reason, it has been engaged in a wide variety of endeavors. In terms of the conservation of wilderness areas, it is now widely recognized that protective measures such as the establishment of conservation areas are essential. Therefore, a variety of methods, including those of a regulatory nature, are adopted on an ongoing basis. Nevertheless, further strengthening of measures is required in relation to such areas.

On the other hand, approximately one-third of the land of the world is affected by cultivation and grazing, while additional vast areas are in use as fallow land, woodland, and pasture. Further, over half of all animal and plant species live outside protected areas, such as in agricultural landscapes. Thus, it may be argued that current biodiversity conservation within designated wilderness protection areas alone is insufficient. These landscapes where people live in harmony with nature have also been the habitats of a large number of living things. However, despite the fact that these areas potentially contribute towards the conservation of biodiversity, enough attention has not been paid and the positive relationship between nature and human beings is deteriorating.

In Japan, "*Satoyama* landscapes" is the name given to such landscapes that were formed as a result of the long-term interaction between humans and nature through agriculture, forestry, animal husbandry and fishing. *Satoyama* landscapes are complex landscapes composed of *Satoyama*(secondary woodlands, which consist of coppices and other managed woodlands, and grasslands) at the center, around which are located cultivated land, rural settlements, irrigation ponds and ditches and other features that result from mosaics of different types of land usage that are functionally linked to one another. In such areas, humans have sought to co-exist harmoniously with the ecosystems through appropriate land usage and suitable management of resources and, as a result, various ecosystem services have been produced. At the same time, distinct ecological environments have been formed. Among their many contributions to biodiversity, these environments are places where unique species exist and they also function as buffer zones for wilderness areas. Therefore, they are considered to be very valuable from a biological diversity perspective. *Satoyama* landscapes have also nurtured the unique cultures and views of nature that exist in various communities while supporting the lifestyles of the people who live there. For example, there are the tradition of community-based performing arts and artistic culture. The people express their prayers and gratitude for abundant water, favorable weather and good harvest at various festivals and ceremonies held throughout the year.

These relationships between humans and nature and the landscapes that resulted from them may be seen not only in Japan, but in Asia and also throughout the world. Examples of such landscapes in countries other than Japan are

"Maueul" in South Korea and "Kebun-Talun" or "Pekarangan" in Indonesia. Here we call a landscape where such human-nature relationships are observed as "*Satoyama*-like landscape". In recent years, the very survival of *Satoyama*-like landscapes has come under threat as they have become the target of large-scale urban, agricultural and recreational development projects. While some *Satoyama*-like landscapes and cultivated land areas are being abandoned and rural settlements are falling into ruin. By learning from the traditional ecological knowledge and practical techniques used in these regions and then combining them with new wisdom and techniques from a biodiversity, low carbon and natural resources circulation perspective, *Satoyama*-like landscapes could be revitalized as model cases for the sustainable use/management of rural/cultural/semi-natural landscapes and these will play an important role in the conservation of biodiversity and the sustainable use of biological resources on a global scale.

The special characteristics and significance that may generally be considered common to these landscapes have been set down. This is for the purpose of sharing a clear image of the landscapes targeted by Initiative in the future, when the Initiative framework has been launched and spread throughout the world. Any comments that might assist in making it more widely accepted would be welcomed.

## ***Satoyama*-like Landscapes**

Traditional *Satoyama*-like landscapes are those landscapes that were shaped and maintained by humans, who, while leading lives that were centered on agriculture, forestry, animal husbandry and fishing, exerted an influence on the local natural environment as a result of a series of land usage and natural resource utilization and management techniques. Here, land usage and natural resource utilization and management are conducted in accordance with the special features of the local natural environment and ecological processes and therefore, these landscapes contribute to the conservation of biological diversity. Furthermore, simultaneous with the contributions that they make to the enhancement of human welfare, including that of the local residents, through the provisioning of a wide range of ecosystem services, these landscapes are in turn supported by appropriate socio-economic mechanisms, including the joint usage and management of land and natural resources by the local communities.

But recent years, the very survival of these landscapes has come under threat, as becoming the target of large-scale urban, agricultural and recreational development projects. At the same time, some forests and cultivated land areas are being abandoned and rural settlements are falling into ruin.

The concept that humans have coexisted with the natural environments that were fostered through agriculture, forestry and fishing activities is not limited to rural villages. It has influenced the way people think about regional planning and relationships with nature in suburban areas and could be applicable widely.

