Chapter 3
Passing on the Life of the Earth to the Future

In order to preserve the healthy condition of the Earth, which is the basis of human existence, conservation and sustainable use of biodiversity, along with the measures against global warming, are essential. The 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10), which was held in Nagoya City, Aichi Prefecture in October 2010, was a historic conference that left significant results such as adoption of the "Aichi Biodiversity Targets," new global targets related to biodiversity, and the "Nagoya Protocol," which relates to Access to Genetic Resources and Benefit-Sharing (ABS). In addition, international society is beginning to make big strides in aiming to realize a "world living in harmony with nature" by 2050.In this chapter we will discuss the results of COP10, the future direction of efforts within and outside Japan based on those results, and efforts by private sector and households.

Section 1 The Results of COP10 and COP-MOP5, and Future Development

1. The Background of Holding COP10

The Convention on Biological Diversity was opened for signature along with the United Nations Framework Convention on Climate Change, at the United Nations Conference on Environment and Development (Earth Summit) that was held in 1992 in Rio de Janeiro, Brazil, and entered into force the following year 1993. Indeed there had been various conventions prior to that with the objectives of conserving specific areas or rare species of wildlife, such as the Ramsar Convention (The Convention on Wetlands of International Importance especially as Waterfowl Habitat) and CITES (The Convention on International Trade in Endangered Species of Wild Fauna and Flora), but such specific conventions did not cover the topic about the importance of a comprehensive framework to preserve biodiversity.

The Convention on Biological Diversity has following three objectives: 1) conservation of biological diversity, 2) sustainable use of its components, and 3) the fair and equitable sharing of benefits arising from the utilization of genetic resources. There are many topics, ranging from issues that are deeply related to conservation, such as "protected areas," "forests," "marine and coasts" and "invasive alien species," to those such as "climate change," "businesses" and "financial mechanism." They are expanding in reflection of the trends of international biodiversity issues (Table 3-1-1: Major Themes of the Convention on Biological Diversity).

192 states and the European Union are the Parties to the Convention on Biological Diversity, which means that most of the countries in the world are participating (as of March 2011 (The U.S. has not yet accepted.)). The Conference of the Parties (COP), which is the highest decision-making body of Convention on Biological Diversity, is held about every two years (Table 3-1-2: Background of the COPs). In addition to the governments that are Parties to the Convention, various players such as non-party countries, the United Nations organizations, local municipalities, NGOs, organizations of indigenous peoples and local communities, corporations and educational organizations can also participate at the COP as observers. The number of participants in the COP increases every time, and what was

Table 3-1-1 Major Themes of the Convention on Biological Diversity

Thematic Programs	Cross Cutting Issues
・Agricultural Biodiversity ・Dry and Sub-humid Lands Biodiversity ・Forest Biodiversity ・Inland Waters Biodiversity ・Inland Biodiversity ・Marine and Coastal Biodiversity ・Mountain Biodiversity	・2010 Biodiversity Targets ・Access to Genetic Resources and Benefit Sharing (ABS) ・Biodiversity for Development ・Climate Change and Biodiversity ・Communication, Education, & Public Awareness (CEPA) ・Economic, Trade, and Incentive measures ・Ecosystem approach ・Global Strategy for Plant Conservation Strategy for preserving the world's plants ・Global Taxonomy Initiative ・Impact Assessment ・Identification, Monitoring, Indicators, and Assessment ・Invasive Alien Species ・Liability and Redress (Article 14.2) ・Protected Areas ・Biodiversity and Sustainable ・Tourism and biodiversity ・Traditional Knowledge, Innovations, and Practices (Article 8 (j)) ・Technology Transfers and Cooperation

Source: Created by the Ministry of the Environment, based on the information on the Convention on Biological Diversity Secretariat website

Table 3-1-2 Background of the Conference of the Parties to the Convention on Biological Diversity (COP)

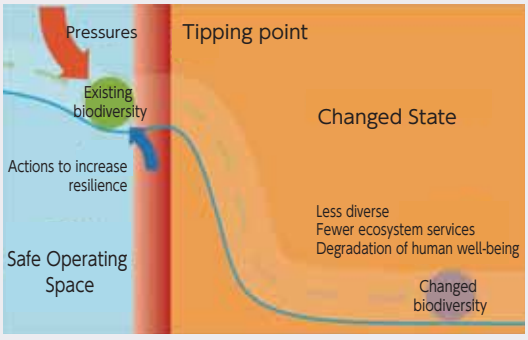
Conference of the Parties	Date / Venue	Overview
COP1	November 28 – December 9, 1994 Bahamas (Nassau)	・Adoption of rules of procedure for the Conference of the Parties ・Designation of a standing secretariat, and establishment of Subsidiary Bodies for Scientific, Technical and Technological Advice (SBSTTA) ・Designation of the Global Environment Facility (GEF) as an interim financial mechanism ・Decisions related to organizational matters for the secretariat and the Conference of the Parties, etc.
COP2	November 6 – 17, 1995 Indonesia (Jakarta)	・Decision on the location of the secretariat (Montreal, Canada) ・Establishment of an ad hoc group of experts on biosafety ・Adoption of guidelines related to marine and coastal biodiversity (Jakarta Mandate)
COP3	November 4 – 15, 1996 Argentina (Buenos Aires)	・Conclusion of a memorandum of understanding with the GEF ・Reconsideration of Implementing Agenda 21, etc.
COP4	May 4 – 15, 1998 Slovakia (Bratislava)	・Adoption of program of work for inland water ecosystems, forest biodiversity and marine and coastal biodiversity ・Establishment of a working group related to traditional knowledge, etc.
Extraordinary Meeting of the Conference of the Parties (ExCOP)	February 22 – 23, 1999 Colombia (Cartagena) January 24 – 28, 2000 Canada (Montreal)	・Adoption of the Cartagena Protocol on Biosafety
COP5	May 15 – 26, 2000 Kenya (Nairobi)	・Adoption of a programme of work for agricultural biodiversity, dry and sub-humid lands biodiversity, and traditional knowledge ・Establishment of a working group for access and benefit sharing (ABS) of genetic resources, etc.
COP6	April 7 – 19, 2002 The Netherlands (The Hague)	・Adoption of a strategic plan for the convention (2010 Target) ・Adoption of the Bonn Guidelines related to ABS, etc. ※Announcement of Global Biodiversity Outlook 1 (GBO1) (November, 2001)
COP7	February 9 – 20, 2004 Malaysia (Kuala Lumpur)	・Establishment of a working group for protected areas, and a working group for implementation of the convention ・Decision to consider an "ABS International Regime" as a mandate for the ABS working group
COP8	March 20 – 31, 2006 Brazil (Curitiba)	・Decision to have the ABS working group conclude consideration of the ABS International Framework by COP10 ・Announcement of Global Biodiversity Outlook 2 (GBO2), etc.
COP9	May 19 – 30, 2008 Germany (Bonn)	・Confirmation of strengthening the efforts aimed at achieving the 2010 Target ・Consideration of revising the new strategic plan for the convention
COP10	October 18 – 29, 2010 Japan (Nagoya City, Aichi Prefecture)	・Adoption of a new strategic plan for the convention (post-2010 targets (Aichi Biodiversity Targets)) ・Adoption of the Nagoya Protocol on ABS, etc. ※Announcement of Global Biodiversity Outlook 3 (GBO3) (May 2010)

Source: Ministry of the Environment

approximately 700 people at COP1 in 1994 surpassed 7,000 people at COP9 in 2008 and came to surpass 13,000 people at COP10 in 2010 (the numbers of participants in COP9 and COP10 include media local staff). In addition, since the G8 Environment Ministers Meeting held in 2007 in Bonn, Germany, the issue of biodiversity has become important topic at G8 process and thus global attention is increasing every year. The COP10, which was held in 2010, had significant meaning on the following three points above all.

