The National Biodiversity Strategy and Action Plan of Japan 2023-2030

The Roadmap to Realizing Nature-Positive by 2030

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Contents

Background ····· 1

Part 1 Strategy ····· 5

Chapter 1: Current Status and Issues of Biodiversity and Ecosystem Services ····· 5

Section 1: Current Situation and Trends at Global Level ····· 5

Section 2: Current Status and Trends in Japan ····· 14

Section 3: Issues to be Addressed in the NBSAP ····· 23

Chapter 2: Vision of Society (2050 and Beyond) ····· 26

Section 1: Principles of Society Living in Harmony with Nature ····· 26

Section 2: Vision of Society in Harmony with Nature to be Achieved (2050 Vision as Long-Term Goal) ····· 26

Chapter 3: Targets toward 2030 ····· 28

Section 1: Short-term Targets for Realizing 2050 Vision (2030 Mission) ····· 28

Section 2: Five Basic Strategies and Individual Targets ····· 31

Chapter 4: Foundations and Mechanisms for Effective Implementation of this NBSAP ····· 63

Section 1: Basic Concept for Implementation ····· 63

Section 2: Evaluation and Examination of Progress ····· 68

Section 3: Mechanisms for Monitoring Progress of Efforts by Various Entities ····· 70

Section 4: Expected Roles of Each Entity and Cooperation among Them ····· 70

Part 2 Action Plan ····· 77

Chapter 1: Restoration to Healthy Ecosystems ····· 77

Action-oriented target 1-1: Conserve at least 30% of land and sea as protected areas and Other Effective area-based Conservation Measures (OECMs), and enhance the effectiveness of the management of these areas ····· 77

Action-oriented target 1-2: Prevent degradation of ecosystems by reducing impacts on biodiversity from use of terrestrial and marine areas, promote restoration of at least 30% of degraded ecosystems, and implement measures that contribute to the development of ecological networks ····· 86

Action-oriented target 1-3: Reduce pollution (control emissions with the objective of reducing the impact on biodiversity to an appropriate level taking into account carrying capacity) and, implement measures contributing to preventing and reducing the negative impacts of invasive alien species (e.g., reduce the rate of establishment of invasive alien species by 50%) ····· 96

Action-oriented target 1-4: Minimize adverse impacts of climate change on biodiversity ····· 109

Action-oriented target 1-5: Implement protection in accordance with laws and regulations for rare species of wild fauna and flora, and promote efforts to improve the current status of wildlife ····· 110

Action-oriented target 1-6: Implement measures taking into account conservation of genetic diversity ····· 114

Chapter 2: Application of Nature-based Solutions (NbS) to Address Social Challenges 117

Action-oriented target 2-1: Promote visualization of ecosystem functions and their further utilization 117

Action-oriented target 2-2: Promote community development making the most of nature while respecting the connection between forests, the countryside, rivers, and the seas, and the preservation of local traditional culture 120

Action-oriented target 2-3: Promote nature restoration that will also contribute to climate change mitigation and adaptation, and promote conservation and use of ecosystems beyond current levels as measures for carbon sink and reduction of greenhouse gas emissions 132

Action-oriented target 2-4: Promote due consideration of biodiversity in introduction of renewable energy 136

Action-oriented target 2-5: Enhance efforts to mitigate human-wildlife conflicts 137

Chapter 3: Realization of Nature Positive Economies 144

Action-oriented target 3-1: Promote quantitative assessment of dependence and impact on biodiversity, analysis of current status, science-based target-setting, and information disclosure, by businesses, develop a foundation for promoting investments and financing by financial institutions and investors, and promote activities to conserve and restore biodiversity from perspective of investment and financing 144

Action-oriented target 3-2: Support technologies and services contributing to biodiversity conservation 146

Action-oriented target 3-3: Implement the ABS in utilizing genetic resources 148

Action-oriented target 3-4: Enhance sustainable, environmentally friendly agriculture, forestry, and fisheries, including reduction in risk-weighted use of chemical pesticides and chemical fertilizer use, and promotion of organic farming, as stated in MIDORI Strategy for Sustainable Food Systems 150

Chapter 4: Recognition of the Value of and Actions for Biodiversity in Daily Life and Consumption Activities (Changing Individual Behavior) 160

Action-oriented target 4-1: Promote environmental education on biodiversity in schools 160

Action-oriented target 4-2: Through providing opportunities for people to interact with nature in their daily life, ensure acquirement of various knowledge and awareness-raising on matters, including nature's blessings and how people interact with nature, and development into a mature person, and raise awareness on ideas on appropriate relationships between people and animals 163

Action-oriented target 4-3: Encourage people to actively change their behavior on a voluntary basis 168

Action-oriented target 4-4: Raise awareness on options considering biodiversity, increase opportunities for selecting, and offer incentives, in order to promote consumption behavior considering biodiversity, including halving food loss and waste, and reducing disposal of other materials 170

Action-oriented target 4-5: Promote local activities to conserve and restore natural environment, utilizing traditional culture and local and traditional knowledges 175

Chapter 5: Development of a Base that Underpins Activities for Biodiversity Conservation and Promotion of International Coordination 178

Action-oriented target 5-1: Promote academic research in biodiversity-related fields including integration of biodiversity and social economy and integration of natural capital into national economic statistics, and implement long-term survey and monitoring building on a sound system 178

Action-oriented target 5-2: Develop human resources and provide tools for dissemination and utilization of the data, to promote effective and efficient biodiversity conservation, facilitate appropriate policy-making and decision-making, and encourage public participation in biodiversity conservation activities ····· 187
Action-oriented target 5-3: Strengthen support for planning, including local biodiversity strategy and action plans (LBSAPs), to promote integrated efforts with participation by various entities ····· 193
Action-oriented target 5-4: Implement efforts to enhance resource mobilization, including identifying and reviewing incentives that are harmful to biodiversity ····· 195
Action-oriented target 5-5: Promote international cooperation utilizing Japan's knowledge and expertise ····· 198

Annex: 30by30 Roadmap and Fundamental Background Information on This Strategy ····· 211

1 30by30 Roadmap ····· 212
1. Key Messages ····· 218
2. Objective of the Roadmap ····· 219
3. Key Measures for Achieving 30by30 Target ····· 219
4. Cross-Sectional Efforts for Supporting and Promoting Key Measures ····· 223
5. Expected Roles ····· 225
6. Implementation of Interim Evaluation ····· 228
7. Background of the 30by30 Target ····· 228
8. NbS Benefits Anticipated from Achievement of the 30by30 Target ····· 232
9. Timeline and Process ····· 236

2 Explanatory Note on Importance of Biodiversity and Ecosystem Services ····· 238

3 Grand Design for National Land for a Society in Harmony with Nature ····· 250

Background

Global stream toward a sustainable future

- Ensuring the sustainability of our planet is of paramount importance for the survival of humankind. To achieve the Sustainable Development Goals (SDGs), which are the global goals addressing shared challenges in an integrated manner with no one left behind, and the 2050 biodiversity vision of "a world of living in harmony with nature", it is essential to secure stable social capital as well as the human capital which is supported by the social capital. Both of them are built upon the natural capital. Therefore, natural capital constitutes the foundation of human security. However, the two crises, biodiversity loss and climate crisis, are undermining the stability of natural capital. Some indicators of Planetary Boundaries[1], an example of a method for objectively assessing the impact of human activities on the Earth system, indicates that the state of the global environment, which serves as the foundation for human existence, may have already reached its limits in some aspect.

- Global efforts for biodiversity and climate change have been pursued in accordance with the Convention on Biological Diversity (hereafter referred to as "CBD") and the United Nations Framework Convention on Climate Change (hereafter referred to as "UNFCCC"), which are often referred to as sister conventions, both of which were adopted in 1992 for the United Nations Conference on Environment and Development (Earth Summit) held in Rio de Janeiro, Brazil. With regard to the relationship between the two global challenges, the phenomena induced by biodiversity loss and the ones caused by the climate crisis interact with each other positively and negatively and such interactive relationship can be also observed in the countermeasures against both of them. Therefore, we need to address the issues in an integrated manner.

- Moreover, since 2020, the world has faced the crisis posed by the COVID-19 pandemic. As it is indicated that the root causes of emerging infectious diseases are closely linked to alterations of nature, such as urbanization, the fundamental causes of pandemics are the same as those changing global environment, which triggers the two crises of biodiversity loss and climate crisis.

- To address these global crises brought about by human activities, there are no other ways than to change the way in which human activities are being carried out. Therefore, society needs to reduce the excessive burden on natural capital imposed by socioeconomic activities that originates from society's values and actions, and to maintain and restore a healthy natural environment, which serves as the foundation of our society. A healthy natural environment enables ecosystems to fully demonstrate their diverse functions and

[1] The planetary boundaries are the consequence of nine human-induced changes in the functioning of the Earth system, namely:(i) biosphere integrity (ecosystem and biodiversity loss), (ii) climate changes, (iii) ocean acidification, (iv) changes in land use, (v) unsustainable usage of freshwater, (vi) interference with biogeochemical flows (flow of nitrogen and phosphorus into the biosphere), (vii) changes in atmospheric aerosol loading, (viii) pollution caused by new chemical substances, and (ix) stratospheric ozone depletion. If humans were to expand their activities beyond the range that would allow the stability of the Earth system (planetary boundary) to be sustained, it would trigger irreversible changes.

contributes to addressing various social issues, including measures against climate change (Nature-based Solutions (NbS)[2]). If Japan becomes a country that addresses these issues successfully as a leading model, it will also help boost the country's competitiveness amid an international trend where sustainable use of natural capital in economic activities is increasingly required. To play such leading roles, Japan needs to shift away from a value system where economic growth is regarded as the only measurement of wealth, and fundamentally transform towards a society that is built on new values, where inclusive wealth is pursued and is built on new value systems.

Current situation in Japan

- In recent years, Japan has faced issues of an aging population, coupled by dwindling birthrate and declining population. Particularly in rural areas, the decrease in the number of farmers and forestry workers has caused a shortage of workforce who can manage *satochi-satoyama*. Such issue has resulted in less utilization of the natural resources, and that is one of the drivers of biodiversity loss in Japan. On the other hand, Japan's dependence on foreign resources has also been contributing to biodiversity loss overseas. In other words, the natural capital close to our everyday life that should be primarily utilized has been underused and degraded, whereas the natural capital in distant places where the changes are difficult to be perceived by the consumers in Japan, is also deteriorated. The issue of resource utilization has not only impacted biodiversity and climate change but also been related to the risk of violations of human rights. Therefore, it is necessary to effectively use domestic resources with a view of enabling sustainable and responsible procurement. In addition, the decline and aging of the workforce, who have been contributing for the management of local forest and agricultural lands as well as wildlife, has worsened the damage caused by wildlife and is threatening the sustainability of local communities. Furthermore, given that Japan is a maritime nation with the world's sixth largest Exclusive Economic Zone (EEZ), it is crucial to build a framework for ensuring the sustainable use of fishery resources on a long-term basis.

- On the other hand, the situation in which Japan is now facing challenges such as a declining population, it can be also perceived as an opportunity for Japan to lead the world to transform its society towards the one that protects and harnesses our natural capital. By achieving such transformation, Japan can have a vision of a sustainable society of living in harmony with nature, as a bright future in the path. For instance, by building self-reliant and decentralized communities that utilize renewable resources, such as recycled resources and biomass resources as much as possible, as well as resilient and adaptive to disasters, Japan can reduce its dependence on underground resources, including fossil fuels and mineral resources. This will also contribute to building decarbonized and sound material-cycle societies. Moreover, reducing dependence on natural capital of other countries will also help reduce impacts on biodiversity at a global scale and will contribute to Japan's national security through safeguarding the foundation of Japan's existence. Subsequently, those efforts will facilitate the establishment of the "Circular and Ecological

[2] Nature-based Solutions. Efforts to resolve social issues by leveraging the functions of healthy natural ecosystems.

Economy", in which communities mutually support each other with fully taking advantage of their own strengths associated with their unique features. In addition, the resilience of our society will be further enhanced with the lessons learned from the Great East Japan Earthquake as well as large-scale disasters caused by heavy downpours. Biodiversity is invaluable, reflecting the geological and evolutionary history of the Earth. It is therefore our responsibility for those living today to make every possible effort to protect habitats of diverse species in our country and pass them onto future generations. As successful cases of such efforts towards new societies are increasing, promoting such changes and trends across society will help transform ideals into reality.

- For the transition towards a sustainable society, it is crucial to make efforts in an integrated manner, by taking into account discussions related to addressing both economic development and social issues, such as a "New Form of Capitalism", the "Vision for a Digital Garden City Nation", "Society 5.0", and the Circular and Ecological Economy. Protecting and utilizing natural capital will build a foundation for realizing the social visions for which these efforts are aiming at and will reinforce our views for sustainability in each of these social visions.

  Regarding climate change measures, Japan has pledged to reduce its greenhouse gases (GHGs) emissions by 46% in FY2030 from its FY2013 levels, and will continue strenuous efforts in its challenge to meet the lofty goal of cutting its emission by 50% in accordance with the target of net-zero GHG emissions by 2050. Similarly, for biodiversity, Japan is required to set new 2030 national targets towards "a world of living in harmony with nature" in 2050, based on the global objectives of the Kunming-Montreal Global Biodiversity Framework (GBF). These two sets of targets for sustainability must be achieved simultaneously without contradicting each other. To this end, based on the premise on the coexistence of the introduction of renewable energy with natural environment, Japan must promote measures against climate change in a manner that coexists with local communities, by fully utilizing mitigation and adaptation measures that make use of functions of nature, while preventing the introduction of renewable energy in a way that hinders the conservation of the natural environment.

Importance and Roles of the National Biodiversity Strategy and Action Plan (NBSAP) of Japan

- A National Biodiversity Strategy and Action Plan or NBSAP is a strategy that is developed by each Party to the CBD in accordance with Article 6 of the CBD. In Japan, the Basic Act on Biodiversity (2008 Act No.58) was enacted in 2008. Since then, it has also been positioned as a basic plan for the conservation and the sustainable use of biodiversity developed by the government in accordance with Article 11 of the Act. This is the most fundamental strategy for biodiversity, based on the Basic Environmental Plan and other related plans. Furthermore, the descriptions on wetlands in NBSAPs are also recognized as National Wetland Policies that the Convention on Wetlands of International Importance especially as Waterfowl Habitat (hereafter referred to as "Ramsar Convention") requires Contracting Parties to develop.

- The National Biodiversity Strategy of Japan 2012-2020 was formulated to serve as Japan's roadmap to achieve the Aichi Biodiversity Targets and to provide direction for creating a society living in harmony with nature, such as the concept of the "Socio-Ecological Sphere" where rural areas (which provide benefits from nature) and cities (which receive benefits from nature) support mutually. The concept of the Socio-Ecological Sphere was the basis for the Circular and Ecological Economy, which was set forth in the 5th Basic Environmental Plan and aimed at integrated improvement of environment, economy, and society. This new NBSAP further develops the direction that was provided by the previous strategy.

- This newly formulated National Biodiversity Strategy and Action Plan (NBSAP) of Japan 2023-2030 sets out such matters to be addressed for the achievement of the GBF based on the experiences gained and lessons learned from the implementation of the Aichi Biodiversity Targets and past national strategies, as well as issues in Japan posed in interaction between Japan and the rest of the world, and the matters to be addressed in response to the challenges at national level.

- With a new mission to be addressed in the biodiversity area, "Nature-Positive by 2030," which aims at halting biodiversity loss and reversing the trend to put nature on a path to recovery, this NBSAP is developed as a roadmap for the realization of this mission. Since "Nature-Positive by 2030" cannot be achieved by the efforts of the government alone, this NBSAP concretely sets forth strategies and action plans that the government will implement, in collaboration with all citizen of the country, to protect and utilize natural capital, including the "30by30 target" which aims at effectively conserving at least 30% of land and sea areas as healthy ecosystems by 2030 for the achievement of the mission.

- While this NBSAP sets the target year as FY2030, Japan will continue to pursue relevant measures based on this NBSAP as Japan's basic strategy for the conservation and the sustainable use of biodiversity for the period beyond FY2031 until the next NBSAP is developed based on a next global biodiversity framework beyond FY2031 that is to succeed the current GBF.

- This NBSAP consists of two parts; Part 1 describes the current status and issues of biodiversity and ecosystem services, as well as the basic concept of "Nature-Positive by 2030" and its targets. Part 2 describes measures to be undertaken by FY2030 for achieving the action-oriented targets specified in Part 1. In addition, annexes include "the 30by30 Roadmap" that outlines the process and detailed strategies for meeting the 30by30 target, "the importance of biodiversity" which describes fundamental information for the implementation of this NBSAP, and "the grand design for national land".

Part 1 Strategy

Chapter 1: Current Status and Issues of Biodiversity and Ecosystem Services

Section 1: Current Situation and Trends at Global Level

1. Current Status and Impacts

Ecosystems supported by abundant biodiversity contribute to stable provision of safe water and food which is vital for human survival. The ecosystems also support the security and safety of people's lives and provide a foundation for developing cultures unique to local communities, thereby contributing to the well-being of humankind. While our lives have become materially wealthier owing to these benefits from nature, biodiversity and ecosystem services are continuing to deteriorate due to human activities around the world. According to the Global Assessment Report on Biodiversity and Ecosystem Services released by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) in 2019, nature has been drastically altered in most parts of the planet. For example, 75% of the world's terrestrial areas have been significantly altered, 66% of the seas and oceans are impacted by multiple human drivers, and over 85% of wetlands have disappeared since 1700. The report points out that nature across the entire planet has been changing at an unprecedented rate in human history over the past 50 years, including results indicating that about 25% of almost all animal and plant species studied are threatened to be extinct. The report also indicates that, without taking any action, biodiversity loss cannot be halted, and a sustainable society cannot be realized.

The report identifies the direct drivers of biodiversity loss as the following, ordered by magnitude of impact: (i) changes in land and sea use, (ii) direct exploitation of organisms, (iii) climate change, (iv) pollution, and (v) invasion of alien species, and shows that climate change is one of the major drivers of biodiversity loss. The report indicates that these direct drivers are triggered by indirect drivers such as rapid population growth, unsustainable production and consumption, and technological developments that amplify impacts of those factors and that impact of both direct and indirect drivers have increased in the last 50 years.

The report further notes that the transformative change across economy, society, politics, and technology is required to drastically reduce the direct and indirect drivers of the deterioration of nature and to halt and reverse the loss of biodiversity.

Given this worldwide degradation of biodiversity and ecosystem services, there is a raising awareness around the world that, in order to continue to benefit from nature without losing it, there is a need to not only implement existing nature conservation measures such as national parks and measures against alien species, but also entirely transform our socioeconomic structure by changing the values and behaviors of each individual and society.

2. Past Efforts as well as the Global Trends Related to the Kunming-Montreal Global Biodiversity

Framework (GBF)

(1) Evaluation of the Aichi Biodiversity Targets and transition to a world of living in harmony with nature (2050 Vision)

(i) Evaluation of the Aichi Biodiversity Targets

At the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP10) held in Nagoya City, Aichi Prefecture in 2010, the Aichi Biodiversity Targets, the first comprehensive global targets for biodiversity, whose target year was 2020, were adopted. However, the 5th edition of Global Biodiversity Outlook (GBO5), which was released in September 2020, reported that six out of the 20 Aichi Biodiversity Targets were partially achieved, but none of the targets were fully met, which was resulting from the fact that national targets and their levels set by each country in response to the Aichi Biodiversity Targets were not sufficient for achieving the Aichi Biodiversity Targets.

(ii) Transitions

While GBO5 predicts that biodiversity loss would continue under the "business as usual (BAU)" scenarios, it points out that there is a chance to reverse the decline in biodiversity and achieve net gain in biodiversity in 2030 and beyond if people not only make effort in the existing conservation of the natural environment such as enhancing ecosystem conservation and restoration, actions against pollution, invasive alien species, and overexploitation but also jointly take actions in various areas including more sustainable production of food, and reduction in consumption and waste.

Furthermore, GBO5 suggests that, in order to achieve the 2050 Vision "a world of living in harmony with nature", it is necessary to shift away from BAU across a wide range of human activities to make transitions particularly in eight sectors: (i) land and forests, (ii) sustainable freshwater, (iii) sustainable fisheries and oceans, (iv) sustainable agriculture, (v) sustainable food systems, (vi) cities and infrastructure, (vii) sustainable climate action, and (viii) biodiversity-inclusive "One Health".

Discussions and reports in various international frameworks have also pointed out the needs for integrated actions to address the issues in the following areas. These areas are particularly closely related to biodiversity, and they are also closely related to the eight areas that require transitions as proposed by GBO5.

1) Climate change

The IPBES Global Assessment Report mentioned above identifies climate change as the third largest direct driver of changes in nature worldwide in the last 50 years. In addition, the Intergovernmental Panel on Climate Change (IPCC) Working Group II contribution to the Sixth Assessment Report (AR6) of the IPCC, released in February 2022, evaluated that anthropogenically-induced climate change has widespread adverse effects on nature and

humans and some ecosystems have reached their limits for adaptation. Those reports recognize the significant impacts and the risks on biodiversity brought by climate change. The IPCC's report also points out that the Ecosystem-based Adaptation (EbA) can reduce the risks of climate change for people, biodiversity, and ecosystem services. It also suggests the resilience of biodiversity and ecosystem services at a global scale depends on effective and equitable conservation of approximately 30–50% of the Earth's land, freshwater, and ocean area.

At the same time, it is pointed out that the mitigation potential derived from nature such as forests and wetlands is highly cost-effective, accounting for approximately one-third of the carbon mitigation measures required to achieve the 2°C goal of the Paris Agreement by 2030. Thus, nature has the potential to contribute to climate actions.

The IPBES-IPCC Co-sponsored Workshop Report on Biodiversity and Climate Change, released in June 2021, states that actions exclusively focused on climate change mitigation and adaptation may have direct/indirect negative impacts on nature and benefits from nature, and that measures focused on biodiversity conservation and restoration often contribute significantly to climate change mitigation, but may be less effective than measures that take into account both biodiversity and climate change. For this reason, there is a need for policy-making that clearly take into account interactions between biodiversity, climate change, and society. With this, it will maximize co-benefits and minimize trade-offs and detrimental effects on both people and nature. Furthermore, from the perspective of risk management, the CBD has also reviewed the impacts of geoengineering on biodiversity, which is an engineering approach to intervene in climate change.

Amid such situations, the "Glasgow Leaders' Declaration on Forests and Land Use" was announced at the 26th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP26) held in October and November 2021, which has an aim to halt and reverse deforestation and land degradation by 2030, and stressed the pivotal and interdependent roles of forests, biodiversity, and sustainable land use in maintaining ecosystem services, in addition to climate actions. The declaration was endorsed by more than 140 countries and regions, including Japan. The importance of the roles of ecosystem protection, conservation, and restoration in climate change mitigation and adaptation policies was indicated in the "Sharm el-Sheikh Implementation Plan" adopted at the 27th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP27) in November 2022.

All those movements are aiming at strengthening the relationship between climate actions and biodiversity conservation.

2) Food production

Food production is also linked with biodiversity. Half of the eight areas identified by the GBO5 for which transitions are required, are related to agriculture, forestry, and fisheries. At the same

time, as the IPCC Special Report on Climate Change and Land released in August 2019[3] points out that GHG emissions from agriculture, forestry, and other land uses accounts for 23% of total global anthropogenic emissions, those areas are closely linked also with climate change. The IPBES Global Assessment Report suggests that the loss of biodiversity, including genetic diversity, impairs the resilience of most agricultural systems to the threats such as pests, pathogens, and climate change, thus posing serious threats to the world's food security. It is, therefore, essential to maintain and restore biodiversity from the perspective of stable food production.

The IPBES Assessment Report on Pollinators, Pollination and Food Production, released in 2016, concludes that, while over three-quarters of the world's major crop species are dependent on pollinators, the data from Northwest Europe and North America show declining trends in the number of wild pollinator species and populations of certain species. As the direct drivers that threaten populations, diversity and other aspects of pollinators, the report also identifies changes in land use, intensive agricultural management, use of pesticides, environmental pollution, invasive alien species, pathogens, climate change and other factors. With respect to fisheries, the IPBES Regional Assessment Report on Biodiversity and Ecosystem Services for Asia and the Pacific, released in 2018, notes that if unsustainable fishing practices continue, there could be no exploitable fish stocks left by as early as 2048. The State of World Fisheries and Aquaculture 2022, published by the Food and Agriculture Organization of the United Nations (FAO), indicates that the world's fishery stocks continue to decline due to overexploitation and pollution, and that the fraction of fishery stocks within biologically sustainable levels decreased to 64.6%. Furthermore, during the UN Food Systems Summit held in September 2021, it was pointed out that food systems contribute up to 80% of biodiversity loss, and that there is a need for sustainable food systems adaptable to feeding population growth in ways that contribute to people's nutrition, health and well-beings, restore and protect nature, are climate neutral, adapted to local conditions, and provide decent jobs and inclusive economic capacity.