The focus of Initiative lies in the aspect of rebuilding sustainable relationships between humans and the natural environment through use/management of land and natural resources. We call such a landscape as *Satoyama*-like landscape which was formed as a result of the exerted influences by human on the local natural environment.

### <Special Characteristics>

#### 1. Formation processes

- 1) Among various human activities, agriculture, forestry and fishing activities are the central activities in terms of exerting influences on local nature. Their influences are longstanding and widespread. For example, in the case of Japan, people have shaped and maintained the *Satoyama* landscape over the ages by working on the surrounding natural environment in the form of a number of activities, including the cultivation of rice in paddies and crops in fields, the regular logging of forests for the purpose of obtaining firewood and wood for charcoal and the gathering of animal feed and fertilizers from grasslands.
- 2) While intensive agriculture are operated increasingly many part of the world, traditional ecological knowledge, systems and techniques on use/management of land and natural resources are now being reevaluated in the aspect of sustainability. Traditional systems and methods are being reintroduced or applied to other rural areas. The *Satoyama*-like landscapes include these areas, too.

3) Urban sprawl and the change in lifestyle have promoted division of human settlement area from natural use land. But even in suburban areas where relationships between human and nature tend to weak, new relationships with human and nature have been developed recently through use/management of woodland in the area. These areas are also included in the *Satoyama*-like landscapes.

## 2. Structure and Ecological Processes:

In terms of their structure and ecological processes, mainly traditional *Satoyama*-landscapes often exhibit the following types of special characteristics:

### 2.1 Ecosystem “mosaics” and the functional relationships that exist between them

- 1) In these areas, there is a coherent variety of different types of land usage. For example, there are wetland environments such as rice paddies, water reservoirs and canals, cultivated fields of fruit trees, vegetables, pulses and tubers, second-growth forests where timber, firewood and wood for charcoal are gathered, woodlands where hunting is practiced and medicinal herbs are gathered and settlements where people live. In other words, these landscapes are veritable mosaics of numerous heterogeneous ecosystems.
- 2) Functional relationships exist in between each of the different types of land usage, such as the plowing of fallen leaves gathered from a forest back into the soil as fertilizer, or the use of firewood as fuel in homes.
- 3) Each of these types of land usage has been arranged in accordance with natural environmental conditions such as topography and soil as well as geographical conditions such as distance from the settlement.

### 2.2 Land usage and resources management that utilize the resilience of nature

- 1) Dynamic land usage is practiced in these areas. This may include shifting cultivation, slash-and-burn agriculture, the regular logging of forests, or, as may be seen in the case of agroforestry, which is practiced extensively throughout the wet tropics as well as in other parts of the world, the staggered planting of various types of trees and plants on the same plot of land at different times.
- 2) These dynamic land usage creates forests which are composed of different stages of vegetation succession.
- 3) Varied types of dynamic land usage such as these are ways of utilizing the resilience of nature in an appropriate and positive manner so that, for example, the vegetation and soil recovers even after the trees have been cut down or the fields have been harvested.

### 2.3 Complex land usage that imitates the structure of natural ecosystems

- 1) Agroforestry is a type of complex land usage where trees of different heights and end-uses, crops, and often feed for domestic livestock are grown on the same plot of land.
- 2) By combining the cultivation of trees that grow to different heights with that of herbs, sunlight and precipitation are captured more efficiently, forming a stable system that is close in terms of its structure to a natural ecosystem.

## 3. Usage and Management:

- 1) In most regions, the use/management of natural resources in areas such as forests, grasslands and water

reservoirs has been performed by the local community on a shared basis.

- 2) In most local communities, there are rules in relation to things such as the time and frequency of harvesting natural resources and the quantity that are taken, which prevent the overexploitation of such resources. In some cases, the rules are set down clearly, while in others, people are aware of them in the form of cultural phenomena such as taboos.
- 3) In recent years, projects participated by various entities including urban residents, NPOs, Industries have been promoted in *Satoyama*-like landscapes.

4. Regional characteristics:

- 1) In *Satoyama*-like landscapes, various human-nature relationships have been developed based on each natural and socio-economic situations. In concrete, the various relationships include the one developed through agriculture, forestry and fishing activities, and the other developed through educational use or maintenance of forest by communities in suburban areas.
- 2) As a result, the fostered landscapes vary. For example, there is a landscape which is composed of cultivated land and forests as a center, and grass land, irrigation ponds and ditches, and residential areas around. Other landscapes include the one composed of lakes or costal zones where aquatic resources such as fish and seaweed, are gathered and utilized, and the one composed of forest and agricultural land in suburban area.