Firstly, 2010 was the target year for the "2010 Biodiversity Targets". At COP6 in 2002, a "Strategic Plan for the Convention on Biological Diversity" (hereinafter referred to as the "Strategic Plan"), which included that "2010 Biodiversity Targets" to "significantly reduce the current rate of biodiversity loss by 2010," was adopted, and efforts aimed at achieving the target were undertaken throughout the world. However, the "Global Biodiversity Outlook 3 (GBO3)", which was published in May 2010 by the Secretariat of the Convention on Biological Diversity, underlined that nine out of the fifteen assessment indicators showed negative trend, and concluded that "the 2010 biodiversity target has not been met" and "the state of biodiversity continues to decline" (Figure 3-1-2: Trends Shown by Agreed Indicators of Progress towards the 2010 Biological Target). It was also pointed out that if the loss continues as it is, it is possible that the "tipping point," which is the point of limit up to which ecosystems can recover on their own, will be crossed, and serious damage for the future generations will be caused (Figure 3-1-1: Tipping Points – an Illustration of the Concept). Moreover, it was pointed out that the question of whether or not the relatively stable environment conditions that humans have relied on for the past 10,000 years could continue into the next centuries would be determined by the actions of the next ten to twenty years. Amid this sense of crisis, COP10

Figure 3-1-1 Tipping Point an illustration of the concept



Source: Secretariat of the CBD Secretariat, "Global Biodiversity Outlook 3 (GBO3)"

was expected to agree a "New Strategic Plan" that includes new global targets for 2011 and beyond, and to immediately proceed with renewed efforts aimed at conservation of biodiversity and its sustainable use without interruption.

Secondly, consideration of an international regime on "ABS" was expected to be completed before COP10. "ABS" is a mechanism by which, for example, when a pharmaceutical company in a user country (mainly developed

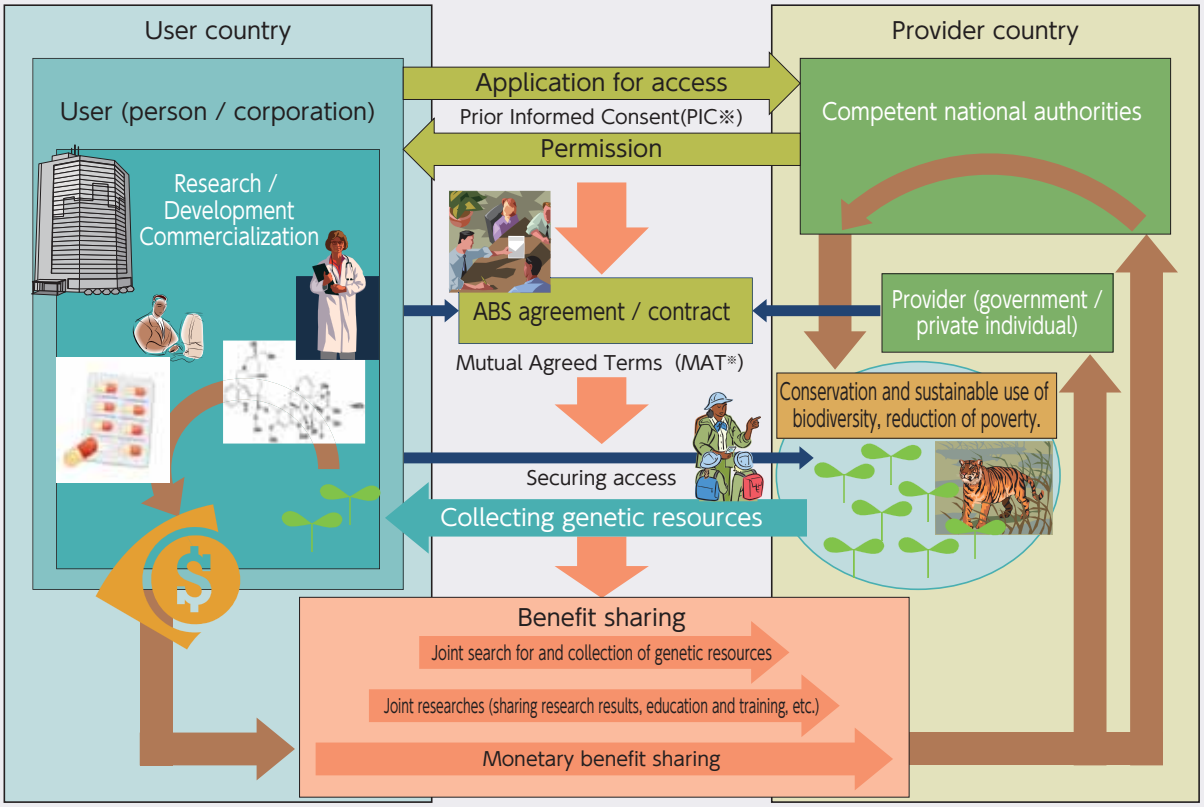
Figure 3-1-2 Trends of Indicators Related to 2010 biodiversity Target

Status and trends of biodiversity components		
↙	Extent of selected biomes, ecosystems, and habitats	Most habitats are declining in most parts of the world. Forest area expands in some regions. Loss of mangroves has slowed, except in Asia. ❋❋
↙	Abundance and distribution of selected species	Most species with limited population size and distribution are reduced. ❋❋❋ (only limited number of taxa assessed)
↙	Changes in status of threatened species	While some species have shown recovery, extinction risk increases for many threatened species. ❋❋❋ (for those species assessed)
↙	Genetic diversity of domesticated animals, cultivated plants, and fish species	Genetic variety of cultivated species may be declining. ❋ (but many cases with high certainty also exist)
↗	Coverage of protected areas	Coverage of both terrestrial and marine protected areas shows increase. Many ecological regions, particularly marine ecosystems, remain under-protected. Protected areas' management effectiveness remains variable. ❋❋❋
Ecosystems integrity and ecosystem goods and services		
↙↗	Marine Trophic Index (Mean Trophic Level)	Despite intense pressure, the Marine Trophic Index has modestly increased globally since 1970, with substantial regional variation. ❋❋❋
↙	Connectivity-fragmentation of ecosystems	Fragmentation is advancing in most terrestrial and aquatic ecosystems, despite an increased recognition of the value of corridors and connections. ❋❋❋
↙↗	Water quality of aquatic ecosystems	Most parts of the world may be suffering from water quality declines. In some areas it has improved through pollution control. ❋❋
Threats to biodiversity		
↗	Nitrogen deposition	Reactive nitrogen creation rate on the planet's surface has doubled. Effect of nutrient pollution is also increasing. ❋❋❋
↗	Trends of invasive alien species	Alien species is increasing in all ecosystems. ❋❋ (but many cases with high certainty also exist)
Sustainable use		
↙↗	Areas of sustainably-managed forest, agricultural and aquaculture ecosystems	Despite considerable efforts underway, major efforts are further required to increase the areas. ❋
↗	Ecological footprint and related concepts	The ecological footprint of humanity is increasing. Resource efficiency efforts are compensated by consumption increase by a growing prosperous population. ❋❋❋
Status of traditional knowledge, innovations, and practices		
↙	Linguistic diversity and numbers of indigenous-language speakers	Many minority languages are in danger of disappearing, and linguistic diversity is very likely declining. ❋ (but many cases with high certainty also exist)
Status of access and benefit-sharing		
?	Development of ABS indicator	The need and options for additional indicators are being examined by ABS Working Group.
Status of resources transfers		
↗	Official development assistance (ODA) provided to support the Convention	ODA for biodiversity has increased in the past few years. ❋❋❋