In addition, the EAT-Lancet Commission also recommends "planetary health diet" which does not cause irreversible and acute environmental changes to our planet and considers human health, and encourages a shift to diets based mainly on plant-derived foods.

3) Emerging infectious diseases and One Health

The global outbreak of COVID-19 again highlighted the relationship between emerging infectious diseases and biodiversity. In the IPBES Workshop Report on Biodiversity and Pandemics, released in October 2020, it was noted that over 30% of the emerging infectious diseases reported since 1960 have been caused by deforestation, human settlement in wildlife habitats, the growth of crop and livestock production, changes in land use such as urbanization

[3] "Climate change and land: IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems"

and other factors, and that underlying causes of pandemics are the same drivers as global environmental changes that are triggering biodiversity loss and climate crises. Under those circumstances, it has been advocated that the One Health approach, which is to propose that optimal health should be addressed and achieved in an integrated manner because the health of humans, animals and ecosystems cannot be accomplished if any one of them is lacking, should be expanded to include biodiversity in its scope, and also an integrated approach should be adopted to manage ecosystems, such as agricultural land ecosystems and urban ecosystems, and utilization of wildlife, thereby promoting animal health and welfare, and healthy ecosystems and human health. During the G7 Cornwall Summit in 2021, G7 leaders concurred that integration of these efforts should be promoted by enhancing the One Health approach. In addition, there is increasing attention to the concept of Planetary Health, which recognizes that the health of our planet and human health are inextricably linked, and that human health and civilization depend on rich natural systems and wise and responsible management and use of such systems.

4) Marine environment

Oceans account for 70% of the Earth's surface and play a critical role in regulating the global environment, including climate, and serving as a source of food, energy, resources and others. There is increasing attention to climate change mitigation functions of "blue carbon" (carbon dioxide-derived carbon sequestered by coastal areas and marine ecosystems) such as seaweed beds and tidal flats. According to the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate released in September 2019, the mitigation potential is equivalent to 0.5% of global annual emissions of GHGs. Marine ecosystems are, however, said to be deteriorated and recover more rapidly in response to various environmental changes than terrestrial ecosystems, and also yearly fluctuations can be more significant. There has been progress in international discussions on the marine environment, which is undergoing drastic changes due to the overuse and destruction of marine habitats, progression of global warming and ocean acidification, and declining oxygen concentration levels. There was progress in discussions at the G7 and G20 ministerial meetings and other meetings. For instance, the Tsukuba Communiqué, announced at the G7 Science and Technology Ministers' Meeting in Tsukuba City, Ibaraki Prefecture in 2016, addressed efforts towards science-based management, conservation, and sustainable use of oceans and marine resources. The Osaka Blue Ocean Vision, shared by leaders at the G20 Osaka Summit in 2019 and by 87 countries and regions as of June 2022, calls to reduce additional pollution by marine plastic litter to zero by 2050. In the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), adopted and declared by the United Nations General Assembly in December 2017 and launched in 2021, it was decided to make focused efforts during the decade from 2021 to 2030 with the aim of achieving the Sustainable Development Goals (e.g., SDG 14 "Life below water") through promotion of ocean science. It was also decided that the intended social outcomes be specified as clean oceans, sound and

resilient oceans, productive oceans, predictable oceans, safe oceans, oceans accessible to all, and inspiring and attractive oceans. In February 2022, the One Ocean Summit was held in France, where the discussions were held for protecting and restoring marine ecosystems, tackling illegal fishing and promoting sustainable fishing, dealing with marine plastic litter, and addressing climate change issues at the high-level segment.

Securing and restoring sound ecosystems

The three issues mentioned above: 1) climate change, 2) food production, and 3) emerging infectious diseases are all closely related to changes in land use. Thus, it is crucial to secure and restore sound ecosystems in their respective locations. With regard to 4) marine environment, the IPBES Global Assessment Report states that changes in land and sea uses are the second largest driver after the direct exploitation of living organisms represented by fishery. The United Nations General Assembly in 2019 decided that the period 2021-2030 would be designated as the UN Decade on Ecosystem Restoration to support and promote efforts to prevent, halt, and reverse the degradation of ecosystems around the world. In addition, the so-called 30by30 target for protecting and conserving over 30% of land and 30% of sea by 2030 had been proposed and was incorporated into the GBF.

In achieving the 30by30 target, in addition to protected areas such as national parks which aim for nature conservation, there has been increasing focus on the roles of Other Effective area-based Conservation Measures (OECMs) as areas that contribute to the conservation of biodiversity. During the 14th meeting of the Conference of the Parties to CBD (CBD COP14) held in 2018, the definition of OECMs was adopted as "a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the *in-situ* conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values". Some of these OECMs could promote efforts for biodiversity conservation and ecosystem restoration in wider areas, including sites of sustainable production activities. In Japan, the government is preparing a system to certify sites where biodiversity is conserved through private-sector efforts, including *satochi-satoyama*, corporate-owned green areas, and shrine and temple forests, as Nationally Certified Sustainably Managed Natural Sites.

Nature-based Solutions (NbS)

In all of these issues described from 1) to 4) above, the active use of nature is being considered in resolving the challenges. Nature-based Solutions (NbS), which harness nature to address those social challenges while contributing to human health and well-being as well as benefit of nature, is a relatively new concept that is drawing attention in various fields, including climate change. The concept is being incorporated into discussions of UNFCCC and CBD. The G7 Climate and Environment Ministers' Meeting in 2021 and the G20 Environment Ministers' Meeting in 2021

also announced plans to promote efforts based on the NbS concept.

In addition to its main objective of solving issues, NbS promises multiple benefits, and is expected to generate associated effects such as healing through nature and positive impacts on human health, both of which are increasingly gaining attention in recent years. NbS is thus anticipated to be a cost-effective approach in terms of generating such multiple effects. As the declining trend in biodiversity cannot be halted solely by actions to protect the natural environment, which was described in section 2. (1) (ii) Transitions, the use of NbS as measures for climate change, and sustainable production and consumption, and the incorporation of biodiversity conservation and appropriate management of natural capital into efforts in areas other than nature conservation, will lead to nature-positive, which is to halt and reverse the biodiversity loss.

In addition, as described later, the efforts to encourage corporate environmental activities by businesses through finance in area of biodiversity are rapidly promoted, and there is an accelerating trend to link biodiversity conservation and natural capital management to finance and economy. Japan is thus required to develop a framework to link efforts including implementation of the NbS with discussions on finance and economics.

(2) Business administration aimed at conserving biodiversity and protecting and wisely utilizing natural capital

In recent years, biodiversity loss and deterioration of natural capital are increasingly recognized as potential risks to business continuity or opportunities to create new business. At the same time, the global trend to incorporate biodiversity into business activities is accelerating, with positioning biodiversity as a business agenda that should be addressed along with decarbonization in an integrated manner. The Dasgupta Review, released by the HM Treasury of the Government of the United Kingdom in 2021, asserts that restoring biodiversity loss will also contribute to addressing climate change, and points out that our economy, livelihoods, and well-being depend on nature, the most precious asset we have, and that the demands for these materials and benefits significantly exceed nature's ability to supply them. The Global Risks Report 2022, released by the World Economic Forum (WEF), also ranks biodiversity loss as the third most serious global risk, after failure to address climate change and extreme weather events, over the next 10 years.

Under such circumstances, discussions are underway to develop a framework for setting and disclosing targets based on proper assessments of impacts on and dependence on natural capital and biodiversity in business activities, as well as risks and opportunities based on such impacts and dependence. With regard to the Science Based Targets (SBT) initiative, which aims to develop science-based targets for reducing GHG emissions, efforts for the SBTs for Nature are being made to develop a method for setting nature-related science-based targets. In addition, similarly to the Task Force on Climate-related Financial Disclosures (TCFD) which takes the lead in the field of decarbonization, the Taskforce on Nature-related Financial Disclosures (TNFD) was launched in 2021, and discussions are underway to publish the framework for disclosure in 2023.

As every business activity by businesses affects and depends on biodiversity and natural capital, not only businesses but also investors/financial institutions are increasingly recognizing the sustainable use of natural capital and biodiversity conservation as a key challenge in business agenda in light of business continuity. This trend resembles the process where decarbonization operations are mainstreamed across society, and thus, over the next decade, natural capital management and biodiversity conservation themselves are expected to become a part of the scope of business activities.

(3) Processes and discussions toward the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF)

(i) Path to adoption

The preparatory process to develop the GBF, a new global framework replacing the Aichi Biodiversity Targets, was decided at CBD COP14 held in Sharm el-Sheikh, Egypt in November 2018. The actual consultation began with the Regional Consultation Workshop on the Post-2020 Global Biodiversity Framework[4] for Asia and the Pacific held in Nagoya, Aichi, Japan, in January 2019. Since then, there were the meetings of the Open-ended Working Group on the Post-2020 Global Biodiversity Framework (OEWG) and the Convention's Subsidiary Body meetings (Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) and Subsidiary Body on Implementation (SBI)), as well as a number of online meetings have been held, while CBD COP15 was postponed several times due to the COVID-19 pandemic.

In addition, various international pledges and initiatives have been declared to encourage the adoption of the framework. In September 2020, the United Nations Summit on Biodiversity, the first summit ever to focus on biodiversity as its main theme, was held. At the same time, the Leaders Pledge for Nature, the first initiative on biodiversity inviting the participation by heads of state and government from all over the world, was initiated and opened for signatures. The Pledge includes ten commitments building on the concept of nature-positive that halts and reverses the biodiversity loss by 2030, and Japan declared its endorsement of the Pledge in May 2021. In January 2021, the High Ambition Coalition for Nature and People, a group of countries calling for the inclusion of ambitious targets such as the 30by30 target in the framework, was launched, and Japan announced its participation. At the G7 Cornwall Summit held in June 2021, the G7 2030 Nature Compact was concurred upon as an annex to the Leaders' Communiqué, in which G7 countries pledged to work together toward the 30by30 target in each country prior to the decision on the Post-2020 Global Biodiversity Framework. The G20 Environment Ministers' Meeting held in July 2021 supported efforts to implement the ambitious, balanced, practical, effective, and robust Post-2020 Global Biodiversity Framework. The High-Level Segment of the first part of CBD COP15, held in October 2021, adopted the Kunming Declaration, which expresses commitment to the adoption of a Post-2020 Global Biodiversity Framework.

[4] Until the Kunming-Montreal Global Biodiversity Framework was finalized at Part II of the 15th Conference of the Parties (CBD COP15), the "Post-2020 Global Biodiversity Framework" was used as a tentative name for the framework.

Through those various consideration and discussions, a new global target succeeding the Aichi Biodiversity Targets, the GBF, was eventually adopted during the second part of CBD COP15 held in Montreal, Canada in December 2022.

(ii) Outline of the Kunming-Montreal Global Biodiversity Framework

The GBF sets "a world of living in harmony with nature" as the 2050 vision, which is to be pursued, following the Aichi Biodiversity Targets, and has established four new results-oriented global goals for 2050 that are linked with this vision. In addition, the GBF includes the 2030 mission to achieve so-called nature-positive by 2030: "To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation". To achieve the mission, the GBF has established 23 global targets for 2030.

The 23 global targets are divided into three groups. The first group "Reducing threats to biodiversity" consists of eight global targets that address the direct drivers of biodiversity loss that are identified in the IPBES. The second group "Meeting peoples' needs through sustainable use and benefit-sharing" has five global targets also related to the SDGs. The last group "Tools and solutions for implementation and mainstreaming" has 10 global targets for the transformative change to promote the changes in indirect drivers, such as socioeconomic factors, as well as social values and behaviors, and the realization of the new framework.

As SDG14 and SDG15 are the targets which are adapted from the Aichi Biodiversity Targets, with the target year of 2020, GBF will have a role of succeeding these SDG targets. In addition, since the GBF also consists of many targets towards sustainability and the transformative change, as mentioned above, it will also contribute to the achievement of the SDGs.

The Aichi Biodiversity Targets allowed considerable flexibility in setting targets for each country and thus failed to adequately aggregate national targets and make comparison among them. Based on such lessons learned, the GBF sets numerical targets for eight targets out of the 23 global targets, and headline indicators for measuring progress toward the global goals and targets are set. In addition, the review mechanism was strengthened, and it has been proposed to enhance efforts and contributions by each country as necessary through implementation of a global review which is to assess the progress to meet global targets. Thus, proposals resulting from the global review will be taken into account in the revisions of NBSAPs and the efforts of the implementation.

In this way, the GBF was developed as a more comprehensive global framework with significant influences from the two major international goals and agreement established in 2015, namely the SDGs and the Paris Agreement, and inherited elements contributing to society and welfare from the SDGs and insights on goal-setting and review mechanisms from the Paris Agreement.

Section 2: Current Status and Trends in Japan

1. Current Status and Assessments

(1) Characteristics of biodiversity in Japan

The biodiversity of Japan is characterized with diverse habitats for a wide variety of species, benefiting from the following features: (a) a long north-south land bordering the Eurasian continent; (b) differences in elevation from coasts to mountains; (c) climate with four distinctive seasons influenced by monsoons; (d) various types of disturbance such as volcanic eruptions, steep river floods, and typhoons; (e) various marine environments, including deep-sea areas; and (f) thousands of islands of varying sizes in the world's sixth largest Exclusive Economic Zone (EEZ). Secondary nature, which resulted from human intervention through agriculture, forestry and other activities, has also provided habitats for wildlife and plants that prefer a brighter environment. Species inhabiting Japan are characterized by a high percentage of endemic species, with approximately 40% of terrestrial mammals and vascular plants, 60% of reptiles, and 80% of amphibians.

Moreover, some wild animals such as migratory birds, sea turtles, and marine mammals migrate to Japan across national borders from Asia, North America, Australia, and other countries on the Pacific Rim. Japan serves as important habitats for breeding and stopover ground for species that migrate over a wide area.

(2) Current status

(i) Status of biodiversity and ecosystems

According to the Japan Biodiversity Outlook 3 (JBO3)[5], biodiversity loss has been continuing over the past 50 years in Japan. Although its rate of loss has been slowing down for some ecosystem types, the overall declining trend is still continuing. The results of assessments for six ecosystem types (forest, agricultural, urban, freshwater, marine and coastal, and island ecosystems) indicate that the extent and quality of ecosystems continues to decline due to decreases in components of each ecosystem (forest, agricultural, marine and coastal and other ecosystems) and changes in habitats, and that the types and populations of species living in these environments are in declining trend.

Satochi-satoyama are located between natural mountain areas and urban areas, and consist of local villages, secondary forests that surround them, and mixture of areas of farmlands, reservoirs, and grasslands. *Satochi-satoyama* is an important area for biodiversity conservation in Japan, but the habitats for wildlife, which are the components of *satochi-satoyama*, have been decreasing due to the reduced use of farmlands, canals/reservoirs, and agricultural forests. More recently, it is becoming clear that the *satochi-satoyama* environment accounts for much of the area of ecosystems which has been lost due to installation of photovoltaic power generation facilities.

It has been reported that about 40 km^2 of shallow marine areas were reclaimed every year from

[5] March 2021 Committee on the Japan Biodiversity Outlook, Ministry of the Environment of Japan

the period of Japan's rapid economic growth to around 1980, resulting in a drop in the population of shorebirds and plovers that use tidal flats and sandy beaches. Risk of species extinctions have been increasing in freshwater ecosystems, and more than 50% of the vertebrates listed in the Japanese Red List 2020 are freshwater species that depend on freshwater for all or part of their life histories.

On the other hand, some urban, coastal, and other ecosystems have shown improvements: urban parks area has increased nationwide by 5.4 times from 1971 to 2018 and red tide events observed in the Seto Inland Sea has decreased from 172 times in 1979 down to 58 times in 2019.

(ii) Status of ecosystem services

According to the JBO3, while our life has become wealthier in the aspect of materials by enjoying various benefits from nature, the ecosystem services have been in a degrading trend over the past five decades. Most of provisioning services, such as food and timber, have decreased compared to the past (timber self-sufficiency rate has recently recovered to the level of the 1970s). The amount of agricultural, forestry, and fishery products has decreased from their peak levels due to increased imports from overseas and changes in resource volume. In particular, marine fisheries catch is now about 50% compared with the catch at the peak time. The diversity of products is also changing, where the diversity of tree species produced by forestry has decreased by about 40% in the past 50 years.

Furthermore, there is a declining trend in regulating services such as air and water purification, which are not only related to food production but also to our health and lifestyle, and contribute to resolving a wide range of social issues. As for disaster risk reduction services provided by ecosystems, shallow landslide prevention services by forests are considered to be enhanced due to the growth of planted trees. On the other hand, it was noted that forests that were not adequately managed due to declining and aging populations, multifunctionality of forest, such as disaster risk reduction and prevention, were not sufficiently demonstrated. Moreover, with regard to the flood control services provided by marshes, the services are considered to be declining over time, as the area of marshes has been significantly decreased, while this depends on the land use type that marshes were converted to. Culture and traditional knowledge, which were closely connected to sustainable use of local resources, are also being lost. Additionally, damage to agriculture, forestry, and fisheries caused by wildlife is having a serious impact on rural areas, for example by discouraging farmers to operate agriculture. Moreover, risks to human health caused by zoonosis such as tick-borne diseases are also becoming apparent, resulting in making ecosystem detriments become more significant.

(3) Prediction of future trends

Research on future predictions of changes in biodiversity and ecosystem services in Japan has been progressing in recent years. Impacts on various ecosystems in terrestrial and marine areas are predicted

from the perspective of climate change. According to the findings of a research funded by the Environment Research and Technology Development Fund of the Ministry of the Environment, for instance, approximately six out of 11 kelp species inhabiting Japan may disappear from the marine areas of the country and potential distribution areas of coral may also disappear. This could impact provisioning services, regulating services for disaster risk reduction and prevention, and cultural services such as recreation. As Japan is faced with a shrinking population, the status of biodiversity and ecosystem services in the future can be changed significantly depending on the population distribution (population concentration or population dispersion*1) and the choices which capital is considered more important (utilization of produced capital or utilization of natural capital*2). For example, it is predicted that there will be more local governments with balanced supply and demand for rice production and other agricultural production, in the natural capital/decentralized society scenario than in the produced capital/compact society scenario. This suggests that it is required to take measures addressing behavior of each individual and desired direction of society, in order to conserve biodiversity and sustainably enjoy ecosystem services, in addition to existing measures aiming at conservation of the natural environment.

*1 Population concentration: Population is expected to further concentrate in current city centers and city areas in the future.
Population dispersion: Population will be dispersed to suburbs and hilly and mountainous areas in the future.

*2 Utilization of produced capital: More proactive use of produced capital (e.g., concrete).
Utilization of natural capital: More active use of domestic natural capital (e.g., forests).

(4) Drivers of biodiversity loss

The direct drivers of biodiversity loss in Japan can be grouped into the following "four crises". Background of these crises, socioeconomic changes are causing the crises as indirect drivers. Furthermore, the values and behaviors of society affect a full range of the crises. To change the values and behaviors of society, every person in society is required to understand the importance of biodiversity and behave accordingly. Businesses are also required to integrate biodiversity into their business and other activities. However, under the current circumstances, these efforts are insufficient and biodiversity has not been sufficiently mainstreamed. To halt and reverse biodiversity loss, it is imperative to address the four crises that biodiversity is faced with, and at the same time, the values and behaviors of society causing these four crises must be changed. This Strategy considers current and past values and behaviors of society as drivers of loss of biodiversity embedded in the socio-economy, and emphasizes the needs for measures to address them.

(i) Four crises that biodiversity is faced with

1) First Crisis: Crisis caused by human activities including development

The first crisis is the negative impacts on biodiversity caused by human activities such as land and sea use change, including development, and direct exploitation of organisms including overexploitation. Ever since Japan's high-economic growth period, rapid and large-scale

development and alterations have significantly reduced the extent and quality of natural forests, grasslands, farmlands, marshes, tidal flats and other ecosystems. Even though the pressure on biodiversity from extensive developments and alterations has been diminishing in recent years, lost biodiversity due to the developments and alterations in the past cannot be easily recovered. In addition, relatively small-scale developments and alterations also have been impacting biodiversity. It is pointed out that while climate change mitigation measures are critical for addressing the fourth crisis (crisis caused by changes in global environment), biodiversity loss has been caused by the inappropriate installation of renewable energy power generation facilities in some cases. In addition, overexploitation of natural resources for ornamental and commercial use, along with illegal harvesting, have also led to declines in population of wild plant and animal species. Development, capture, and exploitation are also considered as major drivers of decline in population of threatened species that are listed on the Japanese Red List.

2) Second Crisis: Crisis caused by reduced human activities with nature

Contrary to the first crisis, the second crisis is caused by the negative impacts on biodiversity due to reduction or withdrawal of human activities with nature. In the past, secondary grasslands such as firewood and charcoal forests, agricultural forests, pastures and others in *satochi-satoyama* were maintained as the sources of the necessary resources for daily life, economic activities, energy and agricultural production. At the same time, they provided habitats for plants and wildlife, including species that rely on disturbed environments, and nurtured a diversity of organisms that are unique to those environments. However, in recent years industrial structure and resource use has been changed, the decline in vitality of the local communities caused by shrinking and aging populations, and the occurrence of abandoned farmlands, there are concerns about the disappearance of the mosaic patterns of diverse environments of *satochi-satoyama,* which consist of farmlands, canals, reservoirs, farm forests and other forests, and meadows, grazing lands, and other grasslands. Moreover, if forest management such as thinning is not carried out properly in secondary forests, the function of the forests as habitats for living organisms will deteriorate. About 20% of current residential areas are projected to become non-residential area by 2050, and abandonment of land due to increase in non-residential villages will have negative impacts on butterfly habitats for example. Due to the disappearance of rice paddies and reservoirs, populations of aquatic insects such as giant water bugs and diving beetles, freshwater fish such as killifish, and other waterside organisms that used to be found in areas close to human environment are rapidly decreasing. Furthermore, abandoned farmlands and unused *satoyama* forests become favorable habitats for Sika deer (*Cervus nippon*) and wild boars (*Sus scrofa*), and that decreasing hunters and their aging have led to reduced hunting pressure, the populations of these wildlife species have significantly increased. Due to enhancement of countermeasures to promote capture over recent years, populations of such wildlife are presently in decline, but their distribution range is still expanding, and there are

concerns about impacting the ecosystem and causing damages to agriculture and forestry. Agricultural damage is currently decreasing, however, these circumstances still induce serious repercussions to rural communities beyond monetary value of the damages, such as reduced willingness to engage in farming. Furthermore, changes in natural and social environments of hilly and mountainous areas, as well as expansion of distribution range of bears, have resulted in bears and other wildlife roaming in urban areas, subsequently leading to human casualties.

3) Third Crisis: Crisis caused by artificially introduced factors

The third crisis is the negative impacts on biodiversity caused by introduced factors, such as the biological invasion and pollutions by chemical substances, which have been brought into wild environment by humans in the process of modernization of human life. Alien species that have been intentionally or unintentionally introduced by humans from overseas or other parts of Japan beyond their natural distribution range have altered local biota and ecosystems, and have a profound negative impact on native species, including threatened species. It is challenging to control spread of alien species once they have established in the country. For example, the distribution of raccoons (*Procyon lotor*), which has been a problem due to the damage they cause to ecosystems, has expanded throughout the country. The number of GIS meshes where the distribution of raccoons has been confirmed were almost tripled from 2006 to 2017. As for the distribution of nutria (*Myocastor coypus*), the number of GIS meshes of confirmed the distribution of nutria has increased five-fold between 2002 and 2017. Over the past few years, there has also been an increase in the number of cases of the introduction of red imported rire ants (RIFA: *Solenopsis invicta*) to the country by accompanying imported goods, raising concerns about the impacts on living environments of people. Furthermore, there is also a concern about genetic disturbance due to the intentional introduction of individuals of the same species derived from populations with different genetic traits into the natural distribution areas of native species, as seen in the use of imported seed-derived mugwort (*Artemisia indica*) and indigo plants (*Indigofera pseudotinctoria*) for greening purposes. Yet, another concern is that abandonment of pets or escape of animals kept as pets during disasters may lead to their establishment in the natural environment, affecting the ecosystems and biodiversity of the areas involved.

With regard to pollution, Japan is already advanced in prevention measures against pollution based on the environmental pollution that occurred during Japan's rapid economic growth period after the World War II. Specifically, the rapid development and use of chemical substances in the 20th century have resulted in exposure of ecosystems to a large number of chemical substances for a long period of time. While the use of chemical substances has contributed significantly to convenience in people's life, some chemicals are toxic to living organisms, and some of them even remain in the environment. Thus, the impacts of such chemicals on the ecosystem are being pointed out. To address these issues, actions must be taken

to reduce the environmental impacts of chemical substances by such measures as reduction in the amount of chemical fertilizers used and the risks posed by the use of chemical pesticides in agriculture, and appropriate treatment of wastewater from factories and business establishments, and households. Furthermore, a concern on the impacts on ecosystems by marine plastic litter including microplastics is growing around the world in recent years. Eutrophication of water bodies has been improving since the mid-1980s and its impact has been in a decreasing trend.