5 Changeability:

- 1) The human-nature relationships mentioned in 4 1) above have been changed in accordance with the socioeconomic situation or technological development. Sometimes the relationships were positive and sometimes the land and natural resources were used unsustainable manner. In the consequences, the landscapes formed have been changing. The concept of *Satoyama*-like landscape involves these changes.
- 2) In modern times, what problematic is losing the balance between human and nature owing to the drastic changes of landscapes. The cause of the changes include urbanization, the conversion of land usage for the purpose of intensive agriculture lifestyle changes and the depopulation of rural towns, which have led to the abandonment of resource management, and also various drastic changes. Activities for the establishment of sustainable relationship between human and nature, adopted the socioeconomic situation of the time, are necessary.

## <Significance>

In *Satoyama*-like landscape, sustainable use/management of land and natural resources potentially facilitates biodiversity conservation and provision of ecosystem services. The quality of biodiversity in *Satoyama*-like landscapes should not be valued in comparison with that of pristine ecosystem but it should be treated as the one relieves the decrease of biodiversity. *Satoyama*-like landscapes nature different and unique biodiversity and could support pristine ecosystem.

### 6. Biodiversity:

#### 6.1 The creation of various habitats

- 1) The various habitats that arise as a result of these mosaics of different types of land usage and different succession stages of vegetation, and ecotones which are the transition zones between different types of environment, produce an abundance of biodiversity.
- 2) As a result, in these landscapes, more stable, healthy ecosystems are formed and maintained and a higher level of biodiversity retained than in ecosystems in intensive agriculture and forestry that specialize in the lone cultivation of a single crop or the growth of a certain species of tree.

#### 6.2 Unique biota

- 1) Unique biota is sometimes nurtured in these environments. For example, artificial environmental disturbances such as regular burning and logging may result in the formation of habitats where glacial period relicts are able to live and breed. These species are conserved by appropriate human intervention to nature.

#### 6.3 Commonality with wilderness areas

- 1) Species that are found in old-growth forests are also found in areas of agroforestry, which mimics the natural forests of the wet tropics. This is one example of the alternative habitat and buffer-zone-to-wilderness role that these landscapes are thought to play.

#### 6.4 Creation of habitats and corridors in suburban areas

- 1) Appropriately located small scale lands of natural use function as habitats and/or corridors of animals and plants which contribute to the relative improvement of biodiversity of the area.

### 7. Ecosystem services:

#### 7.1 Provisioning services

- 1) In addition to provisioning food, timber and fuel materials, animal feed and fertilizers, these veritable mosaics of different types of land usage facilitate the supply of a variety of things, including materials for textiles, medicinal plants and handicrafts. For this reason, they contribute to stability in the lifestyles of the local residents. In particular, shared use of things like forests and grasslands by a community allows economically underprivileged residents to have access to resources.
- 2) It prevents excessive change of ecosystem and contributes to conservation and provision of genetic

resources.

### 7.2 Regulating services

- 1) A variety of regulating services, such as carbon fixation, water quality improvement, the prevention of soil erosion and water resource preservation, are maintained as a result of ecosystems remaining healthy through appropriate land usage and utilization of resources.
- 2) Ecosystems mosaics contribute to production activities as the levels of natural enemies and pollinators that exist there are stable.

### 7.3 Cultural services

- 1) The ongoing relationship between humans and nature throughout the ages has produced views on the natural environment and utilization of flora and fauna which are unique to certain regions.
- 2) By forming attractive scenery, these landscapes also provide humans with opportunities for education, recreation and psychological fulfillment.

## 8. Human well-being

These ecosystem services which *Satoyama*-like landscapes provide, will contribute to the stability and improvement of livelihoods of people.

- 1) By not depending on only one or few products but depending on many types of food and other goods from *Satoyama*-like landscapes, livelihood of local residents will become more stable.
- 2) Regulating services such as water quality improvement, the prevention of soil erosion and water resource preservation sustain basis of agriculture, forestry, fishery and animal husbandry. As a result livelihood not only of the local residents but also of other regions such as urban areas becomes stable and improved.
- 3) Biodiversity and attractive scenery of *Satoyama*-like landscapes will create opportunities for education and recreation by which enhancement of local economy can be achieved.
- 4) They also contribute to the formation of positive social relationships and improvement of human health.

The diverse ecosystem services that are provided by these landscapes contribute to resolving food security, poverty, energy and global warming-related issues. In the future, it is important that reviews are conducted on the significance of *Satoyama*-landscapes in relation to the creation of "natural resources circulation-oriented" societies.