↙↗ Negative changes ↗ Positive changes ↗↙ No clear global trend. Positive and negative changes are occurring depending on the region or biome considered. ? No information to reach a definitive conclusion
Level of certainty: Low ❋ Medium ❋❋ High ❋❋❋

Source: Secretariat of the CBD, "Global Biodiversity Outlook 3 (GBO3)"

Figure 3-1-3 Overview of the Framework of Access to Genetic Resources and Benefit Sharing (ABS)



※PIC: Prior Informed Consent MAT: Mutually Agreed Terms

Source: Ministry of the Environment

countries) utilizes genetic resources out of microorganisms from a provider country (mainly developing countries) and develops a new medicine, the benefits obtained from selling such medicine will be appropriately allocated to the provider country and be contributed to conserving biodiversity in that provider country (Figure 3-1-3: Overview of the Mechanism for ABS). At COP8 in 2006 it was decided that consid-eration of an international regime on ABS would be completed before COP10.

Thirdly, the COP10 was held during "International Year of Biodiversity" designated by the United Nations. At the United Nations General Assembly in 2006, it was determined that 2010 should be the International Year of Biodiversity, and with the Secretariat of the Convention on Biological Diversity as the leading organization, United Nations member countries were requested to set up national committees and organize various events related to international year, in order to increase awareness for achieving the three objectives of the Convention on Biological Diversity and the post-2010 targets. In response, various events related to biodiversity were held around the world, including the high-level meeting of the United Nations General Assembly that contributed to the International Year of Biodiversity held on 22 September, 2010 in New York (US), where Minister of the Environment of Japan Ryu Matsumoto attended

Figure 3-1-4 Overview of the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10)

- Time period: October 18 (Mon.) – 29 (Fri.), 2010
  - High level Ministerial Segment: October 27 – 29
  - Fifth meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety (COP-MOP5): October 11 – 15
- Venue: Nagoya Congress Center (Nagoya City, Aichi Prefecture)
- Participants: 180 countries that are parties to the convention, international organizations, observers such as NGOs, others
  - Number of participants: Over 13,000 (including members of the press and, staff)
  - Number of official side events: Approx. 350
- President: Japan's Minister of the Environment Matsumoto
- COP-MOP5 President: Japan's Minister of Agriculture, Forestry and Fisheries Kano
- Slogan: "Life in Harmony, into the Future"
- Parallel meetings and events
  - Parliamentarians and Biodiversity Forum
  - City Biodiversity Summit 2010
  - Interactive Fair for Biodiversity (more than 118,000 participants)

COP10 logo mark

Source: Ministry of the Environment

Photo: COP10 venue (Nagoya Congress Center)

representing the COP10 Presidency. As a result, interest in the issues of biodiversity was increased as never before.

In such circumstances, there were growing expectations that COP10 would be an important conference that would influence the future of biodiversity by aiming for an agreement on the "Post-2010 Targets," which were new global targets for 2011 and beyond, and a protocol on ABS, which had been a controversial issue since the Convention on Biological Diversity went into effect.

2. Overview of COP10 and COP-MOP5

(1) Overview of the Meeting

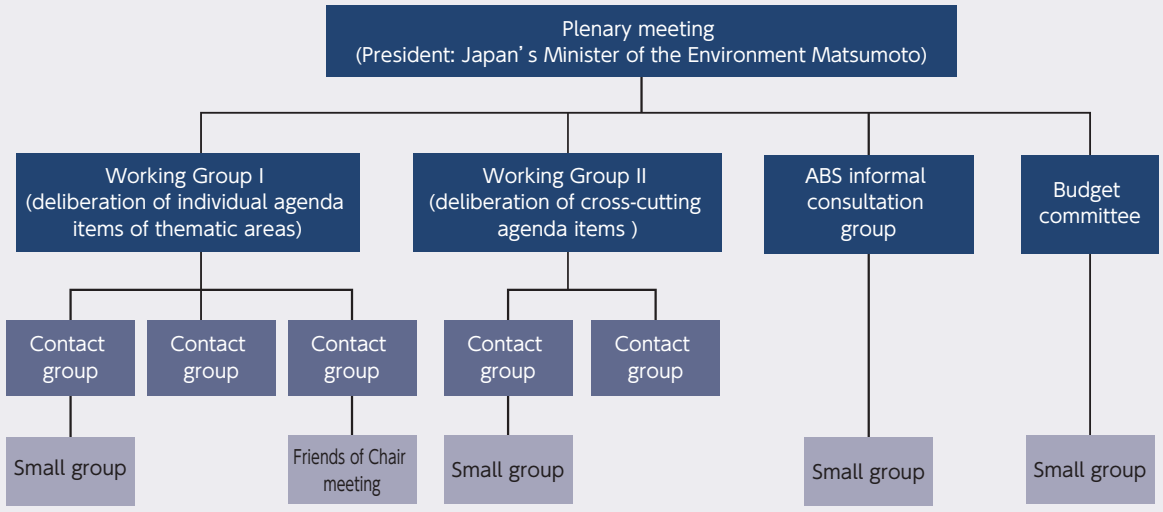
COP10 was held from 18 to 29 October, 2010 at the Nagoya Congress Center in Nagoya City, Aichi Prefecture, under the slogan "Life in Harmony, into the Future" (Figure 3-1-4: Overview of the 10th Conference of the Parties to the Convention on Biological Diversity (COP10)). A total of 13,000 people from around the world participated, including 180 country parties, NGOs and other observers, media, and local staff. Prior to COP10, the fifth meeting of the Conference of the Parties serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety was held from 11 to 15 October. There were as many as 350 official side-events during the period of COP10 and COP-MOP5, and both the number of participants and the number of events were the highest of any CBD COP in history. In addition, Interactive Fair for Biodiversity hosted by the COP 10 Promotion Committee, which consists of Nagoya City, Aichi Prefecture, corporative organizations, etc., was held around the venue, with nearly 200 exhibiting booths set up by NGOs, corporations, and municipalities and approximately 118,000 people participating during the conference (Photograph: A Scene at the Venue).

(2) Conference Operations

Including organizational matters, a total of forty agenda items were discussed at COP10. Japan served as the Presidency, and the conference's final decision-making was done at the "plenary session" chaired by Minister of the Environment Matsumoto. Three working groups were established under the plenary session, and discussions were held by "Working Group I" on the individual topics such as "protected areas" and "forest biodiversity," and by Working Group II on the cross-cutting topics such as "post-2010 targets" and "resource mobilization strategies." The Budget Committee reviewed the budgetary issues necessary for the Secretariat of the Convention to implement COP decisions. An informal consultative group was specially established for "ABS." In addition, discussions were coordinated through setting up small contact groups and small groups as necessary for each working group, and final decisions were made at the plenary session on the final day (Figure 3-1-5: Operating Structure of COP10).

Photo: A scene at the COP10 venue

Figure 3-1-5 Operating Structure of the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10)



Source: Ministry of the Environment

Table 3-1-3 List of Decisions Adopted at the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10)

(Main decisions are shown in hold.)