4) Fourth Crisis: Crisis caused by changes in global environment

The fourth crisis is the negative impacts on biodiversity caused by changes of the global environment by climate change, including global warming and changes in precipitation, and ocean acidification. The Working Group II contribution to the Sixth Assessment Report of the IPCC evaluates that human-induced climate change is causing extensive adverse effects on and its associated loss and damage to nature and humans beyond natural climate variability. In Japan, it has been observed that warm-climate bamboo species (*moso* bamboo and giant timber bamboo) is expanding their distribution to northward; the populations of southern species of butterflies are increasing and their distribution is expanding to northward as well; and that coral bleaching is occurring, possibly due to rising sea water temperatures. It is predicted that these negative impacts will be further exacerbated in various ecosystems, the reduction and disappearance of suitable habitats for the alpine rock ptarmigan (*Lagopus muta japonica*), expansion of the distribution of Sika deer and other animals into areas with heavy snowfall and high altitudes, and changes in the distribution and growth of tree species in forests. It is considered that serious negative impacts on biodiversity in Japan are unavoidable, especially in areas that are vulnerable to environmental changes, such as islands, coastal areas, and subalpine and alpine areas.

(ii) Socioeconomic situation underlies behind the crises

1) Economic growth (mainly behind the first crisis)

Amid growing GDP (gross domestic product), including the period of high economic growth after the World War II, national land use underwent drastic changes with improvement of social capital and others, resulting in significant improvements of convenience in transportation and functions of disaster risk reduction. On the other side of the same coin, many ecosystems were exposed to development and modified. For example, industrial zones were established in coastal and inland areas as the manufacturing industry grew, and a largescale land reclamation was carried out in coastal areas. Today, rapid development has been slowed down, but new developments continue, and the impacts of past developments remain. The lifestyles based on mass production and consumption associated with economic growth are posing a major threat to biodiversity.

2) Population (underlies mainly behind the first and second crises)

Population growth since the *Meiji* Era (1868–1912) brought about a rapid increase in residential land areas and expansion of the areas used as urban areas. Population outflow from rural areas to urban areas has also led to degradation of *satochi-satoyama* areas and increase in abandoned farmlands in rural areas, and household wastewater in urban areas has degraded water quality in rivers, lakes, marshes, and marine areas. On the other hand, Japan's total population peaked in 2008, after which it started decreasing. It is projected that the ratio of the population in underpopulated areas to the total population will continue to fall and that these underpopulated areas will increasingly become non-residential areas. It is concerned that such trends would further weaken the interrelationship between *satochi-satoyama* and the people.

3) Changes in industrial structure (underlies mainly behind the second and third crises)

The industrial structure of the country has changed, and regarding Japan's labor population by industry, the population of primary industry has dropped from about 19% in the 1970s to about 4% in 2015, while that of the tertiary industry has increased from about 47% to about 71%. Meanwhile, from the postwar period until the 1970s, energy sources have shifted to fossil fuels such as petroleum, which led to the decrease of the use of wood and charcoal, and drastic increase in the production of chemical fertilizers and other changes have taken place. Such changes resulted in decreased use of biological resources such as fertilizers made from firewood and fallen leaves in farming and rural mountain village areas. These trends have brought about a rapid abandonment of management of *satoyama* forests and grasslands which had been maintained by humans.

4) Globalization of economy and society (underlies mainly behind the second and third crises, impacts on other countries)

After the World War II, the self-sufficiency rates of food, timber, and other resources have fallen due to the rapid globalization of the economy and society. As the use of domestic resources decreased, dependence on overseas resources increased, and subsequently impacts of such dependence increased. While the import volume of cargo at Japan's ports in 1960 was about 0.09 billion tons, it increased up to about 1 billion tons in 2013, signifying a rise in the cross-border movements of goods. Japan also imports large quantities of live animals and plants. With such surge in the inflow and outflow of people and goods due to economic and social globalization, the number of species, whether intentionally or unintentionally introduced, that may affect biodiversity is expected to increase. Such increase in importing of resources has also triggered “telecoupling” (interactions between consumption activities in certain areas and natural environments in remote areas), where consumption activities in Japan have impacts on the biodiversity of other countries. This means that dependence on imported resources from abroad is causing a biodiversity loss in other countries that supply the resources to Japan,

exacerbating the threat of extinction of wild plant and animal species in other countries. Global movements of people and goods are also concerned to cause emerging infectious diseases in specific regions to expand beyond borders and widely spread to whole of the international community.

(iii) Situation in which biodiversity has not been mainstreamed into society and the economy, the fundamental driver of biodiversity loss

It is the state of society, sense or cognition of values and behaviors of people as a whole that bring about the changes which give negative impacts on biodiversity. Therefore, a situation itself where biodiversity is not mainstreamed is a fundamental driver (crisis) of biodiversity loss. As an example, in daily life and consumption activities, the socio-economic structure, in which adequate choices are naturally made based on the sustainability of resources, has not been fostered, and the values that support it have not been formulated. According to a public opinion survey of the Cabinet Office in 2022, 29.4% of respondents knew what the word “biodiversity” means, and 43.2% had heard of the word before but not understood the meaning. Although the awareness rate of biodiversity is rising, it has not reached the target value of 75%, which was specified in the National Biodiversity Strategy of Japan 2012-2020, indicating that awareness and understanding of biodiversity is not sufficient yet. In addition, according to the 2021 Survey on Time Use and Leisure Activities by the Statistics Bureau of the Ministry of Internal Affairs and Communications, the percentage of those who have volunteered in activities to protect nature and the environment was 3%, and it is dropping from 8% in 2001. In recent years, there have been more children and youths who have had little or no nature experience, and such situation is further raising the concerns that the relationship with nature is becoming scarce. The public opinion survey of the Cabinet Office, mentioned earlier, revealed that 75.3% of respondents were interested in nature, but the percentage of the people who have interest is lower in the younger generation, and there is a possibility such tendency is caused due to less opportunities to have nature experience. However, the percentage of respondents between the ages of 18-29 who knew the meaning of biodiversity was higher than other age groups, suggesting that school and other educational opportunities may have helped raise awareness on the concept to a certain extent.

Both in Japan and abroad, the burden on biodiversity stems not only from the direct use of biological resources such as food and timber, but also from various business activities, such as pollution and emissions generated by use of non-biological resources. According to a survey conducted by the Keidanren and the Keidanren Committee on Nature Conservation, and Japan Business and Biodiversity Partnership, the percentage of member companies incorporating the concept of biodiversity conservation into their business policies rose sharply from 39% to 75% in 10 years from FY2009 to FY2019. While 57% of the member companies are identifying, analyzing, and assessing the impact of their headquarters' business activities on biodiversity, only 24% of the member companies are implementing these actions in their supply chain.

If awareness of the importance of biodiversity and its relevance to our daily life is low, it is likely that the behavior and decision-making considering organisms will not be implemented. In order to address such a situation where biodiversity is not mainstreamed, it is imperative to change the sense of values and behaviors of society. First of all, there is a strong need to increase interest and understanding through education and nature experience. At the same time, a framework is needed to facilitate biodiversity-conscious choices in daily life and efforts to promote sustainable production and procurement by businesses are also needed. Japan needs to make further contribution to addressing various issues that many countries face with, through providing the world with technologies, products, services, and knowledge on biodiversity conservation.

2. Results of the Review of Past Efforts and the National Biodiversity Strategy of Japan 2012-2020

According to the results of the review on the implementation of the National Biodiversity Strategy of Japan 2012-2020 published in January 2021, regarding the efforts made based on the National Biodiversity Strategy of Japan 2012-2020, it concludes that even though various actions have been taken to achieve the national targets, but any of the targets has been achieved, and further efforts are required. The report further suggests that, in order to halt biodiversity loss and achieve the long-term goal "achieving a society in harmony with nature" by 2050, it is desired to make new efforts to change social and economic factors as well as the underlying sense of values and behaviors that indirectly impact biodiversity loss. The report also noted that it is desired to improve the structure of national strategies, including methods for assessment. The status of achievement of the basic strategies, given as the direction of the national policies to be prioritized until 2020, was evaluated as follows:

(i) Basic Strategy 1: Mainstreaming biodiversity in our daily life.
Although steady progress was observed in the efforts to infiltrate biodiversity into society, such as promoting collaboration among various entities, it cannot be considered that biodiversity is integrated into society.

(ii) Basic Strategy 2: Reviewing and rebuilding relationships between man and nature in local communities.
While a rich connection between people and nature is steadily being developed, the relationship between people and nature in local communities has not considered to be restructured and rebuilt.

(iii) Basic Strategy 3: Securing linkages between forests, the countryside, rivers, and the seas.
Although there has been steady progress in the efforts to secure connections among forests, the countryside, rivers, and the seas separately, it cannot be considered that linkages among forests, the countryside, rivers, and the seas as a whole are secured.

(iv) Basic Strategy 4: Taking action with a global perspective.
Despite some delays in the efforts such as a failure to reach some numerical targets, actions with a global perspective have been taken successfully in general, such as support for developing countries through international financial mechanisms.

(v) Basic Strategy 5: Strengthening the scientific foundation and utilizing it in policy making.

Scientific basis has been strengthened and its linkages with policies have also been enhanced in general.

Based on the past efforts and the status of biodiversity and ecosystem services, JBO3 concludes that the rate of biodiversity loss in Japan has been mitigated over the past 50 years, but biodiversity loss has not been recovered. It is pointed out that further enhancement of efforts and implementation of new efforts are needed, and it is crucial to take not only measures that focus on the direct drivers of biodiversity loss, but also comprehensive measures to change the ideal future state of society.

Section 3: Issues to be Addressed in the NBSAP

(1) Perspectives of issues to be addressed

The challenges to be addressed in this Strategy are structured from the following perspectives:

(i) Responses to the Global Targets

As a party to the CBD, it is necessary to promote actions to achieve each goal and target of the GBF adopted at COP15, including the 30by30 target, in collaboration with the international community. It is also necessary to respond to new international frameworks such as the TNFD and the SBTs for Nature related to biodiversity and business.

(ii) Challenges associated with the connections between Japan and the rest of the world

Consumption behaviors in Japan are affecting biodiversity in other countries through supply chains. While the pressure on natural resources is mounting on a global scale as a result of population growth, the population in Japan is shrinking. Given these circumstances, the way natural resources should be used in Japan needs to be reviewed and reconsidered. Furthermore, Japan is required to address issues such as biological invasion caused by various factors including increased cross-border transportation due to globalization.

(iii) Challenges in Japan

Biodiversity and ecosystem services must be redefined as the foundations of social and economic activities, and it is needed to make efforts of the Nature-based Solutions (NbS) which are expected to make use of biodiversity and ecosystem services for solving various social issues. In this context, in order to secure healthy ecosystems, it is crucial to promote activities in areas other than protected areas to contribute to biodiversity conservation, activities to promote sustainable use of terrestrial and marine areas, natural resources in *satochi-satoyama* and its zoning, in addition to conventional conservation in protected areas. As noted in the National Biodiversity Strategy of Japan 2012-2020, based on the experiences and lessons from the Great East Japan Earthquake, it is essential to recognize the relationship between people and nature from the perspective of both benefits and threats, and to continuously work toward reconstruction by making use of nature in the region. In

Japan, the number of people who can carry out the management of natural resources is decreasing, due to the declining birthrate, and aging and decreasing population. The country needs to develop a framework for efficient and effective implementation of activities through collaborations among various entities, including financial support and development of data infrastructure for biodiversity conservation. In making these efforts, it is required to take consideration of the diversity of sense of values that differ by gender, generation and other factors. In addition, the lack of understanding of and interest in biodiversity needs to be addressed.

(2) Specific challenges

The following are five challenges to be addressed in this Strategy, based on the summary of (1).

(i) Restoration to healthy ecosystems

Although the rate of biodiversity loss in Japan has been mitigated through the past efforts, biodiversity is still not on a path to the recovery. The impacts of the four crises that biodiversity is facing with remains substantial, with concerns that the impacts of climate change will be intensified in the future. It is necessary to restore the health of ecosystems so that they can fully demonstrate their diverse functions that support our daily life.

(ii) Application of Nature-based Solutions (NbS) to address social challenges

It is required to rediscover the natural environment as the foundation of society, economy, and livelihood, and to maintain and restore the benefits obtained from it. In particular, social issues accompanying population decline and climate change are becoming apparent in Japan. In the context of the worldwide spread of the COVID-19, it is required to reconsider the ideal relationship between people and nature and how nature should be used. For this reason, it is necessary to keep an appropriate distance between people and nature, to make use of nature in a sustainable manner, and to solve a variety of social issues.

(iii) Realization of nature positive economies

The biodiversity loss will not be halted unless direct drivers such as direct exploitation of natural capital, land use patterns, and emissions of toxic substances and other drivers, as well as indirect drivers such as economic systems and technological developments that create unsustainable production and consumption patterns are addressed. It is also expected to secure and enhance the foundations for sustainable economic activity if activities for biodiversity conservation in business is regarded as business opportunities instead of risks, and the technologies, products, and services that contribute to conservation are developed, deployed, and selected. To realize sustainable business, it is vital to take biodiversity and natural capital into consideration and it is required to integrate the aspects of biodiversity and natural capital into business activities.

(iv) Recognition of the value of and actions for biodiversity in daily life and consumption activities (changing individual behavior)

The underlying causes of the biodiversity crises include a lack of knowledge of and less interest in its importance and a social structure in which the value of biodiversity is not integrated. Nature plays an indispensable role in survival and livelihood of humankind and forms the basis of society and economy. It is vital to promote the biodiversity relevant sense of values widely across society and to create a framework to encourage actions, leading to leverage concrete actions by each individual.

(v) Development of a base that underpins activities for biodiversity conservation and promotion of international coordination

The conservation of biodiversity has been supported by efforts of various entities. For this reason, it requires actions including the followings to encourage their efforts and cooperation: provision of information and technology; development of regional-level plans; development of human resources; supports for the activities; and putting in place legal, financial, and taxation measures. By taking account of Japan's dependence on overseas resources and the impacts to the biodiversity in our country by the international logistics and other factors, it is necessary to make collaborative efforts for cross-border cooperation as well as sharing of information and technologies for conservation and sustainable use.

Chapter 2: Vision of Society (2050 and Beyond)

Section 1: Principles of Society Living in Harmony with Nature

"Create a genuinely prosperous society based on the system of nature"

To build a sustainable society, it is important to choose actions that are consistent with the principles of nature, with harmony and in accordance with its cycles so that nature remains stable, resilient to changes, and enabling people to enjoy its benefits including by future generations. It is also necessary to recognize natural capital as an asset to be handed down to future generations, to adequately understand its value, thereby transforming our society into the one that protects and sustainably uses natural capital. Through these efforts, a truly prosperous society based on the system of nature will be built.

Section 2: Vision of Society in Harmony with Nature to be Achieved (2050 Vision as Long-Term Goal)

Vision for 2050: Build "a society in harmony with nature in which 'By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.'" Specifically, the following societies are realized.

(i) Society where a healthy ecosystem supported by an abundant biodiversity is ensured
A society in which the biodiversity and ecosystems of various regions are conserved and restored while utilizing knowledge and technology in the respective regions according to their characteristics, including the relationship between people and nature, and are passed on to future generations.

In this society, through effective systems including a system of protected areas and OECMs, habitats are conserved appropriately in terms of quantity and quality to a sufficient extent from the perspective of conservation of the entire biological community, and efforts are made to restore biodiversity through nature restoration and other activities. Through these efforts, local populations are conserved, genetic diversity is also secured, and healthy ecosystems that are resilient to various changes, such as natural disasters and climate change are secured, serving as a foundation for a richer biodiversity. Furthermore, these ecosystems are also conserved and managed as carbon sinks as appropriate.

(ii) Society which is based on nature and uses its benefits sustainably.
A society where the intrinsic values of biodiversity and ecosystems are being respected, while biodiversity and ecosystems are used in a sustainable manner that does not cause loss or degradation. It is also a society in which the benefits of nature produced by diverse and healthy ecosystems, as well as culture and lifestyles, such as knowledge and skills, to derive those benefits from interactions with nature, are passed on to future generations, and local communities are revitalized.

In such society, by shifting away from dependence on non-renewable underground resources such as fossil fuels and sustainably using local natural capital, the second crisis of biodiversity can be mitigated and the ratio of dependence on unsustainably produced resources, including those from abroad, are decreased, thereby contributing to building a globally sustainable society (eliminating the negative impacts of telecoupling). By enabling ecosystems to demonstrate their diverse functions, ecosystems help solve social issues that Japan faces with, such as securing carbon sinks for mitigating climate change, strengthening resilience against disaster risks, revitalizing local communities through tourism and agriculture, forestry, and fisheries, and health and well-being.

(iii) Society transformed by mainstreaming biodiversity

A society where people understand that biodiversity and ecosystems support our lives, in other words, that natural capital forms the basis of the social economy, and where consideration of biodiversity and ecosystems in actions by public sector, private sector, and every individual is carried out as part of their own personal responsibility.

In such a society, sustainable supply chains with low impact on biodiversity and ecosystems are established, and efforts for ecosystem restoration are highly valued both socially and economically, thereby ensuring coexistence of biodiversity restoration and business activities.

How biodiversity in region should be is agreed in each region, various local entities are involved in area-based efforts to realize conservation and sustainable use, and multi-layered governance is implemented taking into account biodiversity at both national and global scales, and various sectors and relevant individual make effort building on appropriate allocation of roles.

Chapter 3: Targets toward 2030

Section 1: Short-term Targets for Realizing 2050 Vision (2030 Mission)

This chapter sets forth the short-term targets to be achieved by 2030 (2030 Mission) in order to accomplish the 2050 Vision set forth in Chapter 2, Section 2.

(1) 2030 Mission "Nature-Positive by 2030"

"By 2030, realize 'Nature-Positive'"

In this Strategy, "nature-positive" refers to "halting and reversing biodiversity loss to put nature on a path to recovery". To realize the "Nature-Positive by 2030", the government will make efforts according to the following five basic strategies to address the challenges described in Section 3 (2) of Chapter 1, by securing healthy ecosystems that serve as a foundation for the survival of the human, maintaining and restoring the benefits of nature, and expanding socioeconomic activities aimed at protecting and use of natural capital, based on the concept of the Circular and Ecological Economy that aims to improve the environment, society, and economy in an integrated manner. These efforts will be linked to measures in various fields, such as climate change and resource circulation, in addition to the existing biodiversity conservation measures.

Basic Strategy 1: Restoration to Healthy Ecosystems

To achieve the 30by30 target, conserving at least 30% of land and 30% of sea by 2030, conservation efforts for OECMs in addition to those efforts for protected areas, as well as the conservation of entire biological communities, including common species will be promoted. In addition, the burden on biodiversity will be reduced and its quality improved in the terrestrial and marine areas that are used for various purposes, such as production activities. Through these measures, the health of ecosystems, which contributes to resilience to climate change and other factors, is restored.

Basic Strategy 2: Application of Nature-based Solutions (NbS) to Address Social Challenges

The benefits of nature will be made use to resolve various social issues such as climate change mitigation and adaptation, disaster prevention and mitigation, resource circulation, revitalization of local economies, zoonosis, and health. The government will also promote the effective and efficient management of wildlife to resolve human-wildlife conflicts. Through these measures, the benefits of nature that are bringing about synergistic effects between human well-being and conservation of biodiversity, are maintained and restored.

Basic Strategy 3: Realization of Nature Positive Economies

The government and businesses will work together to establish methods for evaluating the relationship between business activities and biodiversity/natural capital, review what are

ideal economic institutions and systems, and implement measures for reducing the burden of business activities on biodiversity/natural capital and increasing their positive impacts. These measures will expand socioeconomic activities which sustainably use natural capital in business activities.

Basic Strategy 4: Recognition of the Value of and Actions for Biodiversity in Daily Life and Consumption Activities (Changing Individual Behavior)

With the view of the importance of the roles of individuals and organizations that are able to establish one part of the supply chain through consumption and use, as well as to act as investors and advisors through their approach to businesses, necessary measures will be implemented to restore and further deepen the close connections between lifestyles and consumption activities, and biodiversity in the past in such ways that are more relevant to modern times, applying new technologies as well. These measures will expand socioeconomic activities in a way that each of the individual protects and utilizes natural capital.

Basic Strategy 5: Development of a Base that Underpins Activities for Biodiversity Conservation and Promotion of International Coordination

The efforts to improve basic surveys and monitoring of biodiversity, develop information that is easy to use, and secure experts and workforce for implementing the measures, as well as necessary legislative, financial, or taxation measures will be made. To contribute to the conservation of biodiversity at a global scale, Japan will promote international cooperation that makes use of Japan's knowledge and experiences. These measures strengthen and escalate overall domestic and global efforts to conserve biodiversity.

(2) Concept of nature-positive

(i) About nature-positive

As of the end of 2022, the term “nature-positive” had not been precisely defined, but the basic concept of “halting and reversing biodiversity loss to put nature on a path to recovery” is unanimously accepted. It is an important concept on biodiversity, as set out in the “G7 2030 Nature Compact” and the Kunming-Montreal Global Biodiversity Framework (GBF).

The Japanese translation used for nature-positive is a Japanese term for “nature revitalization.” The term “revitalization” used here means to halt and reverse the biodiversity loss. To transform society into one that protects and sustainably utilizes natural capital and thereby facilitate revitalization, it is important to appropriately recognize the value of nature once again. At the same time, it is also important for individuals and society to reconsider their sense of values and actions so that they will choose actions in accordance

with the principles of nature based on symbiosis and natural cycles.

Japan's environmental policies aim to simultaneously resolve the three issues of nature-positive, net-zero GHG emissions, and circular economy, leading to sustainable "novel" growth that will bring about a high quality of life in the future. The mutual collaborations of these measures will be a key.

Nature-positive also has an important meaning for the SDGs. The 17 targets of the SDGs can be categorized into three tiers: economy, society, and environment. It is said that economy is supported by society, and society is supported by environment. If the environment is viewed as one of the important capitals, or "natural capital", that supports the livelihoods of the people and the foundation of businesses, restoring natural capital, the basis of society and economy, through the realization of nature-positive, it can be said that the concept plays a crucial role in achieving the SDGs and building sustainable societies.

To reverse the current tense degradation trends of the global environment by 2030, it is imperative to make the most out of limited resources such as funds, time, and human resources. In this context, NbS draws attention. NbS is an approach that aims to resolve multiple social challenges such as climate change, biodiversity, socioeconomic development, disaster prevention and mitigation, and food problems by leveraging the multifunctional qualities of nature. As described in Chapter 1, Section 1, cross-cutting transformative changes across economic, social, political, and technological sectors are pointed out as crucial for halting and reversing the biodiversity loss. NbS, which acts as an umbrella to integrate different approaches to addressing social issues, is expected to play a key role.

In this way, nature-positive is a concept that describes the roadmap for placing nature back on the path to recovery, by seeing nature as the foundation of society and economy, and pursuing an approach to transform society and economy by breaking away from business as usual.

(ii) Nature positive economies

The nature positive economies are those that contribute to halting and reversing biodiversity loss to put nature on a path to recovery. The same is applied for nature positive management. Efforts aimed at nature-positive are also attracting attentions in the economic world. A report published by the World Economic Forum (WEF) in 2020 points out that over half of the world's GDP (44 trillion dollars) is threatened by nature loss potentially, and that transitioning to nature positive economies is expected to create 395 million jobs by 2030 and business opportunities amounting to 10.1 trillion dollars (approximately 1,070 trillion yen) per year. The G7 2030 Nature Compact also positions the promotion of nature positive economies as one of its main pillars.

(iii) The basic strategies and nature-positive

This NBSAP aims to realize nature-positive through the five basic strategies:

The restoration to healthy ecosystems (Basic Strategy 1) will secure the foundation for human survival. Solving social challenges that arise in the activities of people built on this foundation by making use of the functions that nature exhibits under healthy ecosystems (Basic Strategy 2) will enable the sustainable maintenance and restoration of the benefits from nature to society. As people enjoy and use the blessings of nature in their daily life, an understanding of benefits from nature will be fostered, leading to the establishment of the nature positive economies that incorporate consideration and appreciation of nature and ecosystems (Basic Strategy 3), while people are encouraged to change their behavior (Basic Strategy 4). Such socioeconomic transformation will bring society closer to a society living in harmony with nature, which protects and makes use natural capital, thus creating a virtuous cycle that further contributes to healthy ecosystems. By developing the information serving as the foundation and promoting international cooperation (Basic Strategy 5), this will form the axis that supports these efforts.