1	**Access to genetic resources and the fair and equitable sharing of benefit arising from their utilization(Nagoya Protocol on Access and Benefit-Sharing)**
2	**The Strategic plan for Biodiversity 2011-2020 and the Aichi Biodiversity targets**
3	**Strategy for resource mobilization in support of the achievement of the Convention' s three objectives**
4	Third edition of the Global Biodiversity Outlook: implications for the future implementation of the convention
5	Implementation of the Convention and the Strategic plan 2011-2020.
6	Integration of biodiversity into poverty eradication and development.
7	Examination of the out come-oriented goals and targets and associated indicators and consideration of their possible adjustment for the period beyond 2010
8	United Nations Decade on Biodiversity 2011 - 2020
9	The multi-year programme of work for the Conference of the Parties for the period 2011-2020 and periodicity of meetings
10	National reporting: review of experience and proposals for the fifth national report
11	**Consideration of the outcome of the Intergovernmental Science and Policy Platform on Biodiversity and Ecosystem Services (IPBES)**
12	Consolidated update of the Global Strategy for Plant Conservation 2011-2020
13	New and emerging issues
14	Retirement of decisions
15	Scientific and technical cooperation and the clearinghouse mechanism
16	Technological transfers and cooperation
17	Consolidated updated of the Global Strategy for Plant Conservation 2011-2020
18	Communication, education, and public awareness (CEPA) and International Year of Biodiversity
19	Gender mainstreaming
20	Cooperation with other conventions and international organizations and initiatives
21	**Businesses engagement**
22	Plan of Action on Sub-national Governments, Cities and other Local Authorities for Biodiversity
23	Multi-year plan of action for south-south cooperation in biodiversity for Development
24	Review of guidance to the financial mechanism
25	Additional guidance to the financial mechanism
26	The financial mechanism: Assessment of the amount of funds needed for the implementation the convention for the sixth replenishment period of the Global Environment Facility (GEF) trust fund
27	Preparation for the fourth review of the effectiveness of the funding mechanism
28	Inland waters Biodiversity
29	Marine and coastal Biodiversity
30	Mountain biological diversity
31	Protected areas
32	**Sustainable use of biodiversity (including Satoyama Initiative)**
33	**Biodiversity and climate change**
34	Agricultural biodiversity
35	Biodiversity of dry and sub-humid lands
36	Forest biodiversity
37	Bio-fuels and biodiversity
38	Invasive alien species
39	Global taxonomy initiative
40	Mechanism to promote the effective participation of indigenous and local communities in the work of the convention A. Capacity-building efforts B. Development of communication, mechanisms, and tools to facilitate the effective participation of indigenous and local communities in the work of the convention C. Participation of indigenous and local communities in the work of the convention, including through the Voluntary Fund for facilitating the participation of indigenous and local communities in the Convention Process. D. Other initiatives
41	Elements of sui generis systems for protection of the traditional knowledge
42	Code of Ethical conduct to Ensure Respect for the Cultural and Intellectual Heritage of indigenous and local communities
43	Multi-year programme of work on the implementation of Article 8 (j) and related provisions of the Convention on Biological Diversity
44	Incentive measures
45	Administration of the convention and budget for the programme of work for biennium 2011-2012
46	Date and venue of the eleventh meeting of the Parties
47	Tribute to the Government and people of Japan

Source: Ministry of the Environment

(3) Overview of the Results of COP10

The most significant results of COP10 were the adoption of the "Aichi Biodiversity Targets," which are new global targets on biodiversity (post-2010 targets), and the "Nagoya Protocol," on ABS. In particular, the Nagoya Protocol was the adoption of a legally binding international regime for achieving the third objective of the Convention, which has been debated ever since the Convention entered into force, and therefore, it is not too much to say that it opened the beginning of a new era for the Convention.

In addition to these major outcomes, a total of 47 decisions that are important for proceeding with conservation and sustainable use of biodiversity on a global scale, such as "protected areas," and "sustainable use," were adopted. We will now take a detailed look at the main decisions adopted at COP10 (Table 3-1-3: List of Decisions Adopted at COP10).

(4) Main Outcomes of COP10

A. Aichi Biodiversity Targets

At COP10, The Strategic Plan for the next ten years that included new global targets on biodiversity for 2011 and beyond (post-2010 Targets) was adopted, based on the results of assessment of the 2010 Target. Japan proposed that these global targets should be called the "Aichi Biodiversity Targets," and the proposal was agreed upon.

The Aichi Biodiversity Targets comprises a long-term target up to 2050 (Visions), a short-term target up to 2020 (Missions), and 5 strategic targets and 20 individual targets in order to achieve the short-term target (Figure 3-1-6: Strategic Plan for 2011 - 2020).

The long-term target is a "world living in harmony with nature." In other words, the aim is to, by 2050, realize a world where biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people. As it is Japan that proposed this concept of "living in harmony with nature" to the Secretariat of the Convention on Biological Diversity in January 2010, it can be said that the ways of thinking and knowledge about coexisting with nature that had been cultivated since long ago in Japan have gained the understanding and empathy from countries around the world.

As for the short-term target, positions were divided between the EU, which sought the ambitious target of "halting the loss of biodiversity by 2020," and developing countries, which valued feasibility, taking into consideration future economic development. In the end, in light of opinions expressed at an unofficial Cabinet-level meeting, it was decided to "take effective and urgent actions to halt the loss of biodiversity."

Concerning individual targets, for example, the positions were divided until the last day over the Target 11 on protected areas as for the figure of the quantitative target, but in the end the agreement were reached as "at least 17% of terrestrial and inland water areas, and 10% of coastal and marine areas will be conserved as protected areas." According to the Convention on Biological Diversity Secretariat, approximately 13% of the world's terrestrial and inland water areas and approximately 5% of its coastal and marine areas are designated as protected areas, however in order to achieve the target it is necessary to strengthen efforts, particularly in marine areas.

In addition, Target 2, on integration of biodiversity into national and local development and poverty reduction strategies underlines that the value of biodiversity will be included in national accounting and reporting systems as appropriate. The agreement was reached at the end, despite the fact that several Parties were of the opinion that "it would be difficult to include the value of biodiversity in national accounts." This was because the global attention was focused on the evaluation of the economic value of biodiversity, and furthermore, the importance of incorporating the results into the policy measures on biodiversity, based on the final report of "The Overview of the Economics of Ecosystems and Biodiversity (TEEB)" reported at COP10. The results of TEEB are explained in details in the column.

The Aichi Biodiversity Targets are adopted as a flexible framework to advance the implementation of the Convention as a whole, and from now on it will be necessary for each Party to set its own national targets according to the status of biodiversity and priority issues, etc., and to incorporate them in its national strategies and action plans. In addition, the Secretariat of the Convention on Biological Diversity has provided examples of specific measures of implementing individual target, and milestones and indicators for evaluating the implementation of the targets, which will be continued to be reviewed at related meetings.

It has also been decided that each Party will regularly report the progress of implementation of the new strategic plan, by submitting national reports under the Convention on Biological Diversity and other means. Based on those results, the global assessment on the progress of achievement of the Aichi Biodiversity Targets will be conducted.

In order to carry out the new Strategic Plan and achieve the Aichi Biodiversity Targets, it is necessary for each of the parties to the Convention to promote various measures through development, revision, and implementation of national biodiversity strategies and action plans, with participation from all stakeholders. Meanwhile, at COP10 the needs for financial support, technology transfers, and capacity building required for implementing the new strategic plan were pointed out by many developing countries. For that reason, by revising and steadily implementing its own national biodiversity strategy, Japan as the COP10 Presidency will contribute to promote measures and policies related to biodiversity both nationally and internationally. Furthermore, through contributions to the Japan Biodiversity Fund, administered by the Secretariat of the Convention on Biological Diversity and other means, Japan will support capacity building activities in developing countries, aiming to achieve the Aichi Biodiversity Targets and actively contributing to realizing conservation of biodiversity and its sustainable use at global scale.