The effective and sustainable implementation of the efforts pertaining to these basic strategies in a circular way will generate a driving force to realize nature-positive.

Section 2: Five Basic Strategies and Individual Targets

"State-oriented targets," indicating the status to be achieved by 2030, and "action-oriented targets," indicating the actions to be implemented to achieve the state-oriented targets, are set for each of the five basic strategies, which are the pillars of the efforts to be made by 2030. The state-oriented targets and the action-oriented targets are set based on the status in Japan as well as the GBF.

Basic Strategy 1

Restoration to Healthy Ecosystems

Healthy ecosystems are crucial for the fulfillment of the diverse functions that support our daily life. Therefore, from the viewpoint of conserving entire biological communities, including common species, the achievement of the 30by30 target of conserving at least 30% of land and 30% of sea by 2030 is set as an indicator, as well as habitats and breeding grounds throughout Japan are secured, and their connectivity is improved. In the usage and management of terrestrial and marine areas, including purposes such as production activities and infrastructure developments, the government will reduce the burden on biodiversity and promote the efforts to improve the quality of biodiversity. The anthropogenic impacts on wildlife evolution will be also reduced as much as possible, and comprehensive wildlife conservation is enhanced, from locally distributed to nationally distributed species, which include not only species diversity but also genetic diversity, such as those of local populations. In addition, appropriate relationships between people and wildlife based on changes in nature and society will be reestablished. To effectively promote these efforts, the collaborative system of relevant government ministries and agencies will be strengthened. These efforts will secure the sound biodiversity at various levels, from ecosystem level to genetic level, and contribute to resilience to climate change. The "30by30 Roadmap", which outlines the process and specific measures for achieving the 30by30 target in Japan, was released in April 2022 (see Annex).

(1) Conservation, restoration, and networking of sites for conservation of all biological communities

(i) Conservation by designation of protected areas

The designation and expansion of park areas as well as the optimization of the protective regulation plans through review of regulatory classifications such as Special Zones in terrestrial areas, and designation and expansion of Marine Special Zones in marine areas of national parks and quasi-national parks that serve as the pillar of biodiversity conservation, will be implemented. This includes the conservation of natural mountain areas such as mountain ranges forming the backbone of Japan, which are the core of the establishment of ecological networks. To improve the quality of management, the efforts of nature restoration, the conservation of endangered species, wildlife protection and control, measures against alien species will be made, and the management system will be enhanced. Regarding protected areas other than those above, designation and expansion as well as the continuous and effective management will be carried out as needed. For marine protected areas, consideration of the appropriate establishment of protected areas, improvement of the management and the enhancement of the monitoring will be promoted. For the conservation and management of protected areas, efforts will be made with the consideration of adapting to the impacts of climate change expected in the future.

(ii) Conservation by OECMs

With regards to the "Other Effective area-based Conservation Measures" (OECMs), the areas where biodiversity conservation is being promoted through private sector initiatives will be certified as the Nationally Certified Sustainably Managed Natural Sites, and pioneering efforts related to the 30by30 target will be encouraged through a voluntary coalition of businesses, local governments, organizations, and others (30by30 Alliance for Biodiversity). To further encourage local initiative efforts, incentives, including economic measures, will be considered to facilitate the participation of individuals and organizations, and relevant measures will be implemented. As for areas managed by schemes regulated by relevant ministries and agencies, the areas will be reviewed if they fall under the category of OECMs, and measures including efforts to improve the biodiversity conservation functions of the concerned areas will be taken as necessary, and those that are appropriate will be classified as OECMs. With regard to marine areas, the relevant ministries and agencies will work together to consider the recognition of marine areas where contributions to biodiversity are made as a result of sustainable industrial activities as OECMs, and the information of the relevant sites will be organized.

(iii) Improvement of ecosystem quality and networking

To secure the connectivity among forests, the countryside, rivers, and the seas, degraded ecosystems are restored, the quality of nature is improved, and ecological networks are established and maintained based on the respective characteristics of each of the regions that comprise the country (natural mountain areas, *satochi-satoyama*, rural areas, urban areas, rivers and wetlands, coastal areas, marine areas, and island areas). Therefore, the conservation management of naturally regenerated forests and the development for diverse forests; restoration, maintenance, and management of grasslands; restoration of nature in rivers, lakes, marshes, and coastal areas; appropriate conservation and development of green spaces in urban areas giving consideration to biodiversity will be promoted. In particular, in protected areas such as national parks, the efforts to restore nature and maintain ecosystems, for instance, conversion of forests inhabited by rare organisms to multi-storied forests such as mixed forests of conifers and broadleaf trees or naturally regenerated forests, restoration of river continuity by removing artificial structures, and reduction of the impacts from alien species and Sika deer on ecosystems, will be proactively undertaken. While noting the fact that water systems such as rivers and streams play an important role in the ecological networks of the country by connecting forests, agricultural lands, cities, and coastal areas, the government will promote efforts that take into account aspects such as integrated sediment and nutrient management. The coverage of ecosystems according to the unique biota of the region, as well as connectivity at various

spatial levels, such as landscapes and marine areas that encompass multiple ecosystems will be taken into account. At the same time, it is also necessary to give adequate attention to the negative aspects of ecosystem connectivity, as well as to consider the prevention of damage to agriculture, forestry, and fisheries caused by wildlife, and the prevention and promotion of control of invasions of invasive alien species and their spread. Bearing in mind that neighboring familiar nature provides habitats for living organisms including common species, and constitutes a component of the ecological network, maintenance and management of such nature should be promoted through cooperation among various entities.

(iv) Visualization of the status of biodiversity

To achieve the 30by30 target and establish a network of diverse ecosystems, the government will visualize the importance of biodiversity and effectiveness of conservation activities across the country, such as by mapping the current status of biodiversity and areas that are effective for conservation, and it is intended to develop and provide methods for assessing and capture the qualitative changes in ecosystems, taking into account the trends of the red lists of ecosystems that are being prepared worldwide.

(2) Reduction of the burden on biodiversity in the use/management of terrestrial and marine areas

(i) Forests

Promoting the forest development and conservation aiming for a well-balanced mosaic configuration of forests consisting of various growth stages and tree species, the multifunctionality of the forests including biodiversity conservation can be fulfilled. To this end, the measures with the aim to promote development for diverse forests depending on the current status of local forests and natural conditions, for instance, the conversion from single-storied forests to multi-storied forests associated with conifers and broadleaf trees as well as for the appropriate conservation and management of naturally regenerated forests. Other measures to promote forest practices balancing with biodiversity conservation, such as by protecting valuable wildlife in the forests. The government will secure and train forest managers and promote administration and management led by municipalities with the purpose of reduction of the habitat loss for diverse living organisms in forests through inadequate management and fulfillment of the forest multifunctionality including biodiversity conservation.

(ii) Agricultural land

While proceeding with the evaluation of biodiversity conservation in agricultural lands, the government will reduce the amount of chemical fertilizers use and the risks posed by the

use of chemical pesticides in agriculture, encourage organic farming, reduce environmental impacts through proper management of livestock waste, promote the conservation of the entire mosaic rural landscapes, including canals, rice fields, windbreaks that provide habitats for diverse organisms, and create networks from a broad perspective of these diverse environments. The government will promote sustainable agriculture that takes biodiversity into consideration through these efforts. The government will also provide supports to hilly and mountainous areas in order to prevent the occurrence of abandoned and degraded farmlands through the continuation of appropriate agricultural production activities and to ensure multifunctionality. To maintain productivity and biodiversity conservation functions of grasslands which are declining throughout the country due to lack of management, the government will promote the improvement and management of the grasslands.

(iii) Cities

To secure biodiversity in urban areas, the government will promote efforts to create networks of water and greenery by developing urban parks, conserving green spaces, and creating attractive waterside spaces. The government will encourage the development of attractive urban environments and landscapes that are in harmony with green spaces and agricultural lands. For this purpose, the government will promote urban biodiversity conservation efforts by local governments and private businesses to effectively develop and manage green spaces without damaging the habitats and breeding environments of living organisms, through the assessment of efforts to secure green spaces and by providing supports for the measures to improve the diverse functions of green spaces.

(iv) Rivers, lakes, wetlands (inland water)

In the management of rivers, lakes, wetlands, the government will promote the measures to conserve and create habitats and breeding environments for living organisms and diverse landscapes, and measures against alien species. For such purposes, the government will create attractive waterside spaces through the *Kawamachizukuri Approach* and other measures to develop ecological networks at a large scale. The government will also promote and ensure healthy water cycle by improving river environments, improving water quality in areas of public waters, and fostering interest in and understanding of water environments through cooperative efforts with local residents in watershed areas.

(v) Coastal areas and oceans

The government will promote the conservation, restoration, and creation of marine environment such as seaweed beds, tidal flats, and coral reefs, which play a vital role in the utilization of blue carbon as sinks and in the propagation of fishery resources. As

measures against marine plastic litter, the government will support to improve fishing gear and collect marine litter, and as measures against transboundary movements of alien species by vessels, conduct proper vessels management, and promote the conservation and restoration of the oceans. In dealing with marine plastic litter, it is essential to implement measures involving the inland areas, which are the major sources of plastic waste, such as litter control measures in terrestrial areas, measures to ensure separation of waste for collection and to prevent littering before the waste flows into marine areas, and measures to raise awareness of people for these measures to constrain the generation of waste.

The government will work on feed development and optimization of fisheries ground management in order to prevent the deterioration of the bottom sediment quality of the ground and the eutrophication of the area around the ground. Furthermore, the government will establish sustainable fishery resource management systems to secure biodiversity and restore Japan's fishery production volume at the same time.

To improve water quality and to secure habitats for living creatures, environment-friendly structures, such as bio-symbiotic revetments, need to be adopted in principle when building new revetments or repairing/renewing existing revetments, taking into account constructability and economic efficiency.

These measures will be also given sufficient consideration to the fact that water systems such as rivers serve as the keystones for connecting ecological networks with marine areas, as well as consideration to the connectivity of material transport from surfaces to the deep sea and to global ocean conveyor belts between marine areas.

(3) Wildlife conservation

(i) Enhancing individual efforts and efforts from multiple perspectives

The government will implement efforts focusing on individual species while dealing with urgent issues precisely, including appropriate wildlife population management such as wide-area capturing and securing workforce for this; *in-situ* conservation of endangered wildlife including species found in secondary nature and effective *ex-situ* conservation and reintroduction to the wild to support these conservation efforts; dealing with species that are in urgent needs of control and species that are widely kept and have large outdoor populations in measures against alien species. In order to support and promote individual efforts efficiently and effectively, the government will reinforce wildlife protection and management for multiple purposes, such as measures against lead poisoning of birds caused by lead shots used to capture wildlife, and intensive measures against invasive alien species and wildlife, which have become the main cause for the decline of endangered species.

(ii) Efforts for conservation of common species and genetic diversity of wildlife

For so-called “common species” which are not considered endangered, the government will grasp their current status and implement measures, such as the conservation of habitats and breeding grounds as necessary, as they form the basis of the ecosystem and play a key role in the provision of a wide range of ecosystem services. As the release of living organisms (including crossbreeds) by humans into the wild may affect the conservation of biodiversity in that area, such as the preservation of genetic diversity, and the problems related to alien species of domestic origin, and native species of foreign origin, the government will examine and organize policies on how to handle such releases and take necessary measures to ensure that they do not significantly disturb biodiversity.

(iii) Efforts to appropriately manage domestic animals that may affect wildlife

As a result of economic and social globalization, animals of various kinds have been domesticated, and it is pointed out that such animals may impact biodiversity, including the impacts on natural ecosystems due to abandonment and release of domesticated animals. The government will promote proper animal care and management by having caretakers and owners properly manage their animals when keeping them in facilities to prevent them from running away, and will promote the installation and registration of microchips, particularly for dogs and cats. The keeping of wild animals that have not been domesticated should be limited, given that it is generally difficult to provide proper care for such animals in accordance with their instincts, habits, physiology and ecology.

(4) Cooperation between relevant ministries and agencies in the protection and conservation of areas of importance for nature conservation

To effectively implement the efforts as described in (1) to (3), the cooperation system will be enhanced among relevant ministries and agencies, such as the Ministry of the Environment, the Ministry of Education, Culture, Sports, Science and Technology, the Ministry of Agriculture, Forestry and Fisheries, and the Ministry of Land, Infrastructure and Transport, which oversee measures related to the protection and conservation of the areas important for biodiversity conservation. Especially in areas designated by international organizations such as the Biosphere Reserves, the government will enhance the conservation and management of these areas in a collaborative manner among relevant ministries and agencies as well as the local governments. In light of the fact that the national forests account for approximately 60% of the national parks, the measures will be taken for further cooperation among management authorities, such as thorough protection by combining schemes overseen by the Ministry of the Environment and the Ministry of Agriculture, Forestry and Fisheries, providing opportunities to have nature experience, and improving the management systems by sharing information and holding joint training programs.

Setting targets for Basic Strategy 1

Given that ensuring the soundness of all three levels of biodiversity (ecosystems, species, and genes) is essential for the overall health of the ecosystems in Japan, the government will set state-oriented targets for the soundness of each of these levels. The government will also set action-oriented targets for addressing the direct drivers of biodiversity loss to reach those states, and action-oriented targets for conservation measures focusing on species and genetic diversity within species.

At the ecosystem level, the loss has been progressing in terms of both scale (area) and quality due to the impact of the four crises. For this reason, it is imperative to reinforce area-based conservation to combat losses caused by the land and sea use (action-oriented target 1-1), and at the same time, reduce the burden caused by use and restore degraded ecosystems (action-oriented target 1-2). Moreover, it is essential to reduce and mitigate the impacts of drivers that cause losses other than changes in the land and sea use, such as pollution, invasion of alien species (action-oriented target 1-3), and climate change (action-oriented target 1-4). Through these efforts, restoration of the healthy ecosystems, both in size and quality, is required (state-oriented target 1-1). At the species level, growing threats to the survival of species, such as the increase in the number of species listed in the red lists, efforts will be made to reduce drivers that cause losses (action-oriented target 1-5) and to reduce the vulnerability faced by each species (state-oriented target 1-2). At the genetic level, as increasing pressure on species has resulted in the losses of area-based habitat expansions and networks, the inability to maintain cohesive intraspecific populations, and the loss of genetic diversity, efforts need to be made to prevent further losses and restore genetic diversity (action-oriented target 1-6), and maintain genetic diversity (state-oriented target 1-3).

State-oriented targets

1-1 Healthy ecosystems are being restored with overall ecosystem scale increased and its quality improved

1-2 Extinction risk is reduced at the species level

1-3 Genetic diversity is maintained

Action-oriented targets

1-1 Conserve at least 30% of land and sea as protected areas and Other Effective area-based Conservation Measures (OECMs), and enhance the effectiveness of the management of these areas

1-2 Prevent degradation of ecosystems by reducing impacts on biodiversity from use of terrestrial and marine areas, promote restoration of at least 30% of degraded ecosystems, and implement measures that contribute to the development of ecological networks

1-3 Reduce pollution (control emissions with the objective of reducing the impact on biodiversity to an appropriate level taking into account carrying capacity) and, implement measures contributing to preventing and reducing the negative impacts of invasive alien species (e.g., reduce the rate of establishment of invasive alien species by 50%)

1-4 Minimize adverse impacts of climate change on biodiversity

1-5 Implement protection in accordance with laws and regulations for rare species of wild fauna and flora, and promote efforts to improve the current status of wildlife

1-6 Implement measures taking into account conservation of genetic diversity

Basic Strategy 2

Application of Nature-based Solutions (NbS) to Address Social Challenges

The government will recognize again that the natural environment as the foundation of society, economy, lifestyle, and culture, and promote Nature-based Solutions (NbS) that contribute to both human well-being and biodiversity by making use of the benefits of nature to resolve diverse social issues such as climate change mitigation and adaptation, disaster prevention and mitigation, resource circulation, local economic revitalization, zoonosis, and health. The government will maximize synergies between measures for various issues such as climate change and biodiversity, minimize trade-offs to maximize the effects of NbS while maintaining biodiversity. The government will also implement effective and efficient management of wildlife to resolve human-wildlife conflicts, which is becoming an increasingly serious issue in hilly and mountainous areas, and secure personnel for this.

(1) Regional development by making use of nature

The government will reassess measures related to nature in local areas in terms of NbS, implement NbS in local areas. For this purpose, the government will summarize and disseminate the basic concept of NbS as a means of technical support, as well as practical methods of implementing NbS in local areas. In particular, the government will roll out the efforts of Project to Fully Enjoy National Parks to all national parks in order to encourage nature experience activities, improve the quality of the accommodation environment including the development of visitor facilities and the demolition of abandoned buildings, encourage user fees, promote their use, while promoting adventure and sustainable tourisms that make use of nature. The government will also promote Biosphere Reserves and UNESCO Global Geoparks, which target sustainable development by balancing biodiversity conservation and economic and social activities, thereby establishing a virtuous cycle of the reinvestment in conservation of the natural environment and revitalization of the local economy and society at the same time, resulting in a rich local society that makes the most of nature.

Based on traditional and local knowledge and culture related to natural resource management, the government will expand the connectivity between urban and rural areas by creating exchange population and the population with strong relationship to the areas using natural resources; promote regional development by promoting tourism and make use of wildlife; improve local attractiveness and promote economic activities utilizing natural capital and ecosystem services such as renewable energy; promote pastural grazing and organic farming with a long-term perspective taking into account population decline; and encourage sustainable land use such as biotopes. Based on the concept of the Circular and Ecological Economy, where regions support each other while taking advantage of their unique characteristics to form self-reliant and decentralized communities, the government will promote moves that encourage people to return

to their countryside hometowns, work style reform, the vision for a Digital Garden City Nation, efforts to increase linkages and exchanges amongst cities and rural districts and natural tourist destinations, and establish hubs that lead to the promotion of *workation* (work-vacation), satellite offices, multiple habitations that make the most of nature, and to the promotion of NbS in the region.

In both the physical and intangible aspects of social capital development and land use, the government will promote the implementation in society of green infrastructures that draw diverse functions out of the natural environment to develop sustainable and attractive national lands, cities, and regions through public-private collaboration and cross-sectoral cooperation.

(2) Integrated solutions for challenges by applicated NbS

(i) Enhancing the synergy between climate change measures and biodiversity conservation

To enable natural ecosystems, such as forests and coastal ecosystems to demonstrate their functions as mitigation measures on climate change (measures to enhance carbon sink), the government will conserve the natural ecosystems in healthy state by designating protected areas. For forests, the government will promote implementation of appropriate maintenance and forest pest and disease control, to cope with the loss of habitats for living organisms caused by inadequate forest management, through the cyclic use of forest resources in planted forests, and restore natural ecosystems and local economy. To this end, the measures will be implemented for the utilization of forestry residues and the use of biomass resources as energy sources in *satoyama* which are poorly managed. In coastal ecosystems, the government will promote the conservation and restoration of seaweed beds and tidal flats that function as sequestration sink or storage of blue carbon, as well as wetlands that store carbon from natural sources.

In advancing adaptation measures to climate change such as River Basin Disaster Resilience and Sustainability by All, the government will urge the implementation of the Ecosystem-based Disaster Risk Reduction (Eco-DRR) which aims to promote the idea of green infrastructures that leverage the diverse functions of the natural environment, and build resilient regions against disasters that are considered to be more dire and frequent due to climate change, by securing and improving rainwater storage and infiltration functions through retarding basins; storm surge and tsunami attenuation and coastal erosion prevention through coastal disaster prevention forests, mangrove forests and coral reefs; and nature restoration taking advantage of spatial space created by population decline. In the case of reconstructing from natural disasters, the government will investigate and consider the conservation and management approaches, including the use of ecosystems created by disasters, from the standpoint of adaptive restoration that facilitates adaptation to climate change through flexible responses, including land use control, instead of being

constrained by the concept of restoring the original conditions.

(ii) Avoidance and minimization of trade-offs between climate change measures and biodiversity conservation

To avoid, minimize, and balance the trade-offs between the sustainable enjoyment of nature's benefits and climate change mitigation measures, the government will aim to prevent adverse effects on biodiversity caused by the inappropriate installation of renewable energy power generation facilities, and to proactively introduce renewable energy in harmony with local communities, while giving full consideration to building consensus in the local communities without harming the natural benefits of the local area. For this purpose, the government will make efforts to secure appropriate considerations to the environment and public consultation through measures such as the environmental impact assessment systems. In addition, alliances with efforts to ensure compliance with location regulations under individual laws and business regulations under relevant business acts will be formed. Furthermore, to balance environmental conservation and the introduction of renewable energy, the government will develop a database that provides an extensive range of basic information that can be used to lay out the zone for the area promoted to develop renewable energy and conduct the environmental impact assessment, by combining the information on environmental conservation, business viability, and social adjustments. Moreover, based on Act on Promotion of Global Warming Countermeasures (Act No. 117 of 1998), municipalities will implement renewable energy projects by building consensus at councils attended by interested parties such as local residents and experts, and establishing areas subject to the regional decarbonization promotion project for standards set forth by the Ministry of the Environment and prefectures for environmental considerations, thereby taking environmental consideration into account appropriately while facilitating consensus building in local communities. In particular, in terms of biodiversity and ecosystem services, concepts on where renewable energy power generation facilities should be installed and where they should be avoided or considered in order to enjoy the blessings of nature will be clarified while taking into account future land uses. The government will provide information and create/use guidelines to ensure appropriate sites selection and consideration of biodiversity conservation to guide such facilities to suitable locations. When implementing climate change adaptation measures in areas other than natural ecosystems, the efforts will be made to avoid or minimize the trade-offs with these climate change adaptation measures, such as by averting impacts on biodiversity caused by the installation of artificial structures.

(iii) Integrated solutions for various issues that are around us

The government will promote resource circulation and maintenance/management of

satoyama simultaneously through research and development of utilization technologies for facilitating the use of domestic biomass resources as materials and by expanding the use of resources. By promoting the utilization of these renewable resources, such as recycled resources and biomass resources, the government will reduce dependence on underground resources. Through collaboration between nature conservation activities and educational and welfare fields, the government will provide opportunities for people to have nature experience and improve their physical and mental health, and at the same time, conserve areas that contribute to biodiversity conservation. The government will also encourage the activities that help enrich people's lives through their interactions with nature, such as through inspirational, healing, and thrilling experiences.

(3) Management, segregation, and effective utilization of wildlife

To resolve the human-wildlife conflicts, the government will work toward the segregation of people and nature by utilizing natural resources and zoning *satochi-satoyama* areas whose potential for restoration has yet to be fully harnessed, and promote the effective use of captured wildlife to proactively utilize them in local development. To this end, the government will promote countermeasures to increase the efficiency and reduce labor by incorporating the latest digital technology, in addition to securing and training those responsible for capturing, managing, and effectively utilizing wildlife, and nurture human resources specializing in wildlife management jointly with universities, academic societies, and so on. To promptly identify and respond to outbreaks of infectious diseases related to wildlife that cause large-scale deaths of wildlife which endanger the survival of species and adverse effect on rare wildlife species, the government will continue and reinforce surveillance activities based on the One Health concept.

Setting targets for Basic Strategy 2

Since sustainable enjoyment of the benefits of nature (ecosystem services) from healthy ecosystems is vital for protecting natural capital which serves as the basis of human security, the government will set state-oriented targets to reduce the adverse impacts of ecosystems as well as to resolve diverse social issues both locally and globally by utilizing nature. The government will also set action-oriented targets for actions aiming at achieving these states by making sustainable and effective use of the functions of ecosystems, as well as by responding to local and global challenges in an integrative manner.

To solve social issues by taking advantage of ecosystem services in a sustainable manner, the government will set targets especially with the perspective for community development and climate actions. From the viewpoint of community development, the government will promote the efforts effectively such as assessing and visualizing how nature should be utilized (action-oriented target 2-1), and also by incorporating the perspectives of the use of nature with considerations of traditional culture in a wide range of efforts related to community development (action-oriented target 2-2). It is

necessary, by making such efforts, the range of efforts will be expanded and advanced technologies will be applied, so that people can enjoy the ecosystem services to a greater extent than the present level (state-oriented target 2-1). From the perspective of the climate actions, together with enhancing efforts to contribute to mitigation and adaptation to climate change through conservation and restoration of ecosystems (action-oriented target 2-3), there is a need to create synergies between biodiversity conservation and climate actions to mitigate trade-offs (state-oriented target 2-2) by promoting the efforts for giving considerations to biodiversity when introducing renewable energy, crucial for mitigating biodiversity to climate change to mitigate biodiversity loss due to climate change (action-oriented target 2-4). To mitigate negative impacts from ecosystems, it is necessary to give a special attention to the mitigation of damages caused by wildlife, and by enhancing the efforts to mitigate conflicts (action-oriented target 2-5), the human-wildlife relationships should be rebuilt with an appropriate distance being maintained between them (state-oriented target 2-3).

State-oriented targets

2-1 Ecosystem services are improved beyond current levels, allowing people and communities to utilize their local natural resources and culture to demonstrate their vitality

2-2 Ecosystem impacts of climate change measures are controlled, synergies between climate change measures, biodiversity, and ecosystem services are built, and trade-offs between them are mitigated

2-3 Appropriate distance with wildlife is maintained, damages caused by wildlife are mitigated

Action-oriented targets

2-1 Promote visualization of ecosystem functions and their further utilization

2-2 Promote community development making the most of nature while respecting the connection between forests, the countryside, rivers, and the seas, and the preservation of local traditional culture

2-3 Promote nature restoration that will also contribute to climate change mitigation and adaptation, and promote conservation and use of ecosystems beyond current levels as measures for carbon sink and reduction of greenhouse gas emissions

2-4 Promote due consideration of biodiversity in introduction of renewable energy

2-5 Enhance efforts to mitigate human-wildlife conflicts

Basic Strategy 3

Realization of Nature Positive Economies

To realize sustainable economic activities that realize nature-positive, there is a need to understand the current situation in which natural capital causes positive externality and its loss causes negative externality, and to internalize it through various means. As a part of such efforts, the government will promote joint efforts by the government and businesses to assess risks and opportunities in business activities related to biodiversity and natural capital, to set targets, and to disclose information. Through ESG finances and others, the government will realize a transition to economies that incorporate risks and opportunities related to biodiversity and natural capital, and implement measures to ensure that businesses become drivers for realizing nature-positive.

(1) Promote nature positive management efforts by businesses

(i) Promote business activities that give consideration to biodiversity and natural capital

The Basic Act on Biodiversity stipulates that the government shall implement efforts to reduce the impact of business activities on biodiversity, take necessary measures for disclosing information on biodiversity considerations related to business activities, and support businesses to properly assess the impact and dependence of their business activities on biodiversity and natural capital, to analyze risks and opportunities for corporate management, and to incorporate them into their business strategies. Specifically, focusing on the quantitative evaluation and significance of the impacts of business activities as a whole, including supply chains, on biodiversity and impact of biodiversity loss on business activities; analysis of potential risks, opportunities, and innovations for business activities; and methods for setting targets and disclosing information externally based on these analyses, efforts will be made to collect relevant data by providing support to demonstration projects and businesses, present and disseminate the information as technical advice in the form of guidelines, and to encourage businesses to take actions, while taking into account the trends of international frameworks led by private sectors, such as the TNFD and SBTs for Nature.

Through cooperation with the Japan Conference for 2030 Global Biodiversity Framework (J-GBF), the 30by30 Alliance for Biodiversity, and private voluntary initiatives (Keidanren Committee on Nature Conservation, Japan Business Initiative for Conservation and Sustainable Use of Biodiversity (JBIB), and others), the government and business operators will work together to promote policy development and voluntary activities. The government will set up a platform for the public and private sectors to have connections of the data related to the supply chain, details of various initiatives, and information on leading international case studies.

In implementing these initiatives, efforts will be made to support businesses so that

they can work effectively and in an integrated manner, in collaboration with initiatives in other areas such as decarbonization, circular economy, including resource circulation of plastics.

Businesses will also endeavor to incorporate considerations for biodiversity and natural capital into their own management strategies, while coordinating with national efforts and paying attention to the supply chain.

With respect to OECMs, efforts will be made to proactively contribute to applying for the certification as the Nationally Certified Sustainably Managed Natural Sites and their management, working closely with other local entities.

(ii) Introduce private capital through expanding financing

To promote efforts in the areas of biodiversity and natural capital in green finance, the government will deepen the awareness of financial institutions on nature-related risks and opportunities based on the information on nature-related assessments being disclosed by TNFD and provide technical advice on information disclosures and target settings related to biodiversity and natural capital considerations by businesses such as financial institutions. By implementing green infrastructure technologies in society and ecosystem conservation and restoration efforts, the government will promote to expand green finance and ESG investments by the use of private financing methods such as green bonds.

In addition, the government will provide technical advice and establish schemes to encourage dialogue (engagement) between corporations and financial institutions on business activities that take biodiversity and natural capital into account.

(iii) Promote efforts by industries

The government will promote MIDORI Strategy for Sustainable Food Systems and reduce environmental impact by establishing sustainable food systems. It will also undertake efforts to promote sustainable forest management and wood use.

Various guidelines are being developed by industries in their voluntary efforts for biodiversity conservation, including the Declaration of Biodiversity by Keidanren and Action Policy by the Japan Federation of Economic Organizations, the Guidelines for Action by the Electrical and Electronic Industries concerning Biodiversity Conservation by four electrical and electronic industry associations, and the Guide for Promotion of Raw Material Procurement for Business in Consideration of Biodiversity by JBIB. To further promote business activities that take biodiversity and natural capital into consideration, the government will support the formulation of plans, jointly with industry associations.

(iv) Support small and medium-sized enterprises and local enterprises

The government will provide small and medium-sized enterprises and local enterprises

with a roadmap to help them implement initiatives that give consideration to biodiversity and natural capital in a step-by-step manner, by providing information that is easy to understand and training human resources, depending on their circumstances.

Given that local financial institutions play a key role in promoting regional initiatives such as biodiversity and natural capital considerations and their efforts for the 30by30 target, efforts will be made to raise awareness and promote regional ESG financial initiatives jointly with local financial institutions.

(2) Support for use of economic approaches and creation of new natural capital-conscious businesses

(i) Research, review, and use of economic approaches

The government will conduct research and verifications on economic approaches, such as visualization methods of the environmental value of OECM-certified lands, and monetization methods through sales and purchases, donations of such lands, as incentives to promote the conservation of biodiversity and natural capital by business operators.

The government will explore tax incentives for the areas under protection or conservation.

(ii) Promote creation of nature positive management and industries

The government will provide support for the verification of technologies and products that contribute to the conservation of biodiversity and natural capital in Japan and overseas, as well as support for supply chain management and traceability assurance, by utilizing the technologies and knowledge of Japanese companies.

The government will also work with local governments to support the establishment of businesses that contribute to the conservation and sustainable use of biodiversity and natural capital in local areas.

The government will examine the prospects of businesses related to biodiversity and natural capital, and develop strategies to expand such businesses in Japan.

(3) Proactive actions by national and local governments as business operators

The government will proactively lead the ways in giving consideration to biodiversity and natural capital in their procurement processes through green purchasing. The government will also promote efforts to reduce impacts on biodiversity and natural capital in their own projects.

(4) Proactive participation in formulating international norms

(i) Involvement of public and private sectors in international frameworks

Working with business operators, the government will establish public-private partnerships to support the rule-making led by the international private sector, such as TNFD and the

Guidelines for International Organization for Standardization (ISO) concerning biodiversity. Based on Japan's experience, the government will work with relevant countries to contribute to international discussions so that effective rules can be formed.

(ii) Promote international voluntary efforts

Working with business operators, the government will disseminate information on voluntary efforts by business operators in Japan to the international community, and provide support in establishing schemes that encourage efforts toward the 30by30 target and nature-positive by international business associations.

(iii) Genetic resources and Access and Benefit-Sharing (ABS)

The government will promote efforts to effective and sustainable utilization of biological resources and contribute to conservation of biodiversity, based on the principles of ABS of genetic resources, while paying close attention to international discussions on digital sequence information on genetic resources. In this context, the government will promote understanding and compliance with the ABS related rules and accumulate relevant cases by contributing to international discussions and raising awareness in Japan.

(5) Establishment of infrastructures for nature positive management and industry creation

(i) Research and development

The government will organize and identify national and international methodologies for visualizing the impacts on biodiversity and natural capital of all business activities, including individual products, services, and supply chains. The government will also examine methodologies for quantitatively integrating biodiversity and natural capital into accounting and financial information, and collect and analyze domestic and international case studies and research results on Payment for Ecosystem Services (PES) using both voluntary and economic methods.

(ii) Technological development and data infrastructures

Working with efforts in other fields such as climate change, the government will support the development of technologies for identifying impacts on biodiversity and natural capital in the supply chains and technologies that contribute to ecosystem conservation, restoration, and monitoring by utilizing digital technologies.

Furthermore, collaborating with efforts of other fields such as climate change, the government will facilitate the linkages of data related to biodiversity and natural capital, and provide support to businesses to identify their impacts and disclose information.

Setting targets for Basic Strategy 3

Given that realization of nature positive economies is indispensable for transformative changes to take place, the government will set state-oriented targets aiming at integrating biodiversity and natural capital into business activities, from the viewpoints of overall business activities, the financial sector, and the agriculture, forestry, and fisheries sectors. To achieve these states, the government will set action-oriented targets that encourage the assessment, analysis, and disclosure of impacts on biodiversity in business activities such as procurement and land modification, initiatives that utilize benefits from the sustainable use of biological resources for conservation, and initiatives that support business activities contributing to biodiversity conservation.

With regards to the financial sector, to realize nature positive economies through investment and financing, there is a need to provide technical advice to help businesses quantitatively assess and analyze the impacts of their activities on biodiversity by themselves and to promote information disclosure on the businesses, raise awareness of financial institutions and investors, and promote dialogues between the two, thereby improving the infrastructure for investment and financing (action-oriented target 3-1), and to expand the scale of ESG finance and to promote its allocations to biodiversity related areas (state-oriented target 3-1). It is also necessary to promote technologies and services that positively contribute to biodiversity in all business activities (action-oriented target 3-2). Also sought is the sustainable use of biological resources and promote their return to biodiversity conservation through access to genetic resources and the fair and equitable distribution of benefits derived from their use (action-oriented target 3-3). Through these efforts, it is crucial to expand positive contributions to biodiversity and reduce negative impacts in all business activities (state-oriented target 3-2). From the perspective of agriculture, forestry, and fisheries, there is a need to provide support to reduce negative impacts on biodiversity and increase positive contributions at each stage from production to consumption (action-oriented target 3-4), and to expand sustainable agriculture, forestry, and fisheries in Japan (state-oriented target 3-3).

State-oriented targets

3-1 ESG finance that contributes to biodiversity conservation is promoted and resources are appropriately allocated to measures that contribute to biodiversity conservation

3-2 Steady progress is being made in reducing the negative impact of business activities on biodiversity, increasing positive impacts, reducing biodiversity-related risks for businesses and financial institutions, and promoting actions to ensure sustainable production systems

3-3 Sustainable agriculture, forestry, and fisheries are expanding

Action-oriented targets

3-1 Promote quantitative assessment of dependence and impact on biodiversity, analysis of current status, science-based target-setting, and information disclosure, by businesses, develop a foundation for promoting investments and financing by financial institutions and investors, and promote activities to conserve and restore biodiversity from perspective of investment and

financing

3-2 Support technologies and services contributing to biodiversity conservation

3-3 Implement the ABS in utilizing genetic resources

3-4 Enhance sustainable, environmentally friendly agriculture, forestry, and fisheries, including reduction in risk-weighted use of chemical pesticides and chemical fertilizer use, and promotion of organic farming, as stated in MIDORI Strategy for Sustainable Food Systems

Basic Strategy 4

Recognition of the Value of and Actions for Biodiversity in Daily Life and Consumption Activities (Changing Individual Behavior)

To realize nature-positive, in addition to daily activities and efforts that are biodiversity-conscious at the individual and group level, it is also extremely important for individuals and groups, who form part of the supply chains through consumption and use, to approach to businesses as consumers, investors, and advisors. In this context, the government will implement measures to restore and deepen the close connection between biodiversity and lifestyle/consumption activities of the past, utilizing new technologies. The government will implement the measures taking into account that perspectives may differ, given that the way of engaging with and understanding biodiversity depends on gender, age, and other factors, and will respond to include gender perspectives and communication to young people.

(1) Promotion of environmental education and environmental learning related to biodiversity

(i) Improve understanding of biodiversity to change individual behavior

As the basis for encouraging the efforts of citizens of the country, the government will provide domestic and international information based on the latest scientific findings related to biodiversity, and organize and clarify concepts such as biodiversity, natural capital, and ecosystem services in an easy to understand manner, and disseminate information that clarifies the connection between individual daily life and nature. On such occasions, the government will adopt effective approaches by combining media and messages tailored to each target group, rather than a uniform approach. In addition, the government will provide information related to lifestyles and nature and data on indicators (e.g., footprints) jointly with businesses and related organizations.

People live depending on the benefits of nature in our daily life and will take into consideration the impacts not only on domestic biodiversity but also on the loss of biodiversity around the world, and the Japanese nation will strive to be aware of the importance of biodiversity. In addition, private sector organizations are expected to act as a bridge between the various entities by conveying technical information in a manner that is easy to understand to the public.

The national government, local governments, and private sector organizations will proactively disseminate the information both domestically and internationally through J-GBF, which is a venue for cooperation and collaboration among various entities such as businesses and experts in the field, and through other fora, via SNS and other media. In addition, they will provide opportunities to discuss changing behavior and encourage citizens of the country to proactively and voluntarily change their behavior, utilizing knowledge from behavioral science such as nudges (method of guiding people in a better

direction while allowing them to make choices).

(ii) Promote human resources development

Based on the Act on the Promotion of Environmental Conservation Activities through Environmental Education (Act No. 130 of 2003) and basic policies formulated based on this Act, the government will promote environmental education and environmental learning concerning biodiversity in homes, schools, workplaces, communities, and various other places. The government will also implement measures to improve the qualifications of teachers and to deepen understanding and interest in biodiversity through hands-on activities by promoting the certification of locations of opportunities for experience. In addition, based on the Implementation Plan for Education for Sustainable Development in Japan (The Second ESD Implementation Plan), the government will promote concrete measures to achieve the goals of the SDGs, including biodiversity, by providing easy-to-understand information, establishing learning environments including learning opportunities and places, fostering instructors, and promoting activities focusing on youth and local communities, while also seeking the cooperation of various stakeholders, such as educational institutions, local governments, NPOs/NGOs, businesses, research institutions, local residents, and individuals.

To promote biodiversity education in schools and social education facilities, the government will promote school education and recurrent education at schools through schoolyard and childcare center yard biotopes, addressing alien species and the sustainable use of natural capital and so on in collaboration with NGOs and other organizations.

In addition, to foster human resources with specialized knowledge and experience, the government will work with the promotion center for regional collaboration to facilitate trainings and other activities in the region.

(2) Changes in behaviors in consumption activities

(i) Select biodiversity-conscious goods and services in daily life

The government will advance efforts to increase biodiversity-conscious options and measures to disseminate and raise awareness of such options to enable citizens of the country to opt for biodiversity-conscious goods and services, as well as to disclose information on biodiversity-consciousness in business activities and to promote a deeper understanding of the importance of consumer lifestyles that are considerate to biodiversity. To accelerate these efforts, the government will link them with measures to address other environmental and social challenges, such as decarbonization and circular economy. For example, making choices such as encouraging local production for local consumption, reducing food loss and waste, prioritizing the purchases of products made from renewable resources, such as wood and recycled products, and selecting biodiversity-conscious products with environmental

labels, certified products, and geographical indications, all contribute to the sustainable use of local natural resources, which in turn contributes to the conservation of biodiversity. Measures to encourage consumer behavior from these perspectives will therefore be implemented.

In response to Basic Strategy 3: Realization of Nature Positive Economies, citizens of the country and organizations are expected to review their own consumption activities of goods and services, and also to long with evaluate the efforts of businesses, appealing to and providing feedback to businesses, and calling on other consumers, these stakeholders are expected to change their behavior.

(ii) Encouragement through community businesses and investments

The government will work with private sector organizations and local governments to support community businesses that give consideration to biodiversity, and also support funding through economic methods and review of nudges.

Citizens of the country and private organizations will conduct community businesses that contribute to biodiversity conservation, as well as encourage businesses to take considerations of biodiversity through investments and other activities based on the information disclosed by the business operators.

(3) Promotion of biodiversity conservation efforts

(i) Implementation and collaboration on biodiversity-conscious actions

Citizens of the country and private organizations are encouraged to cooperate with the local entities in the efforts that contribute to biodiversity conservation and sustainable use of natural resources, such as afforestation, nature management, alien species control, food banks and food drives, and in the efforts related to OECMs for achieving the 30by30 target, applications for the certification of the Nationally Certified Sustainably Managed Natural Sites and the maintenance/management of these sites.

The government will implement support projects to encourage these efforts, review support measures based on other economic measures, and promote actions through nudges and other methods.

(ii) Support for conservation efforts by people and private organizations

To encourage activities by citizens of the country and private organizations aiming at the acquisition of lands important for biodiversity conservation, its maintenance and conservation, and other efforts for the conservation and sustainable use of biological diversity, the government will implement efforts based on the Act on the Promotion of Conservation and Sustainable Use of Natural Environment in Regional Natural Asset Districts (Act No. 85 of 2014), as well as introduce economic methods, nudges, and so on.

Moreover, based on the Act on the Promotion of Activities for Biodiversity Conservation through the Cooperation among Regional Diversified Actors (Act on the Promotion of Regional Cooperation for Biodiversity, Act No. 72 of 2010), the government will promote these efforts by supporting the establishment and utilization of the Support Centers for Regional Cooperation Activities on Biodiversity Conservation, which serve to mediate cooperation among various entities.

(4) Fostering understanding regarding the succession of traditional knowledge and views on nature, interactions with nature, and appropriate relationships between people and animals

(i) Efforts within local communities

In light of the significance of local communities as the key players in the maintenance and management of the natural environment, and the importance of their relationship with nature in revitalizing declining local communities, the government will work with local governments to promote measures for the revitalization and reconstruction of local communities, and encourage their active participation in and contributions to local biodiversity conservation activities as the mutual supports.

(ii) Foster values seeking cultural and spiritual abundance

From the point of view of the acceptance of the different conceptions of what constitutes good living, the government will identify the effects of nature on people's mental and physical well-being, and foster social values that seek the cultural and spiritual abundance that can be enjoyed not only by learning and playing in nature, but also by working and living in it.

(iii) Inherit traditional culture and views of nature in the region

Based on the understanding that keeping Japanese views on coexistence between people and nature, such as the respect for nature as symbolized by the Shinto shrine forests and *yaoyorozu-no-kami* (eight million gods), and local culture (traditional events, food culture, local industry, and so on) deep-rooted in the abundance of biodiversity, and the importance placed by the Japanese on maintaining the way of life and land use in the local community according to local nature, the government will implement measures to collect and share such traditional culture and views on nature, as well as knowledge and techniques for utilizing the benefits of nature in the local community and avoiding disasters. In light of the connections among forests, the countryside, rivers, and the seas, the government aims to communicate through various opportunities, the cultural and spiritual abundance that nature provides, the fact that nature supports local traditions, food, industry, and culture, and the inheritance of the Japanese people's perspective of nature coexisting with people in harmony, to deepen local residents' understanding of and concern for nature, and to

promote biodiversity conservation activities in the region.

(iv) Interactions with nature for urban residents

Given that interactions with the natural environment is crucial for understanding the importance of biodiversity and culture and traditions rooted in nature, the government will promote greening and appropriate conservation of green spaces in urban and peri-urban areas so that urban residents, who constitute a large proportion of the country's population, will have greater access to green spaces and waterfront areas where biodiversity is abundant, as well as enjoy more opportunities to have nature experience in daily life. In addition, the government will promote the appropriate conservation and use of productive green spaces and *satoyama* forests in and around urban areas, thus enabling urban residents to improve their health and foster a love of their hometowns through participation in agricultural and forestry experiences. By promoting measures in both rural and urban areas, efforts will be made to create decentralized society that coexists in harmony with nature. Moreover, by promoting exchanges with areas rich in nature, far from urban areas and rural districts, the government will encourage people to play in and become familiar with the unique nature of the region and to learn and experience nature through hands-on learning.

(v) Foster understanding related to the appropriate relationship between humans and animals

To realize a society in which people and animals coexist, there is a need to establish a mindset and attitude that respects animal life and treats animals in such a way that they are not killed, harmed, or suffered unnecessarily. Consequently, the coexistence of humans and animals encompasses the proper treatment of animals according to their roles in society. If animals are treated properly according to their rational purposes, the use of laboratory animals and livestock can be considered as a form of coexistence. Efforts should be made to cultivate an understanding of the appropriate relationship between humans and animals, including not only animals at home and animals for exhibition, but also laboratory animals and livestock.

(5) Promote participation of citizens of the country and private organizations in policy making

To reflect the opinions of the people in policy development on biodiversity conservation and assure the fairness and transparency of the process, the government will invite the opinions of various actors, such as private organizations and experts, review them carefully and develop policies based on them, through efforts to promote public-private partnership platforms, partnerships, and voluntary coalitions.

Private organizations are expected to make policy proposals based on their respective expertise.

Setting targets for Basic Strategy 4

To promote biodiversity conservation and its sustainable use in society as a whole, there is a need to change the structure that lacks knowledge and is indifferent to the importance of biodiversity and the value of biodiversity is not integrated. In this context, the government will set state-oriented targets on the formation of individual people's values and promotion of changing behavior. To achieve these states, the government will also set action-oriented targets to foster people with values that emphasize biodiversity and encourage behaviors that positively contribute to biodiversity.

In the formation of values, it is necessary to facilitate deeper learning about the importance of biodiversity in schools and other educational settings (action-oriented target 4-1), while at the same time increase opportunities for daily interaction with nature in a variety of settings to promote understanding supported by experience (action-oriented target 4-2). Moreover, the government will need to combine efforts such as nudges that encourage voluntary actions by applying the findings of behavioral science (action-oriented target 4-3), and shape values that emphasize biodiversity and the connections between people and nature, and encourage actions (state-oriented target 4-1). From the perspective of changing behavior, the government will set targets that focus particularly on changing consumption behaviors, closely linked to daily life, and on behaviors that are directly related to the conservation and restoration of the natural environment. From the perspective of consumption behavior, there is a need to increase opportunities for making biodiversity-conscious choices and to provide incentives to facilitate such choices (action-oriented target 4-4). Therefore, the government needs to promote appropriate purchasing and recycling efforts to reduce waste, and to encourage biodiversity-conscious behavior change, for example encouraging people to choose sustainable products (state-oriented target 4-2). In terms of actions related to conservation and restoration of the natural environment, there is a need to enhance understanding of and consideration for nature in local regions, including the passing on of traditional culture and local and traditional knowledge related to the symbiosis between people and nature, and to promote conservation and restoration activities through efforts to urge cooperation among various entities in the region (action-oriented target 4-5) and to encourage behavior change so that citizens of the country at large will actively participate in activities to conserve and restore the natural environment (state-oriented target 4-3).

State-oriented targets

4-1 Values that place importance on biodiversity and the connection between people and nature are established through education and public awareness

4-2 Biodiversity is taken into account in consumption behavior

4-3 Active participation of people in activities to conserve and restore the natural environment is taking place

Action-oriented targets

4-1 Promote environmental education on biodiversity in schools

4-2 Through providing opportunities for people to interact with nature in their daily life, ensure acquirement of various knowledge and awareness-raising on matters, including nature's blessings and how people interact with nature, and development into a mature person, and raise awareness on ideas on appropriate relationships between people and animals

4-3 Encourage people to actively change their behavior on a voluntary basis

4-4 Raise awareness on options considering biodiversity, increase opportunities for selecting, and offer incentives, in order to promote consumption behavior considering biodiversity, including halving food loss and waste, and reducing disposal of other materials

4-5 Promote local activities to conserve and restore natural environment, utilizing traditional culture and local and traditional knowledges

Basic Strategy 5

Development of a Base that Underpins Activities for Biodiversity Conservation and Promotion of International Coordination

To effectively promote efforts for the conservation and sustainable use of biodiversity, the government will accurately assess and determine the current status of the natural environment and its chronological and spatial changes, enhance basic surveys and monitoring that lead to the evaluation of biodiversity and development of information that is easy to use, secure experts and the workforce for the development and improvement of survey systems, and provide support for related activities. To raise the overall level of efforts related to biodiversity, the government will adopt required legislative, financial, or tax measures as well as promote cross-sectional efforts through the cooperation among various stakeholders.

Furthermore, in order to contribute to biodiversity conservation on a global scale, the government will promote international cooperation by making use of Japan's knowledge and experiences, and contribute to the efforts to address issues in environmental fields other than biodiversity through NbS, as well as to IPBES.

(1) Develop information base for effective actions

(i) Promote the development of information base and provide information that meets the needs of users

To promote Evidence-Based Policy Making (EBPM), local and regional biodiversity conservation efforts, and their assessments, the government will gather and consolidate fundamental/scientific information and natural environment data, and promote scientific research. To enable various entities to utilize such data appropriately and promptly according to their purposes, the government will improve and enhance the infrastructures and systems for providing information on public and private sector data and their mutual use through open data and Application Programming Interface (API) collaboration, based on the Basic Principles on Open Data (decided by Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society, and Strategic Conference for the Advancement of Public and Private Sector Data Utilization on June 15, 2021).