Figure 3-1-6 Strategic Plan for Biodiversity 2011 – 2020 (Aichi Biodiversity Targets)

■ Long-term targets (Vision) 2050

○A world of "Living in Harmony with Nature"
○A world that, "by 2050 biodiversity is valued conserved, restored, and wisely used, maintaining ecosystem services, sustaining a healthy plant and delivering benefits essential for all people"

■ Short-term targets (Mission) 2020
To take effective and urgent action to halt the loss of biodiversity

◇This will ensure by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication.

■ Individual Targets

Target1: People become aware of the values of biodiversity and the steps they can take
Target2: Biodiversity values will be integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.
Target3: Incentives, including subsidies, that are harmful to biodiversity will be eliminated, phased out or reformed, and positive incentives will be developed and applied.
Target4: Stakeholders at all levels will take steps to achieve or will implement plans for sustainable production and consumption.
Target5: The rate of loss of all natural habitats, including forests, will be at least halved and where feasible brought close to zero, and degradation and fragmentation will be significantly reduced.
Target6: All fish and invertebrate stocks and aquatic plants will be managed and harvested sustainably.
Target7: Areas under agriculture, aquaculture and forestry will be managed sustainably.
Target8: Pollution will be brought to levels that are not detrimental to ecosystem function and biodiversity.
Target9: Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.
Target10: The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification will be minimized.
Target11: 17 percent of terrestrial and inland water areas, and 10 percent of coastal and marine areas will be conserved.
Target12: The extinction and reduction of threatened species will be prevented.
Target13: The genetic diversity of cultivated plants and farmed and domesticated animals will be maintained for minimizing genetic erosion and safeguarding their genetic diversity.
Target14: Benefits from ecosystem services and biodiversity will be provided, restored, and safeguarded.
Target15: Contributions will be made to mitigation and adaptation of climate change through restoration of at least 15% of degraded ecosystems.
Target16: The Nagoya Protocol on ABS will be put into effect and used.
Target17: Each Party will have develop, and commence implementing an effective, participatory and updated national biodiversity strategy and action plan.
Target18: The traditional knowledge will be respected and made mainstream.
Target 19: Knowledge, and the science base and technologies relating to biodiversity will be improved.
Target20: The mobilization of financial resources for effeictively implementing the strategic plan for Biodiversity 2011-2020 from all sources, and in accordance with the considated and agreed process in the strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessment to be developed and reported by Parties.

Source: Ministry of the Environment

B. The Nagoya Protocol on Access and Benefit-sharing

Although negotiations about an international framework (protocol) related to ABS had already been held in advance at preparatory meetings and so forth, a gap of opinions remained between the developing countries and developed countries, and adoption of the protocol was at risk until the final day.

An example of controversy is the time frames covered by the protocol. While developed countries argued that genetic resources obtained after the protocol enters into force should be subject to the protocol, developing countries were of the opinion that the protocol should be applied all the way back to when the Convention on Biological Diversity entered into force, and there were even some opinions that the protocol should cover periods even before the convention entered into force. Thus, the negotiations seemed not to come to an agreement with each other. In addition, various opinions of many of the parties to the convention were tangled over multiple issues, such as whether the "derivatives" of chemical substances, etc. that arise from the metabolism of genetic resources should be covered by the protocol, how define

user countries' discretion for measures in order to comply with the domestic measures of provider countries, and whether special consideration should be given to the handling of pathogens. It was extremely difficult to resolve these issues (Table 3-1-4: Main Issues Related to ABS, and Their Results).

The Ministers of each country showed strong expectations for agreement on the protocol, but working-level negotiations that took place into the late hours of the night over consecutive days did not make progress. On October 27, two days before the end of the conference, an informal ministerial consultation was held based on a call by the President of the COP10, Minister of the Environment Matsumoto, and political guidance was given to negotiations at the working level. Even so, agreement was still not reached at the working-level. On the morning of the final day (the 29th), a draft protocol by the President Matsumoto was presented to the Ministers, etc. representing each region, and a ministerial consultation was held again based on that draft, and finally the "Nagoya Protocol" was adopted through compromise by each of the parties to the convention (Figure 3-1-7: Overview of the Nagoya Protocol).

The Nagoya Protocol will be sequentially signed and ratified by each of the parties to the convention, and enter into force 90 days after the 50th Party has ratified. The following are expected by the entry into force of the Nagoya Protocol: ① The transparency, clarity, and legal certainty of the domestic measures ensured by provider countries will make it possible for corporations, etc. in user countries to smoothly obtain genetic resources, and utilization of genetic resources will be promoted, ② fair and equitable sharing of benefits arising from utilization of genetic resources will be promoted toward provider countries, and conservation of biodiversity and its sustainable use will be strengthened, ③ through collection of information related to prior informed consent and mutually agreed terms, monitoring of utilization of genetic resources and compliance with domestic measures on ABS of provider countries will be promoted, and thus appropriate utilization of genetic resources will be ensured, ④ as for traditional knowledge associated with genetic resources, benefits arising from the utilization will be fairly shared to indigenous and local communities that hold the knowledge, which will lead to their knowledge being respected, preserved, and maintained.

Table 3-1-4 Main Issues Related to ABS, and Their Results (Nagoya Protocol)

Issue	Countries using resources (developed countries)	Provider countries (developing countries)	Result (Nagoya Protocol)
Access	It is necessary to ensure legal certainty and transparency.	Legal certainty and transparency should not be obligated in the protocol.	Each Party to the Convention is obligated to provide for legal clarity and transparency of their domestic access
Benefit sharing	Allocation of benefits to the providing country, based on mutually agreed terms conditions	Benefit should be shared to providing countries too, irrespective of mutually agreed term.	Benefit sharing shall be based on mutually agreed.
Compliance / Designation of checkpoint(s)	Specific organizations to be designated should not be enumerated for designation.	Specific organizations to be designated should be enumerated.	Each party is obligated to designate one or more checkpoints, Specific organizations to be designated were not defined.
Scope (retroactive application)	After the protocol enter into force	Before the protocol enters into force(There are also some opinions that it should go back to before the convention entered into force.)	The protocol did not provide for retroactive application, which means that retroactive application was not allowed.
Scope (derivatives)	Genetic resources.	Derivatives (chemical substances) as well as genetic resources	"Utilization of genetic resources" can include utilization of derivatives, and whether benefit sharing is also applied to derivatives is based on mutually agreed terms.
Scope (pathogens)	It should be deliberated by other expert organizations such as the WHO (The protocol should not apply to pathogens).	The protocol should apply also to pathogens.	The protocol provides for special consideration to pay due regard to imminent emergencies that threaten human, plant or animal health, including access to pathogens.

Source: Ministry of the Environment

Figure 3-1-7 Overview of the Nagoya Protocol

◆Objectives
- Fair and equitable sharing of benefits arising from utilization of genetic resources
- Contributions to conservation of biodiversity and the sustainable use

◆Utilization of genetic resources
- Research and development on the genetic and biochemical composition of genetic resources, including application of bio-technology

◆Scope
- Genetic resources within the scope of the Convention on Biological Diversity
- Traditional knowledge within the scope of the Convention on Biological Diversity
- Benefits arising from their utilization

◆Fair and equitable sharing of benefits
- Benefits shall be shared in a fair and equitable way based on mutually agreed terms (contracts)

◆Access
- Each Party to the Convention shall provide for legal certainty, clarity and transparency of their domestic access

◆Special consideration
- Research for non-commercial purposes
- Due regard to imminent emergencies

◆Multilateral benefit-sharing mechanism
- Parties shall consider the need for a multi-lateralmechanism to address the fair and equitable sharing of benefits in cases that genetic resources occur in transboundary situations or that it is not possible to obtain prior informed consent

◆Compliance with domestic laws and regulations related to ABS
- Each Party shall take appropriate measures to provide that genetic resources utilized within its jurisdiction have been accessed in accordance with domestic laws and regulations of the other Party.