The government will also endure data quality that is appropriate for the purposes of the use of data, and provide assistance for the development of digital technologies for monitoring using satellite images and drones that support such data quality. Efforts will be made to promote technological development which will contribute to the planning, development, maintenance, and management of efforts that contribute to biodiversity conservation, such as green infrastructures, and to implement regional model verification projects and other activities to support the application the technologies to regions.

(ii) Overall assessment of biodiversity

The government will continue to carry out surveys and studies for the comprehensive assessments of biodiversity and ecosystem services in Japan, including the integrated assessments of biodiversity loss and socio-economic activities, and evaluate the achievements of the efforts from the national or regional perspectives. Aiming at the visualization of environmental values, the government will evaluate the economic values of ecosystem services and natural capital as a whole, and undertake surveys and research geared toward changing behavior of various entities and integrating them into national economic statistics.

(2) Legislative measures and regional plans for biodiversity conservation

(i) Legislative, financial, or tax measures

The government will implement legislative, financial, or tax measures and other measures needed to realize biodiversity conservation and sustainability measures in order to raise the overall level of biodiversity-related efforts. Specifically, the government will work on the measures for biodiversity conservation outlined in this NBSAP by revising relevant laws, securing budgets, and other efforts, and encouraging the deployment of private-sector funds. To improve the quality of natural environments in national parks and quasi-national parks to reach the 30by30 target through effective conservation measures in protected areas and OECMs, collected user fees and cooperative fees will be allocated to conservation and management, and the cost sharing mechanisms will be expanded. For ecotourism such as wildlife tourism, efforts will also be made to expand schemes that seek the cost sharing for conservation and management of the natural environment in order to ensure the sustainability. In addition to efforts to financially support conservation led by local governments and the private sector, the government will also review legislative and tax measures to support conservation efforts as required. For various incentives, including domestic subsidies, the government will identify those that are harmful to biodiversity and reassess the relevance of the identified incentives.

(ii) Regional planning for space utilization and local biodiversity strategies and action plans (LBSAPs)

In terrestrial and marine areas, the government will promote integrated efforts based on spatial planning that gives consideration to biodiversity at various scales, depending on the conservation targets. In particular, to promote efforts based on the NbS concept at the regional level, the government will work on the following; with regards to the efforts for conservation and utilization of biodiversity at regional level, collaborations with relevant regional plans for the conservation and sustainable use of biodiversity (Basic

Environmental Plan, Master Plan For Parks and Open Spaces, Local Climate Change Adaptation Plans, Action Plans of Local Governments based on the Act on Promotion of Global Warming Countermeasures) and integrated development of these plans, such as the formulation of LBSAPs; promotion of wide-area collaboration among local governments, including joint development of these plans; integrated efforts applying the landscape approach; efforts that utilize nature in community planning and developments; fostering of human resources to carry out efforts as well as human resource to provide intermediary support; and support activities at local and regional levels.

(3) Voluntary efforts and cooperative efforts by stakeholders

(i) Voluntary efforts through partnerships

The government will promote partnerships, such as cooperative agreements and partnerships with business entities, which are expected to foster flexible and creative approaches and efforts, through regular follow-ups and reviews, to make promises of voluntary cooperation on an equal footing.

(ii) Collaborative efforts by multi-stakeholder approaches

Given that joint efforts by citizens of the country, businesses, NPOs, and local and national governments are expected to lead to more effective frameworks and initiatives with new knowledge and objective assessments from different sectors, as well as raise widespread awareness, the government aims to implement the J-GBF, the 30by30 Alliance for Biodiversity, the Project on Connecting and Supporting Forests, Countrysides, Rivers and Seas, the Green Infrastructure Public-Private Partnership Platform, and other initiatives by multi-stakeholders through regular follow-ups and by deepening the efforts.

(4) International collaborations

The government will promote international cooperation by making use of Japan's knowledge and experiences. Specifically, the government aims to support projects on the sustainable use of secondary nature based on the Satoyama Initiative, support the formulation of national biodiversity strategies that incorporate the concept of the landscape approach, support the building of skills required for the implementation of Eco-DRR in developing countries, and reduce the burden on biodiversity in the international supply chains. At the same time, the government will seek to demonstrate the multifaceted effects of these efforts which are expected to contribute to addressing issues in the environmental field other than biodiversity, such as climate change. In particular, recognizing the roles of tropical forests in biodiversity conservation, the government will support the efforts by the Secretariats of International Tropical Timber Organization (ITTO) and CBD through the ITTO-CBD collaborative initiatives for tropical forest biodiversity. Moreover, the government will focus on international collaborations related to climate change and resource

circulation that contribute to biodiversity (efforts through NbS), increase the number of related cooperative projects, and encourage Japanese researchers to participate in the projects to contribute to various evaluation reports by IPBES, and provide support in the operation of technical support organizations.

To achieve the 30by30 target in the Asian region, support will be provided in the designation and management of protected areas and OECMs through the Asia Protected Areas Partnership (APAP). In addition, the government will share with other countries Japan's knowledge and efforts regarding the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Ramsar Convention, bilateral conventions and agreements for the protection of migratory birds, the East Asian-Australasian Flyway Partnership (EAAFP), which are international frameworks contributing to the conservation of biodiversity. The government will also advance international collaborations on countermeasures against the unintentional invasion of invasive alien species.

Since ocean is a continuous body of water, marine areas under Japan's jurisdiction are affected by other countries, and Japan's influence may also extend to other countries and high seas. Taking into account these unique characteristics of marine areas, the government is committed to leading international cooperation in marine environmental policies, based on the existing international frameworks such as the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL73/78) and International Convention for the Control and Management of Ship's Ballast Water and Sediments (Ballast Water Management Convention), as well as by developing a new international legally binding instrument (treaty) on plastic pollution, including in the marine environment, with the Osaka Blue Ocean Vision in mind.

Setting targets for Basic Strategy 5

It is indispensable to build foundations for biodiversity conservation in Japan and abroad that the information, knowledge, and technologies accumulated in Japan to date will be deployed to a wide range of activities related to biodiversity conservation in the country, and international cooperation that leverages Japan's knowledge and experience, including financial support will be promoted. In this context, with a view to establishing a foundation for the measures in Japan, the government aims to establish state-oriented targets and action-oriented targets for promoting a series of efforts for effectively implementing activities using the information, for promoting domestic and international efforts from a financial perspective, and for promoting global biodiversity conservation through international cooperation based on Japan's expertise in areas such as the conservation and sustainable use of secondary nature.

From the viewpoint of developing infrastructures in Japan, various entities in the region should make effective hands-on efforts using various data and methods (state-oriented target 5-1) by developing assessment methods that can be linked to effective actions (action-oriented target 5-1),

developing human resources who can interpret information and promote on-site actions (action-oriented target 5-2), and by disseminating and developing planning methods that can effectively promote local actions from a macro perspective (action-oriented target 5-3) based on continuously developed biodiversity data. With regards to funding, the government aims to identify and review subsidies and incentives that are harmful to biodiversity in Japan, and to facilitate those that contribute to biodiversity conservation, in order to make changes that incentive measures become positive overall, and to strengthen contributions to international resource mobilization (action-oriented target 5-4), in order to secure sufficient funding for the implementation of the NBSAP and to contribute to bridging the global biodiversity conservation funding gaps (state-oriented target 5-2). In addition, it is imperative to promote overseas expansion of projects that make use of Japan's experiences in biodiversity conservation and its sustainable use and the sharing of knowledge (action-oriented target 5-5), and build capacities in developing countries to promote biodiversity conservation in those countries (state-oriented target 5-3).

State-oriented targets

5-1 Information infrastructures for biodiversity are developed, survey and research results and provided data and tools are utilized in various sectors, and collaboration between various entities is promoted at various spatial scales under spatial plans that take biodiversity into consideration

5-2 Funding for biodiversity conservation is secured to improve the funding gaps for global biodiversity conservation

5-3 Japan's supports to developing countries in capacity building is progressed, and the results are reflected in the measures taken in each country to promote biodiversity conservation

Action-oriented targets

5-1 Promote academic research in biodiversity-related fields including integration of biodiversity and social economy and integration of natural capital into national economic statistics, and implement long-term survey and monitoring building on a sound system

5-2 Develop human resources and provide tools for dissemination and utilization of the data, to promote effective and efficient biodiversity conservation, facilitate appropriate policy-making and decision-making, and encourage public participation in biodiversity conservation activities

5-3 Strengthen support for planning, including local biodiversity strategy and action plans (LBSAPs), to promote integrated efforts with participation by various entities

5-4 Implement efforts to enhance resource mobilization, including identifying and reviewing incentives that are harmful to biodiversity

5-5 Promote international cooperation utilizing Japan's knowledge and expertise

Chapter 4: Foundations and Mechanisms for Effective Implementation of this NBSAP

Section 1: Basic Concept for Implementation

To achieve the state-oriented targets and action-oriented targets in the five basic strategies for realizing the short-term mission "Nature-Positive by 2030" set forth in Chapter 3, it is essential to steadily implement the measures associated with each goal described in Part 2.

In implementing these measures, it is critical to adopt the following approach from a long-term perspective, in light of the complexity and uncertainty of biodiversity and the ideal ways for the region to move toward the vision of a society in harmony with nature envisioned by this NBSAP.

1. Scientific recognition, and Preventive and Adaptive Efforts

Conservation and sustainable use of biodiversity must be conducted based on scientific data and an understanding of the characteristics, mechanisms, and historical aspects of nature, while referring to knowledge on living in harmony with nature at the regional and local levels. This understanding should serve as a starting point and basis in policy making and measures. This will also demonstrate the importance and effectiveness of the efforts to the public.

However, knowledge and understanding of biodiversity is limited, so undeniably, that there will always exist some uncertainties in the assessments of the causes of biodiversity loss and the resulting decrease in ecosystem services, and in the planning and implementation of measures, even if the necessary measures are taken based on the latest scientific knowledge at the point. Yet, if measures are not implemented due to this uncertainty and problems were to occur, the subsequent damage and costs could be extensive, and the impacts could be extremely serious or irreversible, lasting for a long period of time. Consequently, in the conservation and sustainable use of biodiversity, in principle, efforts should be made based on the "precautionary approach", which involves taking preventive measures while working to improve scientific knowledge, instead of putting off measures to deal with problems that may affect biodiversity because of the lack of scientific knowledge or uncertainties. It should be noted that consensus building with stakeholders and the public is crucial for making policy-related decisions amidst certain uncertainty. In such cases, policy makers must be fully accountable, and it is vital to ensure communication among the various actors.

In addition, ecosystems are complex and constantly evolving. Even after policy decisions are made, it is critical to review them in a flexible manner according to changes in the ecosystem. Moreover, it is vital to promote efforts based on the concept of "adaptive management", whereby measures are continuously reviewed, such as adding or changing necessary measures or discontinuing measures, based on newly accumulated scientific knowledge and scientific evaluation of monitoring results of the implementation of measures.

2. Prioritizing the Ease of Understanding

One of the challenges faced with biodiversity is that the relationship with our lives is unclear, and it is difficult to understand how we can help conserve and sustainably use biodiversity. Although often unnoticed in our daily life, our livelihoods are dependent on the benefits of nature, such as food, water, and health. These ecosystem services are intricately linked to other social and relational capital, making it difficult to directly assess the contribution of ecosystems to human well-being. On the other hand, given that efforts to assess ecosystem services are being made, it is essential to demonstrate clearly how ecosystems are related to and contribute to our daily life, while utilizing the results of such efforts.

Unlike climate change measures, biodiversity conservation does not have clear indicators, making it difficult to assess the actions to be taken for biodiversity conservation and the benefits of such actions. This poses one of the reasons why biodiversity conservation measures have been lagging behind compared to climate change measures, and why it is imperative to resolve this "lack of clarity" about biodiversity.

Consequently, in the process of planning and implementing biodiversity-related policies and verifying their effects, it is important to clearly show the path from the implementation of measures (inputs) to their results (outputs) and the resulting effects (outcomes) on biodiversity based on the concept of EBPM, and disseminate this information through education and awareness-raising activities.

Additionally, many of the terminologies related to biodiversity are difficult to explain to the general public, such as "natural environment," "ecosystem," and "biodiversity," which tend to be used in a confusing manner and have overlapping concepts with each other. Moreover, some terms are difficult for Japanese people to understand intuitively because they are based on the terminologies in English. Therefore, to promote understanding of biodiversity, there is a need not only to streamline the terms used, but also to convey their essential meanings in simple expressions that can be easily understood by most people.

Furthermore, policies related to biodiversity implemented under this NBSAP should be presented in a way that is easy to understand and consistent with international goals, especially with the GBF. Through such efforts in conveying the significance of each initiative and their contributions to national and global targets will promote the efforts and raise motivations at the field level. At the same time, by reporting progress to international organizations, it will also help the international community to understand Japan's efforts.

3. Respect of Regional Identity and Self-direction

Regional biodiversity is not homogeneous because it has been developed over a long period of time by the natural and social conditions of each region. Accordingly, when implementing measures in this NBSAP, it is important to take into account the natural environment that has developed the biodiversity of the region, the state of distribution of wildlife, history and culture, and the relationship between

people and nature. In this process, it will be particularly effective to establish collaboration with educational and research institutions, experts, and agriculture, forestry, and fishery workers and residents who have lived in the area for many years, to set up a system for obtaining cooperation and advice, and to accumulate and actively make use of the information on knowledge and experiences passed down in the community. Moreover, it is also beneficial to have the perspective of advancing existing activities that are being carried out in the region through making creative efforts.

It is thus essential for local communities to have a sense of responsibility when making decisions, to take the initiative to set their own regional goals, and to promote initiatives that are appropriate for their region. This will not only contribute to the conservation of biodiversity in the region, but also revitalize the region and solve local issues. Furthermore, building networks that link activities in each region and fostering collaborations and partnerships will also help to secure workforce and players, revitalize activities and facilitate objective assessments of the activities.

An effective tool for maintaining and revitalizing biodiversity-related activities in the region and for reviewing the direction of land uses is the LBSAPs, which are developed by the region itself through the participation of various entities. By defining the directions of efforts by each region, the roles of each entity, and the aimed vision of the region, sustainable and attractive regional development plans can be pursued.

4. Efforts aimed at Ecological Connectivity

Today, our planet hosts a diverse range of organisms that have evolved and adapted to various environments. Ecosystems are formed and sustained by the interactions among these organisms and their surrounding environments comprised of air, water, and soil, and are interconnected via the circulation of nutrients or other materials, water cycles, and animal migrations. The organisms found there include migratory birds such as Anatidae that travel across national borders, Asiatic black bears (*Ursus thibetanus*) that roam across prefectural borders, *Ayu* sweetfish (*Plecoglossus altivelis*) and salmons that migrate up rivers from oceans, frogs that move between wetlands and forests within narrow areas, and even creatures that reside in the microhabitats.

Hence, sustainable use and conservation of biodiversity must be approached from the perspective of creating ecological networks that ensure the connection and appropriate allocation of habitats according to their respective ecological characteristics, taking into account the national and even global connectivity. Furthermore, ecological networks should not be confined to mere concepts, but should be incorporated into regional efforts and efforts that extend to surrounding areas as well.

In this process, it is important to capture the related watershed area as a single entity with the watershed as its basic axis. With forests and oceans connected by rivers, much of our lives and culture are built on watersheds serving as units. Activities should not be carried out from the perspective of only one area, but from a broader perspective that takes into account the ecological and cultural connectivity of each watershed unit, thereby bringing about positive far-reaching effects or

repercussions in other regions as well.

Moreover, as there are various levels of connectivity, from trans-basin to national and global connectivity, as well as the connectivity among different levels, a broad perspective that is conscious of each of these connections is essential to promote efforts aimed at resolving issues specific to each region.

5. Efforts with Long-term Perspectives

Socio-economic activities tend to focus on short-term productivity and efficiency. Yet, it is often said that, from a long-term perspective, it is more economical to sustainably conserve natural capital (stock) and utilize the various benefits (flows) that can be derived from that capital, rather than to gain benefits while losing the natural capital. Therefore, the rule is not to seek short-term productivity and efficiency, but to weigh the long-term benefits of sustainably conserving natural capital and harnessing it to the extent that it does not exceed its ability to recover. Furthermore, in light of the fact that natural capital has been continuously depleted over the years, threatening not only business activities but also the sustainability of nature-based cultures and humanity, it is necessary to commit not only to maintaining but also to restoring natural capital, for future generations to be able to enjoy the various benefits that can be derived from it. Some of these natural capitals are used based on the traditional wisdom that people have cultivated over the years. It is important to remember that the conservation and restoration of such knowledge leads to the preservation and inheritance of traditional wisdom, and also contributes to keeping alive Japan's appreciation of nature and love of our homeland for generations to come.

In undertaking individual initiatives, long-term changes must be taken into consideration. For example, the declining birthrate and aging population may make it difficult to sustain local communities and properly manage land. Options such as restoring natural forests and wetlands in the areas and utilizing them as disaster buffer areas should be explored.

In light of this era of uncertainty, with such issues as global climate change and biodiversity loss, various options that can flexibly respond to changing circumstances and foundations for these options are essential to enable better future predictions and to ensure sustainability under various possible scenarios. For this reason, not only is it critical to steadily maintain and restore biodiversity-rich natural capital that is resilient to changes over the long run, but it is also imperative to take prompt actions without postponing the issues that are being encountered, given that it takes a long time to recover degraded natural capital.

6. Active Use for Integrative Solution of Social Issues and Landscape Approach

The declining trends in biodiversity cannot be halted by efforts aimed solely at conservation of the natural environment, such as intensifying ecosystem conservation and restoration, responses to the issues of pollution and invasive alien species, and so on. Joint actions by various sectors, ranging from

sustainable food production to consumption and waste reduction, are considered essential to address the issues. Social understanding, partnerships, and cooperation on biodiversity are therefore indispensable. To halt and reverse biodiversity loss, Nature-based Solutions (NbS) initiatives, which redefine biodiversity, natural capital, and ecosystem services as the foundation of social and economic activities and utilize them to solve various social issues, must be actively pursued to gain social understanding, partnerships, and cooperation. Beyond its main objective of resolving social issues, the NbS are characterized by having multiple benefits, and are also expected to have other multiple effects, including nature's healing properties and positive health effects on people, both of which have been attracting increasing interest in recent years. In this context, some efforts, which aim not at NbS but at conservation of the natural environment, can contribute to resolving issues such as climate change mitigation/adaptation, disaster prevention/mitigation, resource circulation, local and regional economic revitalization, zoonosis, and health. It is therefore important to proactively define those efforts as NbS when promoting social understanding, collaboration, and cooperation.

The landscape approach is recognized as one of the most effective methods to achieve the conservation and sustainable use of biodiversity, including NbS. This approach is based mainly on land and space planning in a certain area or space, and is designed to comprehensively address various human activities and the natural environment in order to draw out solutions to problems. Instead of pursuing conservation of the natural environment and resolving social issues separately, the aim is to clarify synergies and trade-offs between biodiversity and other social issues at various scales by region, by integrating natural and social conditions, and by coordinating various efforts through the participation of various entities in the region, aim to realize ideal land use. To this end, it is crucial to clearly provide various types of information on maps and to review them as “spatial plans”. This approach is not only useful for terrestrial areas, but also for seascapes such as *satoumi* (coastal areas where biodiversity is conserved and high biological productivity is maintained based on the situation of each region.), as well as for efforts that span both land and sea, and is therefore expected to be applicable to a wide range of local efforts related to land uses.

7. Promoting Cooperation and Collaboration among Various Entities

Cooperation and collaboration among various entities and actors will become even more critical to proactively pursue the conservation and sustainable use of biodiversity, including NbS.

To this end, mechanisms to enable closer cooperation and collaboration among various entities, ranging from the national government, local governments, agriculture, forestry, and fishery companies, businesses, private sector organizations, experts, educators, and local residents, are required to be set up in local communities. Another important approach is for the seniors, who represent the traditions and wisdom of the community, and the younger generations, who will lead the community going forward, to work together in making decisions, while identifying the visions that the community seeks to achieve. In addition, the mutual sharing of human resources, funds, knowledge, and connections

between the rural areas, which provide the benefits of nature, and the urban areas, which receive them, as well as the establishment of wider-area networks for the transfer of know-how between regions, constitute important components for the effective and efficient implementation of sustainable efforts in society with declining populations. In addition, the cases where businesses are working with private entities and local governments are increasing, and therefore, such perspective to promote the collaboration with businesses is also indispensable. Coordination by intermediary support organizations and participation of experts with scientific expertise are also valuable. Moreover, to reflect diverse value systems that differ by gender, generations, and other factors, and to promote the proactive efforts, it is necessary to enable relevant entities to participate in the efforts of cooperation and collaboration.

To support such efforts, it is indispensable to build collaborative systems among and within government organizations. From the level of the central ministries and agencies to the level of the local government departments, it is important for cooperation to be continued at various levels in order to effectively and efficiently facilitate local efforts.

Section 2: Evaluation and Examination of Progress

1. Support for International Frameworks

The GBF has increased the number of numerical targets from the Aichi Biodiversity Targets and also included headline indicators that all countries are required to use in common in their national biodiversity strategies and national reports, in order to measure progress toward achieving global targets. According to the national biodiversity strategies and targets, which will be revised by parties based on the global framework, analysis will be conducted at each meeting of the CBD COP to assess the contributions that each country intends to make to the framework. Furthermore, global reviews will be performed at COP17 and COP19 to examine and evaluate the progress of efforts by countries to achieve the global targets based on the national reports. These efforts have substantially improved the evaluation process and enhanced the connection between the global targets and national biodiversity strategies of each country, including the establishment of a framework for reviewing efforts in each country and proposing improvements in the effort level, as necessary.

Based on such developments, the Committee of the Ministries on the National Biodiversity Strategy of Japan, which is comprised of relevant ministries and agencies, will establish indicators to measure the progress of state-oriented targets and action-oriented targets, which are the national targets based on the framework, taking into account the status of biodiversity in Japan, when implementing this NBSAP. The headline indicators of the framework are designed to be commonly used by all countries, but since the details of the indicators are to be determined by COP16, the positioning of state-oriented targets and action-oriented targets in the NBSAP will be determined in due course, based on the developments in the international discussions. Part 2 of this NBSAP summarizes individual measures taken by the Japanese government by 2030 to achieve the action-oriented targets in order to

identify the progress of state-oriented targets and action-oriented targets using indicators and grasp the implementation status of each measure of this NBSAP.

Efforts by the government include effectively and efficiently examining and evaluating the implementation status of this NBSAP, taking into account the timing of international reporting and evaluation processes. Specifically, regular inspections of the implementation status of indicators and individual measures, as well as mid-term and final evaluations of this NBSAP will be conducted in accordance with the timing of preparing the national reports that parties are required to submit for the global review. However, if the compilation of national reports for the final evaluation of the GBF falls at a timing that is inappropriate for the final evaluation of this NBSAP, the information in the national reports will be updated in the final year of the NBSAP as the final evaluation.

Furthermore, review and reconsideration of indicators and individual measures based on interim and final evaluations, as well as those of the NBSAP itself based on the results of the global review will be considered as necessary.

2. Examinations and Evaluations

The indicators to measure the progress of the state-oriented targets and action-oriented targets of this Strategy and the examination of the implementation status of the individual measures described in the Part 2 will basically be checked once every two years, taking into account the international reporting and evaluation processes. The results will be summarized by the Committee of the Ministries on the National Biodiversity Strategy of Japan.

Moreover, to grasp how biodiversity and ecosystem services in Japan have changed through the efforts based on this Strategy, the information provided by research and monitoring will continue to be collected, and the information will be compiled and assessed as the “Japan Biodiversity Outlook (JBO)”. In particular, state-oriented targets will be evaluated effectively and efficiently by aligning the assessments of the achievement status of this NBSAP with the assessment by the JBO.

Evaluation of the achievement will be conducted as interim and final evaluation, in accordance with the international reporting and evaluation processes. In the evaluation processes, efforts towards the achievement of the action-oriented targets will also be evaluated in terms of how they are linked to the achievement of the state-oriented targets.

3. Review and Revision

The indicators for measuring progress of state-oriented targets and action-oriented targets of the NBSAP and the individual measures described in its Part 2 will be updated or added as required based on the results of the evaluation of the achievement status of the state-oriented targets and action-oriented targets in the interim assessment and the trends of international discussions on headline indicators. The results will be summarized by the Committee of the Ministries on the National

Biodiversity Strategy of Japan.

This Strategy will be revised as necessary based on the results of the global review.

Furthermore, the next National Biodiversity Strategy and Action Plan will be developed based on the results of the final evaluation and JBO, as well as information from research results related to the assessments and forecasting of biodiversity and ecosystem services.