◆Monitoring of the utilization of genetic resources
- Each Party shall designate one or more checkpoints to monitor utilization of genetic resources.
- Checkpoints should collect information of relevant information at any stage of research, development, or commercialization

Point
①No provision for retroactive application
②Designation of checkpoints to support compliance
(Organizations to be designated are left to the discretion of each Party)
③Application of benefit-sharing to derivatives is not necessarily obligated and based on mutually agreed terms

Source: Ministry of the Environment

Agreement on the Nagoya Protocol was reached through compromise by each of the Parties to the convention. We have to make tireless efforts so that the protocol will enter into force as soon as possible, all of the parties will utilize it actively, and it will truly contribute to conservation of biodiversity and the sustainable use.
Japan signed the Nagoya Protocol on May 11, 2011. Aiming for early entry into force of the protocol, Japan as the COP10 presidency will develop necessary domestic measures and also provide international support such as capacity building for implementation of the protocol in developing countries so that the protocol can be ratified in many countries as soon as possible.

Column

The Difficult Negotiations at COP10

The plenary session on the final day of COP10 that started after 3pm on October 29 went on until around 3am of the next day (the 30th), and concluded after 47 decisions had been adopted. The adoption of the "Aichi Biodiversity Targets" and the "Nagoya Protocol" were significant results which can be called historic, and the process to the agreement was certainly not an easy one.

In order to get developed countries to compromise on "ABS," which is what developing countries were most interested in, it was argued from the beginning that a new strategic plan including post-2010 targets and a resource mobilization strategy should be agreed upon as a package. Despite this, even at the final plenary session, when agreement on ABS could be foreseen, there were signs that several developing countries would not agree on the new strategic plan and the resource mobilization strategy, and the tense negotiation continued with the EU, which was trying to block such movement. In the end, these three important issues were adopted unanimously with supports of statements such as that the content should be discussed instead of the process of discussions by South Korea, The moment of agreement was a moving scene with almost all of the participants in the meeting room stood up and applauded, and thereby welcomed this historic agreement (Photograph: The moment agreement was reached). The agreement was an outcome of the accumulated negotiations and compromises boldly made by each country while sharing the pain, which was based on the shared feelings of the participants towards "benefits for the Earth" and "benefits for humans."

The moment of the agreement reached

(5) Other Matters Decided

A. Resource Mobilization Strategy

Concerning setting indicators and targets in order to monitor the progress of the resource mobilization strategy, negotiations proceeded with difficulty between developing countries, which strongly demanded clarification of specific monetary targets (targets for the financial flow around the world as a whole in both private and public sectors), and developed countries, which said it was not possible to set targets without firm indicators. In the end, developing countries withdrew their demand for specific targets and, taking into account discussions about indicators, the following decisions were adopted: "adopt targets at COP11, provided that robust baselines have been identified," and "increase the annual international financial flows by 2020 to partner countries to contribute to achieving the Convention's three objectives".

B. Climate Change and Biodiversity

As for biodiversity conservation measures and environmental assessment of biodiversity related to activities on Reducing Emissions from Deforestation and Forest Degradation (REDD+) in Developing Countries, it was decided that the Secretariat of Convention on Biological Diversity would provide advice without pre-empting any future decisions taken under the United Nations Framework Convention on Climate Change, and that consideration would be given to joint activities with other Rio conventions (The United Nations Framework Convention on Climate Change and The United Nations Convention to Combat Desertification) towards the United Nations Conference on Sustainable Development 2012 (RIO+20).

C. Cooperation with Various Entities

As for business and biodiversity, encouragement of establishing a global platform to facilitate invitations by Parties to the Convention for promotion of collaborative activities of businesses and biodiversity, encouragement of specific participation by the private sector, international collaboration for Business and Biodiversity Initiatives on national and regional levels. In addition, an action plan related to biodiversity of local municipalities targeting the years from 2011 to 2020 was approved, and parties to the convention and other government organizations were encouraged to implement the plan.

D. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

It is expected that the "IPBES," which is also referred to as the biodiversity version of the IPCC, will make significant contributions to promote the collaboration between science and policy regarding biodiversity, and largely contribute to the conservation of biodiversity on a global scale. At a meeting on IPBES, which was convened by the United Nations Environment Program (UNEP) in June 2010 in Pusan (South Korea), a fundamental agreement on the necessity of its establishment was made. At COP10 to the Convention on Biological Diversity, it was decided to invite the General Assembly of the United Nations to consider the early establishment of the platform. Based on that decision, a resolution was adopted to request UNEP to hold a plenary meeting in order to determine modalities and institutional arrangements for the IPBES at the earliest opportunity, at its 65th session of the General Assembly of the United Nations held in December 2010.

E. The United Nations Decade on Biodiversity

As for the "United Nations Decade on Biodiversity" that was proposed by Japan, at COP10 it was decided to advise that this should be adopted at the United Nations General Assembly, and at the 65th United Nations General Assembly in December, 2010, it was adopted that the ten years from 2011 through 2020 would be the "United Nations Decade on Biodiversity," during which all sectors of international society would collaborate to tackle problems of biodiversity.

F. The SATOYAMA Initiative

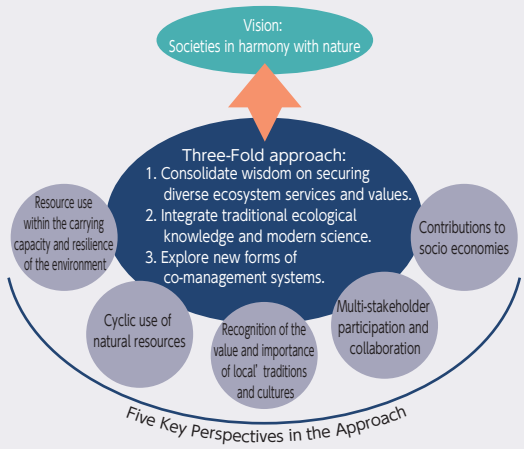
Protecting biodiversity entails not only conserving pristine environments but also conserving human-influenced natural environments that have been developed and maintained through human activities such as agriculture and forestry. A variety of species have adapted to and rely on these natural environments, hence they play an important role in protecting biodiversity. But these natural environments are increasingly threatened in many regions of the world, due to urbanization, industrialization, rapid changes of regional population structures, etc.

In Japan, it has been a critical task to manage and revitalize Satochi-satoyama under the decline of population and primary industries that form basis in the regions. In order to realize "Life in harmony, into to the future" as the slogan of COP10, Japan as the COP10 Presidency initiated the "*Satoyama* Initiative," which aims to harmonize conservation of biodiversity in human-influenced natural environments with its sustainable use, share awareness of problems with other countries and related organizations, discuss on a global scale, and accelerate the international efforts.

At the International Experts Meeting and other preparatory meetings on the *Satoyama* Initiative prior to COP10, the conceptual structure of the *Satoyama* Initiative (Figure 3-1-8: Conceptual Structure of the *Satoyama* Initiative) was built, and supporting mechanisms for developing it internationally were discussed. The vision of the *Satoyama* Initiative is to "realize societies in harmony with nature," comprising human communities where the maintenance and development of socio-economic activities (including agriculture, forestry, and fisheries) align with natural processes. From now on we will make efforts in line with the approach and the perspectives.

In addition, in order to contribute to promotion of specific efforts based on the concept of the *Satoyama*

Figure 3-1-8 Conceptual Structure of the Satoyama Initiative



Source: Ministry of the Environment

Photo: Launching ceremony of IPSI

Initiative, the "International Partnership for the *Satoyama* Initiative" (IPSI) was launched on October 19 during COP10 as a platform for sharing information and promoting collaborative activities among partner organizations. The launching ceremony of IPSI was held as a side-event during COP10 with 51 founding partner organizations, including the government ministries of 9 countries, 18 NGOs, and 9 international organizations (Photograph: Launching ceremony of IPSI). The IPSI is open to all of the organizations who will make efforts to promote the Satoyama Initiative. At the first IPSI Regular meeting held in March 2011, 23 organizations newly joined IPSI, and it is estimated that the number of the IPSI members will increase. It is expected that the expansion of the IPSI members and the development of their activities will contribute to the further promotion of the *Satoyama* Initiative.

G. Encouragement of Implementation of the Rice Paddy Resolution

It is recognized that, in agricultural biodiversity, conservation of biodiversity and sustainable use of rice paddy ecosystems are particularly important. The Ramsar Convention's "Rice Paddy Resolution," which internationally recognized the fact that rice paddies acting as human-created wetlands support a wide range of biodiversity as artificial wetland, is welcomed, and it was decided that parties to the convention would be asked to implement it.

(6) Overview of the Outcome of COP-MOP5

Minister of Agriculture, Forestry and Fisheries Mr. Kano served as chairman of COP-MOP5, which was held prior to COP10. The main discussion at COP-MOP5 was about stipulation of measures that should be taken by parties to the convention in relation to "responsibility and redress" when damages to conservation of biodiversity and sustainable use are caused due to trans-boundary movements of living modified organisms.

Negotiations about "liability and redress" began in 2004 and, after six years of discussions, the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, which stipulates measures that parties to the convention should take, was adopted at this conference. This stipulated that in case of damage to biodiversity, parties to the convention will identify the responsible party and order response measures to return biodiversity to its original state.

From now on it will be necessary for the parties to the convention, including many developing countries, to work to smoothly implement this supplementary protocol.

(7) Japan's Contributions

At the High-level Segment of COP10 (Ministerial meeting), Prime Minister Kan announced the "Life in Harmony Initiative" (USD 2 billion) as support for developing countries in relation to biodiversity, with priority areas such as to pursue a balance between the livelihood of the locals and the conservation of natural environment, to manage protected areas adequately, to halt biodiversity loss caused by the excessive use of natural resources, and to explore the value and share benefits of micro-organism. Japan's Minister of the Environment Matsumoto also announced the "Japan Biodiversity Fund" (JPY 1 billion) aimed at supporting development of a National Biodiversity and Action Plans as well as another contribution to the assistance (JPY 1 billion) for capacity building on ABS in developing countries under the said initiative. Moreover, the Vice Foreign Minister Banno announced specific assistance in relation to use of genetic resources and conservation of forests. As the Presidency, Japan also actively participated in and contributed to discussions on each of the topics and was highly praised by various countries for its positive stance in leading the conference through smooth and fair business operations and for the "President's proposal" related to the Nagoya Protocol.

Many participants also expressed their appreciation for the heart-warming hospitality elaborated by the host areas Aichi Prefecture and Nagoya City, and for the active endeavors of Japan's NGOs, such as Japan Civil Network for CBD. It is believed that the combination of each of these individual efforts was a major factor that led to the conference's success.

Column

The Economics of Ecosystems and Biodiversity (TEEB)

At COP10, the final report of "TEEB: The Economics of Ecosystems and Biodiversity," which is referred to as the biodiversity version of the Stern Review, was released (Figure1: Overview of TEEB). TEEB is an initiative of study supported mainly by the UNEP based on the "Potsdam Initiative" that was adopted at the 2007 G8 Environment Ministers Meeting, conducting analysis and assessment of the effects of deterioration of biodiversity and ecosystem services on international society and economy from an economic perspective. Here we will introduce TEEB's main outcomes and recommendations.

(1) Quantification of Biodiversity and Ecosystem Services

Until recently the value of biodiversity and ecosystem services has rarely been recognized, and there are an aspect that they have been rapidly lost due to exploitation and development. Therefore, with the objective of quantifying the effects of loss of biodiversity on our daily lives and the value that we gain by the conservation, attempts to assess the economic value of ecosystem services are being made around the world (Table1: Examples of Assessing the Monetary Value of Ecosystem Services).

TEEB not only brings about awareness of such value. It is said that it also works toward economic rationality and makes preservation of biodiversity and sustainable use possible, by reflecting the value in the decision-making and actions of government decision-makers, businesses, and consumers. For example, New York City authorities made decisions, to pay remuneration to landowners in the Catskill mountains to improve farm management techniques and prevent run-off of waste and nutrients into nearby watercourses in order to secure purified water. The cost of this choice was between USD 1 billion and 1.5 billion, while avoiding the projected cost of a new water filtration plant at USD 6 billion, plus USD 300 million to USD 500 million in estimated annual operation costs (Figure 2: Comparison of Costs Required for Securing Purified Water in New York City). However, it must be noted that such methods

Figure 1 Overview of the Economics of Ecosystems and Biodiversity (TEEB)

TEEB: The Economics of Ecosystems and Biodiversity

○An initiative to draw attention to the economic value of biodiversity on a global scale, highlight the cost of biodiversity loss caused by economic and social losses, and provide information to facilitate policymakers local and regional agencies, businesses and citizens for their decision-making.
○At the 2007 G8 Environment Ministers Meeting the importance of economic assessment of global-scale loss of biodiversity was pointed out, and research then began, carried out mainly by Deutsche Bank. An interim report was made at COP9 in 2008, and a final report was released at COP10 in 2010.

Organizations and countries that played a central role:
United Nations Environment Programme (UNEP), European Union (EU), the UK, Germany

D0 (Theory)
D1 (For policymakers)
D2 (For Local and Regional Policy)
D3 (For Business)
D4 (For Citizens)

Recommendations

①It is important to economically clarify the value of ecosystems and biodiversity.
○The value of ecosystems and biodiversity is not reflected in a wide variety of decision-making, and that is leading to loss.

②It is necessary to change to a method in which it is possible to economically and socially reflect the value of ecosystems and biodiversity in policy formation and a wide variety of decision-making
◆Examples of specific methods
<National and regional governments>
○Candidates for policy framework for managing natural resources
(payment for ecosystem services, promotion of procuring products that pay attention to biodiversity.)
○Reform of subsidies that have a negative impact on conservation of biodiversity, etc
○Introduction of regulations and tax systems to conserve biodiversity, etc
○Management of protected areas
<Businesses>
○Prediction of risks and business chances in business activities related to ecosystems and biodiversity, and activities by the businesses based on those predictions
○Building an information system related to ecosystems and biodiversity, setting targets, and measuring, assessing, and reporting