4. Alignments with Related Plans

The National Biodiversity Strategy shall be developed based on the Basic Environment Plan as stipulated in Article 12.1 of the Basic Act on Biodiversity. It is therefore required to ensure consistency with the contents of the Basic Environment Plan. Specifically, when drafting the next Basic Environmental Plan, the items described in this Strategy will be incorporated, and when revising this Strategy, the contents of the next Basic Environmental Plan will be taken into consideration.

In addition, alignments with other national plans related to this Strategy such as the Plan for Global Warming Countermeasures, Fundamental Plan for Establishing a Sound Material-Cycle Society, and the MIDORI Strategy and other relevant national plans will be carried out. In addition, efforts will be made to standardize examinations and other tasks to the extent possible with the strategies, and guidelines developed by relevant ministries and agencies, and to align them in terms of contents of this Strategy to ensure efficient and effective implementation.

Section 3: Mechanisms for Monitoring Progress of Efforts by Various Entities

The GBF recognizes the importance of localized efforts to achieve the global goals, and this requires the participation of various entities in the efforts. For this reason, this Strategy also places importance on the proactive efforts of various entities and the cooperation and collaboration of each entity. In order to evaluate the state of achievements of this Strategy, it is important to understand how to grasp, analyze, and assess the efforts of various entities.

However, the results of efforts by entities other than the national government have not been sufficiently taken into account in the examination and evaluation of the national biodiversity strategy to date. Thus, in implementing this Strategy, the government will build a mechanism to consolidate the efforts made by various entities, such as local governments, corporations, NPOs, and individuals, to contribute to the achievement of this Strategy's goals, and will quantitatively assess the extent to which the efforts of each entity have contributed to the achievements of these goals. In establishing the mechanism, the information collected will be shared back to each entity, and efforts and considerations will be made to further increase motivation, improve technology, and promote collaboration among entities.

Section 4: Expected Roles of Each Entity and Cooperation among Them

This Strategy summarizes the basic concepts and national policies related to the conservation and

sustainable use of biodiversity. However, achieving the goals requires participation, coordination, cooperation, collaboration, and actions by all entities, not just the national government. This section describes some representative examples of the roles and cooperation among entities expected of various entities including the national government in order to achieve the basic strategies.

1. National Government

Acting as the main entity to implement the NBSAP, the government will set targets which will also contribute to the achievement of the global goals, and at the same time, undertake measures from a nationwide and international perspectives, in a broad and unified manner, utilizing all possible methods. To ensure the effective implementation of the measures defined in the action plan of this NBSAP, efforts will be pursued in close collaboration among relevant ministries and agencies, local governments, and business operators, and also between all levels from the ministry, regional government headquarters, and corporate headquarters level to the field level. The government will also provide information and technical and budgetary resources to enable all the actors to fulfill their expected roles. Furthermore, given the numerous efforts at the regional level for biodiversity, the government expects to play coordinating and supporting roles to ensure that each regional effort is aligned with national efforts for better results.

With respect to the 30by30 target defined in Basic Strategy 1, for example, the government will designate or expand protected areas and enhance their management. To encourage the certification of the Nationally Certified Sustainably Managed Natural Sites by various entities, the government will not only establish schemes but also demonstrate the significance and importance of conservation of these areas, including incentives, methods to local governments, businesses, resident groups, and so on, thereby encouraging regional, local and community-based conservation efforts by various entities through cooperation.

In application of Nature-based Solutions (NbS) to address social challenges described in Basic Strategy 2, the government will identify ideal approaches for resolving social issues such as climate change, human health, and human-wildlife conflicts by making use of biodiversity-rich natural environments, and at the same time, establish institutions and develop methods necessary for implementing these approaches.

In integrating biodiversity and the economy described in Basic Strategy 3, the government will develop guidelines for biodiversity-conscious business activities, operate certification systems, and build foundations for biodiversity-conscious investments and financing such as information disclosure, as well as actively disseminate examples of good practices to ensure that biodiversity is taken into account in all business activities, while keeping in mind international trends. In addition, the government itself will make the efforts in environment-conscious actions, such as giving full consideration to reducing the burden to biodiversity in procurement of goods and maintenance and improvement of facilities.

In the efforts toward changing individual behavior described in Basic Strategy 4, the government will explain in a manner that is easy to understand how biodiversity is connected with the daily life of each individual, what actions are needed to protect biodiversity, and launch dissemination and awareness-raising activities to promote biodiversity as a national movement jointly with local governments and businesses, based on insights from behavioral science.

As the foundation for pursuing these activities, the government will develop a nationwide and wide-area information and research framework on biodiversity as outlined in Basic Strategy 5, and develop technologies for the conservation and sustainable use of biodiversity. Furthermore, in aiming towards global biodiversity and its sustainable use, the government will play an active role in the formation of fair and effective international rules, cooperate with developing countries, especially in the Asia-Pacific region, in efforts to build sustainable societies and enhance international partnerships.

2. Local Governments

Local governments play a crucial role in promoting the conservation and sustainable use of biodiversity in Japan through meticulous efforts that are attuned to the natural and social conditions of their respective regions. Among them, municipalities are expected to play a key role in promoting activities related to biodiversity that are familiar to local residents in their daily life as well as in human resource development through school education and social education. Prefectures are also expected to play crucial roles in facilitating wide-area efforts such as the establishment of ecological networks and the formation of human networks that transcend municipalities, as well as in promoting inter-municipal cooperations and offering human, technical, and financial supports for municipal efforts.

For example, to achieve the 30by30 target outlined in Basic Strategy 1, it is expected that the targets will be set at the municipal or prefectural levels, and local residents and local businesses are encouraged to work together to conserve not only prefectural natural parks and protected areas under local ordinances, but also more regionally rooted areas such as *satoyama*, biotopes, grounds within shrines and temples, and urban green spaces that are valued by local residents. Prefectures are expected to set targets and to promote collaborative efforts among municipalities each of which has different percentages of protected areas, accumulate know-hows and information in accordance with local conditions, and establish human resource networks.

In application of Nature-based Solutions (NbS) to address social challenges described in Basic Strategy 2, for example, local governments are expected to work with related entities to show how the facilities for renewable energy should be introduced in a way that does not burden biodiversity and that is in harmony with the local communities. Moreover, it is also expected that they will be proactive in making use of nature to solve local challenges, such as disaster prevention and mitigation, human health, and community revitalization. By combining the wide-area insights possessed by prefectures with the region-specific information possessed by municipalities, spatial plans can be developed and implemented more effectively.

In the integration of biodiversity and economy outlined in Basic Strategy 3, local governments are expected to boost the revitalization of local economy utilizing nature by promoting sustainable agriculture, forestry, and fisheries that give consideration to biodiversity, promote matching between businesses and urban residents and local activities, increase the added value of local products and expand the population involved.

In the efforts toward changing individual behavior described in Basic Strategy 4, local governments are expected to work with the national government and businesses to raise awareness and educate the residents on actions needed to conserve biodiversity, and to provide support and guidance related to activities run by educational institutions, as described later, while making the most of regional characteristics.

With regards to Basic Strategy 5, which serves as the foundation for implementing these efforts described above, in formulating LBSAPs, the basic administrative plans for biodiversity, local governments are expected to define their local efforts for biodiversity, set targets that contribute to achieving global goals and the objectives of this Strategy, and share their progress and achievements broadly, including the national government. Moreover, local government plans are expected to incorporate biodiversity perspectives in various administrative fields and to involve all local entities in their planning. Thus, it would be beneficial to pursue interdisciplinary efforts by developing LBSAPs integrally with the Basic Environmental Plan and Master Plan for Parks and Open Spaces. Since ecosystems are connected beyond administrative boundaries, it would be effective for multiple local governments to work together to develop LBSAPs watersheds level and other units, to pursue efforts that are based on ecological networks.

3. Businesses

While businesses, regardless of their size or type, use some forms of natural capital in their business activities to supply products and services through their business activities, they also impose burdens on biodiversity by changing land uses, emitting pollutants, and introducing alien species. Accordingly, they are expected to understand the connections between their own business activities and biodiversity, and to develop measures to reduce the burden on biodiversity and establish systems to implement such measures, together with their suppliers and customers. Basic Strategy 3 of this Strategy outlines targets for these business activities, and businesses are expected to play central roles in these activities.

Particularly in the supply chains, it is imperative to reduce biodiversity impacts in each process from production, to transportation, processing, sales, and disposal of raw materials. On the other hand, by providing technologies, products, and services, businesses can contribute to biodiversity conservation and reduce biodiversity impacts in many aspects of society through their value chains. They are required to be aware of the connections between the supply chains and value chains surrounding them, and disclose information in a transparent and appropriate manner.

In terms of agriculture, forestry, and fisheries, businesses are expected to take biodiversity into

consideration and actively engage in sustainable production activities to provide more ecosystem services. In development projects, businesses should take necessary measures to prevent negative impacts on biodiversity as a result of implementing their projects. As for financial institutions, they are required to contribute to biodiversity conservation through ESG finance, such as by giving priority to lending to biodiversity-conscious business activities.

In addition to their business activities, businesses are also expected to contribute to society. Their efforts for biodiversity conservation together with local residents as a united way, and provisions of funding will also significantly contribute to regional biodiversity conservation. Some green spaces within the factory premises and company-owned forests serve as habitats for diverse plants and animals. The management of such areas as OECMs would also contribute to biodiversity conservation.

4. Research Institutes, Researchers, and Academic Organizations

Based on the findings from fundamental and applied research and monitoring surveys, research institutes, researchers, and academic organizations play a role in providing knowledge for policy-making on biodiversity conservation, such as impacts of Japan's socio-economic activities on biodiversity nationally and internationally, as well as proposing effective biodiversity conservation measures and communicating these to society in a manner that is easy to understand. Research institutions, researchers, and academic organizations are the main actors in Basic Strategy 5, which serves as the foundation for Basic Strategies 1 to 4.

Amid claims that transformative change is required to halt and reverse biodiversity loss, interdisciplinary research spanning academic fields which integrate natural scientific understanding and humanistic sociological understanding is becoming increasingly important. Looking ahead to the utilization of research results, these research entities are expected to work closely with local governments, local activity groups, businesses, and other various entities. In particular, some communities may not have sufficient information and knowledge when implementing community-based activities related to biodiversity. Researchers, as the experts, are expected to provide their knowledge to local governments, local groups, and businesses, and to support their activities.

Academia is also expected to play a prominent role in international endeavors, utilizing Japan's knowledge and experience to contribute to international cooperation and international organizations and frameworks such as the Secretariat of the CBD and IPBES.

In this way, the roles of research institutions, researchers, and academic organizations are wide-ranging. Their efforts in fostering future generations of researchers and technicians with cutting-edge expertise and extensive visions are also hoped for.

5. Educational Institutions (e.g., Schools, Museums)

Educational institutions play a role in encouraging behavior changes by facilitating knowledge

acquisition and experiential activities among the public broadly, as venues for school education and social education. In addition to providing educational activities, educational institutions also play a role in connecting governments, research institutions, and local residents to promote various activities.

In the efforts toward changing individual behavior described in Basic Strategy 4, educational institutions are expected to foster public interests in biodiversity and in the connections between people and nature, improve knowledge, and encourage changing behavior in the school education setting. They are expected to cultivate leaders and the workforce related to biodiversity. In addition, they are also expected to provide opportunities for learning, experiencing, and participating in activities through museums and facilities outside of schools. Furthermore, by implementing these activities jointly with entities operating in the local communities, it should help pass on the traditional culture and traditional and local knowledge of the local communities to the next generation.

6. Private Organizations (e.g., NGOs, NPOs)

Private organizations such as NGOs and NPOs form the cores of the efforts to implement various activities to conserve biodiversity unique to respective regions in Japan and abroad, such as participation of citizens of the country, monitoring and natural environment education, and when providing programs and creating systems to welcome the wider participation of individuals. Moreover, activities by private organizations, such as conservation activities in developing countries and collection and analyses of scientific information from an international perspective, play a crucial role in advancing the conservation and sustainable use of biodiversity on a global scale. Private organizations are expected to serve as the driving forces in all areas of basic strategies 1 through 5 of this Strategy.

For this reason, private organizations are expected to actively participate in the implementation of this Strategy, from planning to implementation and evaluation, and playing a central role in the implementation of activities, by proposing activity plans and participating in local councils, drawing on their experiences and knowledge of nature in their local communities.

In addition, they are also expected to promote inter-regional collaborations by leveraging networks with government agencies, research institutions, and private organizations in other regions.

7. Citizens of the Country

To halt and reverse biodiversity loss, society must change as a whole. Each and every citizen of the country must be aware of the benefits of nature that they enjoy in their everyday life and that they have an impact on biodiversity both domestically and internationally, and that changing their behavior based on this awareness, as described in Basic Strategy 4, will help them to shift to a sustainable lifestyle that is biodiversity-conscious.

Local communities also play a key role in community-based efforts to conserve the natural

environment. However, in recent years, some regions are struggling to maintain their communities due to a decrease in community members caused by the declining birthrate and aging population, as well as the thinning of bonds among residents. For this reason, individual residents must realize that they are part of their local communities, and protect and preserve local resources such as traditional and local culture and *satoyama* for future generations.

In local communities, elderly persons are expected to make use of their past experiences and pass on their history and experiences of natural disasters, as well as traditional knowledge and culture nurtured by biodiversity to the next generation. It is also important for young people, who will lead the next generation, to be able to participate more easily in local decision-making. Efforts to involve young people and collaborate with other communities and organizations to adopt new perspectives and values can lead to innovative new methods for community revitalization, which could be a way to enhance regional sustainability.

In order to apply these new perspectives and values to regional developments, local residents should participate proactively in the formulation of LBSAPs and other administrative plans.

Through social media, people can now easily connect with others at any time. The sharing of information about biodiversity-related efforts by individuals could therefore help to create far-reaching effects throughout society. This signifies the increasingly important roles of the individuals in steering the whole Japanese society toward nature-positive attitude. The citizens of the country are therefore required to raise their awareness of biodiversity conservation in their daily life.

Part 2 Action Plan

Introduction

The second part of this NBSAP (Part 2 Action Plan) summarizes and exhaustively describes the specific measures to be taken by the government by 2030 to achieve the action-oriented targets set forth for each of the five basic strategies outlined in Chapter 3 of the first part (Part 1 Strategy).

For each action-oriented target, the current status and the basic concepts of the required measures are described, followed by a summary of measures based on details and scope of efforts need to be taken. The ministries and/or agencies which are responsible for the implementation of each measure are indicated, and where possible, the current status of indicators and numerical targets related to the measures are shown to better understand the status of the implementations. For measures that are set with numerical targets, those for 2030 are indicated. If no numerical target has been set for 2030, targets that can be presented at this time are indicated, such as indicators for a certain target year (fiscal year) set in other existing plans and strategies, or figures that have been continuously maintained without setting a specific target year. A "-" indicates there is no numerical target being set.

Regarding the measures, those that will be newly implemented or those that will be enhanced or improved with ambitious targets are identified as priority measures, and are marked with "priority" at the end of the name of the measures.

In implementing the measures, the seven "basic policies for implementation" described in Section 1 in Chapter 4 of Part 1 (Strategy) will be taken into consideration.

The specific measures will be enhanced and improved as needed, based on the changes in the national and international status of biodiversity as well as the progress of each measure, including the results of the global review of the collective progress in the implementation of the Kunming-Montreal Global Biodiversity Framework (GBF) scheduled in 2025 or later.

Chapter 1: Restoration to Healthy Ecosystems

Action-oriented target 1-1: Conserve at least 30% of land and sea as protected areas and Other Effective area-based Conservation Measures (OECMs), and enhance the effectiveness of the management of these areas

What is needed to ensure healthy ecosystems are area-based conservation, effective management and the network development among them. The G7 countries, including Japan, have stressed their commitment to achieving the 30by30 target of conserving at least 30% of land and sea by 2030 for biodiversity conservation.

As of January 2023, 20.5% of land and 13.3% of sea in Japan are conserved as protected areas[6]. In

[6] For terrestrial areas, the percentage of protected areas to the total national land is calculated based on geographic information available. Overlapping areas are excluded. The protected areas include natural parks, Natural Seashore Conservation Areas, Nature Conservation Areas, Wildlife Protection Areas, Habitat Protection Zones, Suburban Special Green Conservation Areas, Special Green Conservation Areas, Protected Forest, Green Corridors, natural monuments, and other protected areas designated by prefectural ordinances. For marine areas, the percentage of total area of Marine Protected Areas within national jurisdiction is calculated. Overlapping areas are excluded.

order to achieve the 30by30 target, it is essential to expand protected areas such as national parks and improve the quality of their management, as well as to promote the establishment and management of OECMs.

With regard to the expansion of protected areas in terrestrial areas, coordination will be made progressively toward the designation/expansion of candidate sites selected based on latest data for new designation or large-scale expansion of national and quasi-national parks. In addition to consideration aimed at improving the quality of management, review and inspection of existing national and quasi-national parks will be further enhanced by 2030. If needed, the government will incorporate the adjacent areas or upgrade zonal classification. For marine areas, the aim is to double the area of Marine Special Zones in national parks by 2030, particularly in coastal areas that play an important role from the perspective of landscape and utilization, and that contribute to the conservation of biodiversity. As for national parks, while working with a wide range of stakeholders, the government will form a virtuous cycle of protection and use through the projects such as the Project to Fully Enjoy National Parks, and improve protection and management measures and management systems. In addition, for existing protected areas that are not applicable for designation or large-scale expansion, appropriate conservation and management will be steadily implemented in accordance with laws and regulations.

With respect to the establishment and management of OECMs, the government will establish schemes to certify areas in which biodiversity conservation is being promoted through efforts of private sector and the like on priority basis as "Nationally Certified Sustainably Managed Natural Sites" and list them in the World Database on Other Effective area-based Conservation Measures (WD-OECM), excluding any overlap with existing protected areas. In addition to that, given that forests, rivers, urban green spaces managed in accordance with government systems represent critical areas for building ecological networks, relevant ministries and agencies will work together to investigate areas that fall under the definition of OECMs, and recognize those areas that are appropriate as OECMs. For marine areas, the relevant ministries and agencies will investigate applicable areas to recognize the areas to be organized in the OECMs, where both multi-use and biodiversity conservation can be achieved through effective management and monitoring in cooperation with various entities.

In order to strengthen the system that supports those measures, the government will enhance cooperation with various stakeholders, improve basic surveys and monitoring, and promote visualization of the status of biodiversity by creating maps to visualize areas that are effective for conservation.

Specific Measures

1-1-1 Large-scale expansion of national and quasi-national parks (Priority)

- **Following up on project to overhaul national and quasi-national parks**

  Through cooperation with relevant organizations, the government will progressively proceed towards designations and large-scale expansions by 2030, mainly targeting candidate sites selected in FY2022 for new designation or large-scale expansion of national and quasi-national

parks. (MOE)

Current status and target

Indicator	Current status	Target value
Number of newly designated or significantly expanded national and quasi-national parks (cumulative)	―	14 (2030)

- **Doubling area of Marine Special Zone**

  For marine areas, the government will make effort to double the area of Marine Special Zones in national parks by 2030, particularly in coastal areas that are important in terms of landscape and utilization and contribute to the conservation of biodiversity. (MOE)

Current status and target

Indicator	Current status	Target value
Area of Marine Special Zones	55,088 ha (End of FY2020	110,176 ha (2030)

1-1-2 Reinforcement of overhaul of park plans for national and quasi-national parks

In order to improve the quality of management of protected areas, the government will enhance efforts to review and inspect existing national and quasi-national parks, taking into account the results of the follow-up to the project to overhaul national and quasi-national parks and review of the natural park system, and promote the incorporation of adjacent areas into parks and upgrading of zonal classification, where necessary. (MOE)

Current status and target

Indicator	Current status	Target value
Number of national park areas (plans) less than 10 years since the last review of the park plan	25 (End of 2022)	50 (2030)

1-1-3 Enhancement of management of national and quasi-national parks

- **Enhancement of management system of national parks and others**

  Management system of national parks will be enhanced by allocating more local staff from the Ministry of the Environment, promoting designation of park management organizations to manage natural scenic areas, and so on. In addition, through training of natural park adviser s and park volunteers, the proper use of natural parks and other natural areas and their protection activities will be enhanced. (MOE)

Current status and target

Indicator	Current status	Target value
Number of designated park management organizations	7 (End of FY2022)	More than 15 (End of FY2022)

Number of registered park volunteers	1,284 (End of FY2021)	More than the previous fiscal year
Number of registered natural park adviser	2,266 (Jan. 2022)	More than the previous fiscal year

- **Enhancing management through community participation**

  For national parks and other parks, local private businesses, who are familiar with the natural conditions of the local area, will be utilized to implement natural environment conservation activities in cooperation with public and private sectors, and improve management and conservation system led by the private sector (Green Worker Program). In addition, in marine areas designated as Marine Special Zones that boast exceptional scenery such as coral and seaweed beds, measures will be implemented by establishing an excellent management system designed to balance protection and use and by introducing effective management methods, such as eradicating crown-of-thorns starfish (*Acanthaster planci*) to prevent coral feeding damage (Marine Worker Program). (MOE)

- **Coordinating use in national parks**

  In order to prevent destruction of vegetation due to excessive use by the concentration of users and disturbance of wildlife habitats, and to secure places for visitors to experience quality nature, appropriate facilities will be installed such as wooden paths in marshes and fences to prevent entry in alpine plant communities. Moreover, to disperse and equalize use, management methods will be examined and implemented such as designating Utilization Management Zones in accordance with the Natural Parks Act (Act No. 161 of 1957) and designating Specified Natural Tourism Resources in accordance with the Ecotourism Promotion Act (Act No. 105 of 2007), as well as creating and delivering limited experiences. (MOE)

- **Sika deer (*Cervus nippon*) control in national parks and other parks**

  In areas suffered or likely to be suffered serious ecological damage caused by Sika deer, such as national parks that play critical roles in the conservation of Japan's biodiversity, projects for protecting natural scenic areas such as national parks will be carried out to work towards their conservation. (MOE)

- **Projects supporting mountain environment conservation measures (mountain toilets)**

  In order to improve the public service functions of private mountain lodges, support will be provided for environmental improvement (e.g., building mountain lodge toilets) to conserve the beauty of mountain areas such as national parks, maintain hygiene, and conserve and ensure appropriate use of natural environments. (MOE)

Current status and target

Indicator	Current status	Target value
Number of facilities with environmentally friendly toilets, etc	42	Approx. 100 (2030)

- **Specific private land purchase schemes**

  Privately-owned lands located within national parks that are important for the conservation of the natural environment and are in strong need of protection in terms of biodiversity conservation will be purchased to strengthen the protection and management of these areas. (MOE)

1-1-4 Regulations and management of existing protected areas based on laws and regulations

In existing protected areas*, appropriate management and surveys will be steadily implemented based on laws, regulations, and systems, and if necessary, new areas will be designated or areas will be reviewed. (MOE, MAFF, MEXT, MLIT)

* Terrestrial and inland water protected areas (Applicable systems will be reviewed as necessary)

Type	Area
Natural parks (National parks, quasi-national parks, prefectural natural parks)	5,602,912 ha (As of Mar. 2022)
Natural Seashore Conservation Areas	91 areas
Nature Conservation Areas (Wilderness areas, Nature Conservation Areas, prefectural Nature Conservation Areas)	104,637 ha (As of Dec. 2020)
Wildlife Protection Areas	3,515,000 ha (As of Nov. 2021)
Habitat Protection Zones	1,489 ha (As of Jul. 2021)
Suburban Special Green Conservation Areas	3,754 ha (As of Mar. 2021)
Special Green Conservation Areas	2,896 ha (As of Mar. 2021)
Protected Forests	981,000 ha (As of Apr. 2022)
Green Corridors	584,000 ha (As of Apr. 2022)
Natural monuments	―
Other protected areas specified by prefectural governments ordinances	―

*: The 20.5% share of protected areas in Japan's terrestrial area is based on calculations of the areas for which geographic information is available in these areas, after excluding any overlapping areas. For this reason, it does not match the total of the official designated areas shown above.

* Coastal and Marine Protected Areas (Applicable systems will be reviewed as necessary)

Type	Area (with some overlaps)
Natural parks	19,115 km^2
Natural Seashore Conservation Areas	91 areas
Nature Conservation Areas	1 km^2
Offshore Seabed Nature Conservation Areas	226,834 km^2
Wildlife Protection Areas	661 km^2
Habitat Protection Zones (No marine areas designated)	―
Natural monuments	―
Protected water surfaces	28 km^2

Coastal fisheries resource development zones, designated marine areas	333,616 km^2
Areas designated by prefectures, fishery organizations, etc	–
Common fishery right areas	87,200 km^2

Note: The 13.3% share of protected areas in Japan's marine area does not match with the percentage of the total area above due to overlapping areas.