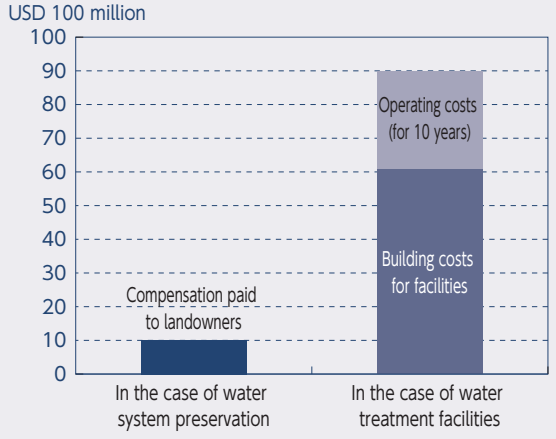
Source: Ministry of the Environment

Table 1 Examples of Assessing the Monetary Value of Ecosystem Services

Item	Monetary value of ecosystem services (estimate)	Source
Effects of reducing emissions of greenhouse gases through forest conservation	Halving deforestation rates by 2030 would avoid damages from climate change estimated at more than USD 3.7 trillion.	TEEB Final Report
Loss caused by deterioration of forest ecosystems	Economic loss of approximately JPY 220- 500 trillion by 2050	TEEB Interim Report
Preservation of the world's protected areas	Although approximately USD 45 billion is necessary per year for management of protected areas, the value of the carbon dioxide, drinking water preservation, flood convention brought about by protected areas is USD 5 trillion per year.	TEEB D1 (for Policymakers)
Economic loss caused by reduction of the world's fishing resources	If over-exploitation continues, it will reduce the income from global marine fisheries by USD 50 billion annually, compared to a more sustainable fishing scenario,.	TEEB Final Report
Agriculture production through insect pollination	Total economic value of insect pollination worldwide is estimated at 153 billion Euros annually.	TEEB Final Report
Value of coral reef systems	・The net benefit from recreation provided by the 166,000 thousand hectares of Hawaii's coral reef is USD 306 million per year. ・The worldwide economic effects of fish cultivation, tsunami damage reduction, tourism resources, are USD 30 – 172 billion.	TEEB Final Report
Protection against tsunami by mangrove forests	At a cost of USD 1.1 million to protect and plant mangrove forests in Vietnam, USD 7.3 million in expenses for maintaining levees would be saved.	TEEB D1 (for Policymakers)
Economic value brought about by preserving the world's wetlands	The economic effects brought about by the world's 63 million hectares of wetlands through cultivation of fish and shellfish, tourism resources, is USD 3.4 billion.	TEEB D2 (for local municipalities)
Tree planting that enhances urban life	In Canberra, Australia, the results of planting 400,000 trees to regulate microclimate and reduce of pollution and thereby improve urban air quality, was reduction of energy costs for air-conditioning as well as store and sequester carbon These benefits are equivalent to approximately USD 20 – 67 million over the period 2008-2012.	TEEB Final Report

Source: Created by the Ministry of the Environment, using information from "The Economics of Ecosystems and Biodiversity (TEEB)"

Figure 2 Comparison of Costs Required for Securing Purified Water in New York City



Source: "The Economics of Ecosystems and Biodiversity (TEEB)"

cannot necessarily be used in all cases. Some reasons for this are that there is insufficient scientific knowledge about the functions of biodiversity and ecosystems, and there is uncertainty in assessing value due to the limits of economic methods. Therefore, keeping in mind that there are limits to its assessment it is important to actively make efforts that lead to conservation of biodiversity and ecosystem services and to take measures that follow the principle of prevention by warding off unnecessary development in advance.

(2) Biodiversity as Natural Capital

TEEB views biodiversity as natural capital in various scenes. Natural capital is an extension of the economic concept of capital to nature. In other words, biodiversity is handled as stock (an asset) which continues to provide ecosystem services in the future.

A typical example is a "protected area."Specifically, protected areas of forests would provide with supply services such as timber, that has utility value, and supply service of fruits, adjustment services such as alleviation and adaptation for climate change, and cultural services such as eco-tourism, forest bathing trip and mental relaxation. By establishing protected areas and appropriately managing and using them, it becomes possible to persistently use ecosystem services, even though management and other costs are involved. Therefore, investing in conservation of ecosystems in order to view biodiversity as natural capital and work toward the maintenance, reactivation, and strengthening of ecosystem services can be said to be meaningful from the perspective of economic efficiency and long-term benefits.

(3) Business and Biodiversity

Business activities are closely related to biodiversity in a variety of situations, such as procurement and

transport of resources and land use. On the premise that all businesses rely on and affect biodiversity and ecosystem services, TEEB identifies seven key action points that business should follow for conservation of biodiversity and sustainable use (Table 2: Key Action Points for Business in Relation to Preservation of Biodiversity and Sustainable Use).

It also indicates risks and opportunities in business activities. For example, as risks for business activities, it points out that shortages of raw materials and increased costs for procuring materials are conceivable due to declines in living resources. It says that such risks can be effectively managed by setting up appropriate systems. Meanwhile, an example of an opportunity is securing stable and sustainable resource procurement. In addition, it views new markets of certified products that give consideration to conservation of biodiversity and sustainable use and ecosystem services as new business opportunities (Table 3: New Markets for Biodiversity and Ecosystem Services).

(4) Cooperation between Conservation of Biodiversity and Measures against Global Warming

Conservation of biodiversity and measures against global warming are related to each other on various points. It is feared that global warming is having serious effects on biodiversity, such as disrupting ecosystems and causing species to become extinct. For example, it is pointed out that an increase of carbon dioxide, which is one of the main greenhouse gases, in the ocean would lead to loss of coral reefs, which leads to loss of the ecosystem services obtained from coral reefs. Meanwhile, conservation of biodiversity is thought to be a highly cost-effective way to slowdown global warming through absorption of carbon dioxide by forests and adapting to global warming by preserving freshwater and preventing natural disasters. For example, according to TEEB, by reducing the speed of deforestation by half by the year 2030, damages estimated to be over USD 3.7 trillion caused by climate change would be avoided. Further, according to TEEB the planting of mangroves along the coast of Vietnam required USD 1.1 million, but it had the effect of saving the annual USD 7.3 million to maintain levees. From such perspectives, there are expectations for efforts that take into consideration both preservation of biodiversity and counter measures global warming.

Table 2 Key Action Points for Businesses in Relation to Conservation of Biodiversity and Sustainable Use

1)Identify the impacts and dependencies of your business on biodiversity and ecosystem services (BES)
2)Assess the business risks and opportunities associated with these impacts and dependencies
3)Develop BES information systems, set SMART targets, measure and value performance, and report your results
4)Take action to avoid, minimize and mitigate BES risks, including in-kind compensation ('offsets') where appropriate
5)Grasp emerging BES business opportunities, such as cost-efficiencies, new products and new markets
6)Integrate business strategy and actions on BES with wider corporate social responsibility initiatives
7)Engage with business peers and stakeholders in government, NGOs and civil society to improve BES guidance and policy

Source: "The Economics of Ecosystems and Biodiversity (TEEB)"

Table 3 New Markets for Biodiversity and Ecosystem Services

Market opportunities	Market size (USD per annum)		
	2008	2020 (Estimate)	2050 (Estimate)
Certified agricultural products	40 billion*	210 billion	900 billion
Certified forest products	5 billion (FSC certification)	15 billion	50 billion
Carbon offsets	21 million (2006)	10 billion−	10 billion−
Payments for water-related ecosystem services (Government)	5.2 billion	6 billion	20 billion
Payments for water-related ecosystem services (Voluntary by businesses)	5 million (several spots in Costa Rica and Ecuador)	2 billion	10 billion
Payment for other ecosystem services (Government)	3 billion	7 billion	15 billion
Biodiversity offsets in regulated markets	3.4 billion	10 billion	20 billion
Voluntary biodiversity offsets	17 million	100 million	400 million
Bio-prospecting agreements	30 million	100 million	500 million
Conservation of private land	8 billion (US)	20 billion	Difficult to predict

※2.5% of global food and beverage market
Source: "The Economics of Ecosystems and Biodiversity (TEEB)"