(Data updated based on the Ministry of the Environment's "Survey and Study for Discussions on International Targets after 2021 under the Convention on Biodiversity" report issued in FY2021)

1-1-5 Conservation of endangered species in Habitat Protection Zones

Based on the protection guidelines set forth for Habitat Protection Zones, the habitat/growth status of target species will be monitored and managed appropriately. Efforts will be made to maintain and improve the habitat. In addition, in order to strengthen the conservation of endangered species, protection guidelines and the zones will be reviewed as needed. (MOE)

1-1-6 Enhancement of conservation and management of Natural World Heritage

After Shirakami-Sanchi and Yakushima were inscribed on the World Heritage List as the first natural World Heritage sites in Japan, new candidate sites were reviewed, and Shiretoko and Ogasawara Islands were inscribed. Then, in July 2021, Amami-Oshima Island, Tokunoshima Island, Northern part of Okinawa Island, and Iriomote Island, which had been left as candidate sites, were also inscribed. In these sites, monitoring surveys will be conducted based on the management plans. Efforts will be made to enhance adaptive conservation and management by addressing various issues such as measures against alien species, wildlife management, tourism management, river restoration, forest management, and climate changes in light of discussions at the UNESCO World Heritage Committee, while seeking regional agreements through discussions at regional liaison meetings and scientific committee meetings. (MOE, MOFA, MEXT, MAFF)

Target: Establishment of World Heritage Centers in heritage sites

Establishing a World Heritage Center in each region, providing lectures, and so on prior to the use of World Heritage sites for tourism, providing facilities (e.g., VR) where visitors can enjoy the values of the sites, and establishing systems for ensuring the appropriate protection and management of the sites in each region and public awareness systems for dealing with users, including foreigners.

Current status: World Heritage Centers and facilities with equivalent functions have already been built in Shiretoko, Shirakami-Sanchi, Ogasawara Islands, and Yakushima.

1-1-7 Promotion of preservation and utilization of natural monuments

Of fauna and flora of high academic value to Japan, those that are important as natural monuments

will be designated. Support will be provided for distribution and ecological surveys, maintenance and restoration of habitats and living environments, and measures against feeding damage. In addition, partial subsidies will be provided for projects in which local governments bring land designated as natural monuments into public ownership. (MEXT)

1-1-8 Promotion of efforts aimed at conservation and sustainable use of biodiversity based on the Basic Plan on Ocean Policy

In order to conserve the irreplaceable marine environments, based on the Basic Plan on Ocean Policy and in accordance with the Convention on Biological Diversity (CBD) and other international commitments, efforts will be made to promote the establishment and enhance the management of marine protected areas (MPAs) and OECMs for the conservation of marine biodiversity and sustainable use of ecosystem services in order to achieve the 30by30 target. In addition, efforts will be made to conserve and restore vulnerable ecosystems such as coral reefs, seaweed beds, tidal flats, and deep sea, which play an important role as habitats for diverse organisms, but are also vulnerable to climate change and other factors. (MOE, relevant ministries and agencies)

1-1-9 Basic survey and monitoring of Offshore Seabed Nature Conservation Areas (Priority)

In order to appropriately manage the Offshore Seabed Nature Conservation Areas, basic surveys on the status of natural environments will be conducted at the time of designation of the area by analyzing images and eDNA in unique ecosystems existing in seamounts, hydrothermal vent areas, ocean trenches, and so on. Monitoring surveys will be continuously conducted to understand environmental changes in protected areas. In addition, the development of biodiversity monitoring technologies for deep sea areas will be carried out and such technologies will be applied to the management of Offshore Seabed Nature Conservation Areas. (MOE, MEXT)

Current status and target

Indicator	Current status	Target value
Total number of survey sites in Offshore Seabed Nature Conservation Areas	2	14 (2030)
Number of information provided to the Ministry of the Environment and others	More than once a year	More than once a year

1-1-10 Development of efficient deep sea ecosystem monitoring technologies

A monitoring method that incorporates simple equipment and the latest analytical technology will be developed, as the current deep sea ecosystem monitoring method requires large equipment and high cost. It will be utilized for the management of Offshore Seabed Nature Conservation Areas, and so on. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of cases where the developed technology has been used	none	More than once
Number of information provided to the Ministry of the Environment and others (number of committee meetings attended)	More than once a year	More than once a year
Number of scientific papers	More than one report per year	More than one report per year

1-1-11 Promotion of activities to create *Sato-Umi* areas and dissemination of information

The government will comprehensively promote the creation of *Sato-Umi* areas led by communities where biodiversity and biological productivity are ensured, based on the Report on Future Measures for Environmental Conservation in the Seto Inland Sea (Central Environment Council, March 2020) and the Act on Special Measures concerning Conservation of the Environment of the Seto Inland Sea (Act No. 110 of 1973) revised in June 2021. In addition, information on the concept of *Sato-Umi* will be disseminated domestically and internationally through the utilization of the website about *Sato-Umi* symposiums and other means. (MOE)

Target: Expansion of Natural Seashore Conservation Areas, promotion of creation of *Sato-Umi* areas which bring about virtuous cycle of conservation and restoration of coastal environments, and utilization of local resources.

1-1-12 Activities based on 30by30 Alliance (Priority)

Pioneering efforts related to the 30by30 target will be encouraged through the 30by30 Alliance for Biodiversity, a consortium of volunteers with core members of 21 organizations from industry, business and government agencies, including the Ministry of the Environment. (MOE)

Current status and target

Indicator	Current status	Target value
Number of 30by30 Alliance participants	337 (Dec. 2022)	500 (2025)
Number of Nationally Certified Sustainably Managed Natural Sites	-	100 (2023)

1-1-13 Promotion of certification of Nationally Certified Sustainably Managed Natural Sites (Priority)

A scheme to certify areas where biodiversity conservation is being promoted through the efforts of the private sector and others as Nationally Certified Sustainably Managed Natural Sites will be officially launched in FY2023, with the aim of certifying more than 100 sites nationwide by 2023. Certified sites will be registered in the WD-OECM, except for overlaps with existing protected areas. Certification will be promoted through batch certification, cooperation agreements with organizations, and 30by30 Alliance to secure as many sites as possible to achieve the 30by30 target.

(MOE)

Current status and target

Indicator	Current status	Target value
Number of Nationally Certified Sustainably Managed Natural Sites	-	100 (2023)
Percentage of protected areas and OECMs in the terrestrial area in Japan	20.5%	30% (2030)

1-1-14 Consolidation of areas that qualify as OECMs among the areas managed under national systems and so on (Priority)

After reviewing areas managed under national systems and so on that may qualify as OECMs, appropriate areas will be organized as OECMs. (MOE)

Current status and target

Indicator	Current status	Target value
Percentage of protected areas and OECMs in the terrestrial area in Japan	20.5%	30% (2030)

1-1-15 Consideration of OECMs recognition in marine areas (Priority)

In order to recognize marine areas as OECMs where both multi-use and biodiversity conservation can be achieved through effective management and monitoring in cooperation with various entities, candidate marine areas for OECMs will be investigated based on such as Ecologically or Biologically Significant Marine Areas (EBSAs), existing scientific information such as fisheries, and the development status of seabed mineral resources. In addition, effective monitoring methods following recognition will be reviewed. (MOE, MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of MPAs and OECMs within the waters under Japan's jurisdiction	13.3% (2021)	30% (2030)

1-1-16 Compilation of biodiversity information serving as a basis for designation of MPAs and OECMs

In order to contribute to the promotion of marine biodiversity conservation and sustainable use, including the achievement of the 30by30 target, biodiversity information will be collected and organized as a basis for the effective establishment of MPAs and OECMs, while utilizing existing EBSAs. (MOE)

1-1-17 Visualization of importance of biodiversity and conservation effects (Priority)

A map will be provided that visualize the current status of biodiversity and effective conservation

areas covering the entire terrestrial area, from the backcountry to hilly and mountainous areas and even urban areas. Furthermore, necessary functions will be added and enhanced, such as developing an updatable system and linking the monitoring function with the map so that the effectiveness of conservation activities can be visualized as needed. In the check and review of this NBSAP, efforts will be made to understand the conservation status of various ecosystems and areas by using visualization to ensure that conservation is promoted effectively and in a balanced manner.

(MOE)

Current status and target

Indicator	Current status	Target value
Percentage of terrestrial protected areas and OECMs in Japan	20.5%	30% (2030)

Action-oriented target 1-2: Prevent degradation of ecosystems by reducing impacts on biodiversity from use of terrestrial and marine areas, promote restoration of at least 30% of degraded ecosystems, and implement measures that contribute to the development of ecological networks

Of the direct drivers of biodiversity loss in Japan, the impact of land and sea use, including development, is extremely significant. Over the past 50 years, there has been a reduction in the scale of agricultural land ecosystems, inland water ecosystems, and coastal and marine ecosystems due to the development, alteration, and reduced use of agricultural lands and grasslands, the development and reclamation of marshes and natural lakes, and the development and reclamation of natural riverbanks and beaches. With regard to the quality of ecosystems, in forest ecosystems, habitats for living organisms have been changing due to the shift from natural forests to planted forests, changes in species composition and diversity resulting from the neglect of secondary forests. There are concerns that *satochi-satoyama* ecosystem where habitat environments are arranged in a mosaic-like pattern, will disappear due to the decline in use of farmlands, waterways and reservoirs, agricultural forests, and grasslands and pastures, leading to the loss and degradation of biodiversity. In recent years, it is being pointed out that when renewable energy generation facilities, which are important for addressing climate change, are improperly installed, biodiversity may be affected adversely. It has also been pointed out that the fragmentation of forests and agricultural lands is leading to a decrease in the populations of species vulnerable to habitat fragmentation, and that the fragmentation of rivers due to the construction of dams and weirs may be hindering the migration of organisms up the rivers. Thus, the continuity of forest, agricultural land, and inland water ecosystems is likely to decrease over the long term.

To conserve biodiversity, the government will prevent the further degradation of ecosystems caused by land use, restore degraded ecosystems and improve the quality of nature, and establish ecological networks to ensure the connection between forests, the countryside, rivers, and the seas. Specifically, the government will promote environmental impact assessments to ensure appropriate environmental

considerations when implementing projects, and identification of areas with outstanding natural environments that can serve as the core of ecological networks to promote their establishment as protected areas or OECMs. Based on different features in each areas that make up ecological networks, the following activities will be aggressively pursued through the collaboration of various entities: promotion of diverse forestation with multifunctionality; development and restoration of farmlands, waterways, grasslands, and so on that serve as habitats and breeding sites of various organisms; environmentally-friendly urban development; restoration of river continuity and improvement of water quality through the removal of man-made structures; and conservation of marine areas.

Since water systems such as rivers form the backbone connecting ecological networks, there will also be a need to take into account ways to achieve connectivity within marine areas, by incorporating comprehensive sediment and nutrient management, and, for marine areas, by transporting materials from water surfaces to the deep sea and using different ecosystems in the lifecycles of living organisms.

To prevent the degradation of ecosystems, the government will take measures for the establishment and operation of protected areas cited in Action-oriented target 1-1, since those measures will contribute to the prevention.

Specific Measures

1-2-1 Promotion of environmental impact assessment

To ensure appropriate environmental considerations in the implementation of projects and to contribute to the conservation of biodiversity, efforts will be made to implement environmental impact assessment systems including the promotion of strategic environmental assessment to incorporate environmental considerations when forming upper-level plans, the persistent disclosure of environmental impact assessment documents so as to improve the technologies to estimate and assess environmental impact, and the promotion of voluntary assessments of the operators of small-scale projects that are not subject to the Environmental Impact Assessment Act and ordinances, prior to the formulation of project plans. Furthermore, for appropriate and effective implementation of the Environmental Impact Assessment Act, the implementation status will be continuously inspected and reviewed, and the system, including its implementation methods, will be examined and comprehensively promoted. (MOE)

1-2-2 Efforts to double treated volume of recycled raw materials for metals

Advancing the recycling of metals found in used products will contribute to the conservation of biodiversity, atmosphere, water, and soil during the mining and production of mineral resources such as rare metals, as well as to the reduction of impact on natural environments. Based on the mission to double the treatment volume of recycled metal materials by FY2030, as stipulated in the Grand Design and Action Plan for a New Form of Capitalism and Follow-up (Cabinet decision in June 2022), metal recycling efforts including imported scrap will be promoted in Japan. (MOE)

Current status and target

Indicator	Current status	Target value
Amount of used small electronic equipment, etc. that are collected	102,489 tons (FY2020)	140,000 tons (FY2023)

1-2-3 Certification of effective protected areas and OECMs (Priority)

Resilient national lands will be built against environmental changes, such as climate changes, through the establishment of effective protected areas and OECMs to enhance the connectivity and soundness of ecosystems from both a macro perspective and from a perspective according to each local characteristic. (MOE)

Current status and target

Indicator	Current status	Target value
Number of Nationally Certified Sustainably Managed Natural Sites	-	100 (2023)
Percentage of terrestrial protected areas and OECMs in Japan	20.5%	30% (2030)

1-2-4 Formation of ecological networks in forests, the countryside, rivers, and the seas

- To enjoy the benefits of forests, the countryside, rivers, and the seas into the future, work will be promoted on providing information and awareness-raising of concepts, planning methods, and implementation techniques for ecological networks.
- Visualization of biodiversity networks will be promoted through Local Biodiversity Strategies and Action Plans (LBSAPs) and so on. (MOE)

1-2-5 Preservation and restoration of forest ecosystems and protection and management of scattered rare forest ecosystems

- In primeval forest ecosystems and forests where rare wildlife inhabits and grows, efforts will be made on the basis of protecting them without intervention through cooperation of national forests and private and public forests.
- Efforts will be made to promote continuous conservation and management of secondary forests such as *satoyama*.
- Regarding the national forests, which play an important role in the conservation of the natural environment, protection of wildlife, and preservation of genetic resources, efforts will be made to protect rare wildlife, while collaborating with local residents, NPOs, and others. (MAFF)

1-2-6 Promotion of diverse forest development

- Efforts will be made to implement thinning, conversion to broad-leaved forests, extended thinning, conversion to mixed forests of conifers and broadleaf trees, and reliable reforestation after harvesting, according to the use of forest resources and frequency of natural disruption.

- For forestry road network development, efforts will be made to ensure adjustment with the surrounding environment in all stages of planning, design, and construction.
- In the management and operation of national forests, the forests will be classified into functional types, such as nature maintenance and water resource types, and efforts will be made to promote the maintenance of forests suited for the habitat of rare organisms, thinning and conversion to multi-storied forests. Consideration will be given to the effective use of forest resources to appropriately implement operations as forests for public benefit. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of forests guided to multi-storied forests, out of the 3.5 million ha of single-storied forests that are to be converted to multi-storied forests, based on natural conditions and other factors to further fulfil their multiple functions (cumulative)	1.9% (FY2018)	2.9% (FY2023)

1-2-7 Contribution to biodiversity through the forest planning system

Provide guidelines for forest practices that contribute to the conservation of valuable wildlife through the forest planning system including the Prefectural Forest Plans. (MAFF)

1-2-8 Conservation and management of forests in the local areas

For forests whose owners are unable to operate or manage them on their own, the municipalities will operate and manage them mainly through the use of the Forest Environment Transfer Tax, and encourage the forest owners to do so. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of municipalities with privately owned planted forests that have undertaken forest cluster and intensification under the new system	60% (FY2020)	100% (FY2023)
Percentage of privately owned planted forests that have been clustered and intensified as forests where forestry operations are carried out	37% (FY2020)	50% (FY2028)

1-2-9 Promotion of grassland development, conservation, and use

The government will promote grazing and develop grasslands to maintain the productivity and functions of grasslands throughout the region, and establish grazing lands such as public pastures that have valuable grassland resources. (MAFF)

1-2-10 Conservation of ecological networks in rural environments

Provide support for initiatives that contribute to improvement of the rural environment for conservation of water quality and ecosystems, in combination with efforts to conserve and manage resources such as agricultural land and water on a community-wide basis with the participation of

not only local farmers but also various entities. (MAFF)

Current status and target

Indicator	Current status	Target value
Total number of participants in community-wide conservation and management of agricultural land and waters	Total 13.01 million people/organizations (FY2016-2020)	Total 13.01 million people/organizations (FY2021-2025)
Preventing a decrease in the area of agricultural land in hilly and mountainous areas, etc	72,000 ha (FY2020)	75,000 ha (FY2024)
Percentage of agricultural land that is conserved and managed on a wide scale through local cooperation activities for the conservation and management of agricultural land and water	46% (FY2020)	60% (FY2025)

1-2-11 Establishment of wetland network

For wetlands such as marshes and tidal flats that serve as habitats for a diverse range of fauna and flora, especially migratory waterbirds, the government will promote the establishment of networks between wetlands and cooperation through international frameworks such as the Ramsar Convention and East Asian-Australasian Flyway Partnership (EAAFP), for the conservation and awareness-raising among local residents. (MOE)

1-2-12 Securing water for ecosystem conservation

Support will be provided for surveys and adjustments for the acquisition of agricultural water, environmental water, and others to maintain and improve natural environments. (MAFF)

1-2-13 Development of roads that are ecologically friendly

From the viewpoint of preventing the fragmentation of animal habitats and conserving environments for plant growth, efforts will be made to develop roads in consideration of the ecosystem, such as by installing road crossing structures for animals and signs that warn of animals. (MLIT)

1-2-14 Creation of habitat environments for plants and animals during road construction

Depending on the region, efforts will be made to actively work on the creation of habitats, for example, by selecting tree species for planting, while taking into consideration the current state of the surrounding natural environment in road construction. (MLIT)

1-2-15 Surveys and data accumulation on natural environments and adoption of route selection and structure format as needed

Efforts will be made to conduct detailed surveys and accumulate data on natural environments, and if necessary, use this information to select routes that allow for the conservation of abundant nature and adopt structural formats that prevent any major changes to the topography and vegetation.

(MLIT)

1-2-16 Regreening in adjustment with nature at embankment slopes, and so on

For embankment slopes created in conjunction with road projects, efforts will be made to carry out regreening by making use of vegetation that best adjusts with natural conditions such as the local climate and soil, including existing stock, and restore them as close to nature as possible.

(MLIT)

1-2-17 Promotion of biodiversity conservation in urban areas (Priority)

The government will support local public bodies and private entities by evaluating their efforts to secure open green spaces so that public and private sectors can work together to ensure biodiversity in urban areas. In addition, biodiversity conservation efforts will be promoted in urban areas by raising awareness of the Biodiversity Indicators in Urban Areas (simplified edition) formulated in FY2016. (MLIT)

1-2-18 Promotion of Urban Greening, and so on (Priority)

Regarding effective schemes for promoting greening of privately-owned lands, such as the Greening Area System, information will be disseminated to further encourage the schemes. In addition, the government will promote the scheme for evaluation of green spaces in urban development so as to motivate developers to make greater efforts, by recognizing projects related to greenery in development and awarding excellent examples. (MLIT)

1-2-19 Conservation of urban green space, development of urban parks, and so on (Priority)

In order to conserve and utilize green spaces that have excellent natural environments, efforts will be made to promote the use of green space conservation schemes such as Special Green Conservation Areas, and to enhance the diverse functions of green spaces such as securing habitats for living organisms in urban areas through financial support for purchasing land and developing facilities necessary for the conservation of green spaces. Furthermore, habitat for living organisms will be conserved and created by promoting the development of urban parks, usage of Civil Green Space System, social implementation of green infrastructures such as installation of rain gardens, and conservation of urban agricultural lands by utilizing the Productive Green Zone System, and so on. (MLIT)

Current status and target

Indicator	Current status	Target value
Amount of public space secured for water and green in urban areas	13.9 m^2 per person (FY2020)	15.2 m^2 per person (FY2025)

1-2-20 Conservation and creation of waterfront areas in spaces of sewage treatment facilities,

and so on

In spaces such as the upper part of sewage treatment facilities and rainwater culverts which serve as valuable open spaces in densely populated urban areas, efforts will be made in cooperation with related stakeholders to conserve and create waterfront areas by developing streams and reusing treated water, and to provide habitats and nurturing areas for living organisms in urban areas.

(MLIT)

Indicator	Current status	Target value
Area of streams, etc. at sewage treatment facilities, etc.	1,147 ha (FY2020)	1,170 ha (End of FY2030)

1-2-21 Construction of water circulation system by recycling treated sewage water and rainwater, and so on

The government will promote projects aimed at building sound water circulation systems from a broad perspective, such as reuse of treated sewage water and rainwater, and minimizing outflow through retention and seepage of rainwater. (MLIT)

Current status and target

Indicator	Current status	Target value
Number of projects per fiscal year using New Generation Sewerage Support Project System	2 (FY2020)	22 since 2020 (cumulative) (End of FY2030)

1-2-22 Promotion of active operations and management of nutrient salts according to local characteristics

To restore rich seas and conserve biodiversity, operation will be carried out by season to actively manage nutrient salts in sewage effluent according to local characteristics. (MLIT)

1-2-23 Formation of river-based ecological networks in broader areas (Priority)

The government will promote the restoration of wetlands and the improvement of fish run-up and run-down environments through constructing structures such as fishways. In addition, efforts will be made to conserve and create river basin ecosystems through the formation of river-based ecological networks in cooperation with various entities, such as local governments, citizens, river administrators, and farmers. (MLIT, MAFF, MOE)

Current status and target

Indicator	Current status	Target value
Number of river-based ecological networks with action policies and targets	13 (FY2020)	17 (FY2030)

1-2-24 Creation of nature-oriented river works (Priority)

The government will promote the conservation and creation of habitats and breeding sites for living organisms, as well as diverse river landscapes, in harmony with local lifestyles, history, and culture, taking into consideration the natural activities of the river as a whole. Given that the creation of nature-oriented river works is the basis of all river development, efforts will be made to promote this approach in all river management actions, such as surveys, planning, design, construction, and maintenance on all Class A rivers, Class B rivers, and others. (MLIT)

Target: Promotion of the creation of nature-oriented river works in river management

1-2-25 Raising awareness on sound water cycle

Through the Ministry of the Environment's Water Project, launched as a result of the enactment of the Basic Act on the Water Cycle (Act No. 16 of 2014) in 2014, the government will carry out activities to raise awareness and disseminate information on the maintenance or restoration of a sound water cycle, and support the conservation and utilization of local waterfront areas, so as to raise the awareness of environmental conservation and promote water environment conservation. Also, efforts will be made to select the 100 Famous Waters for the new generations. (MOE)

Current status and target

Indicator	Current status	Target value
Number of participants in the Ministry of Environment's Water Project "Good Practice *Juku*"	575 (FY2022)	-

1-2-26 Reduction in negative impact of land use in river basins on ecosystems

- **Promotion of comprehensive sediment management efforts**

  The government will promote efforts for integrated sediment management from the headwaters of the basin to the shoreline, in harmony with the natural environment and with the collaboration of related entities. Efforts will be made to understand sediment dynamics through monitoring, formulate an Integrated Sediment Management Plan, and ensure continuity of sediment transport, such as the construction of permeable sediment control weirs, downstream return of sediment deposited by dams, and coastal erosion countermeasures using sand bypasses. (MLIT)

- **Environmental considerations for dam development, and so on.**

  In implementing large-scale public works such as dam projects, preliminary environmental surveys will be conducted to review their impact on the environment so as to implement appropriate environmental protection measures, including prevention, reduction, and compensatory measures. (MLIT)

- **Flexible management of dams**

For the conservation of the river environment in the downstream of dams, flexible management and related tests of dams will be conducted using part of the flood control capacity effectively to the extent that this does not interfere with flood control. In addition, discharge methods will be further investigated to make them even more effective. (MLIT)

- **Restore clear streams by elimination of water cutoff zones due to hydroelectric power generation**

  In order to improve the reduced flow sections where river flow is significantly reduced due to hydropower generation, efforts will be made to eliminate the reduced flow section in accordance with the Guidelines for Power Generation. In addition, efforts will be made to seize opportunities for water rights renewal and other opportunities to recover clear water in the water-reduced section due to power generation. (MLIT)

1-2-27 Establishment of fisheries environment corresponding to the life history of fisheries organisms

The government will promote the development of environments for fisheries to create good habitats from seaweed beds and tidal flats to offshore areas that correspond to the life history of fisheries organisms. (MAFF)

Current status and target

Indicator	Current status	Target value
Amount of increased production of fisheries products through restoration of fisheries resources and improvement of fishing grounds	0 ton (FY2021)	65,000 tons (FY2026)
Maintain and restore the area of seaweed beds in the sea areas where efforts to conserve and create seaweed beds are implemented	Approx. 6,000 ha (FY2020)	Approx. 7,000 ha (FY2026)

1-2-28 Improvement of marine environment through Bay Renaissance Project

To realize restoration of the sea, the third decision of the urban restoration project, various measures will be promoted based on the action plan in Tokyo Bay, Osaka Bay, and Ise Bay. Moreover, various measures will be promoted based on the action plan for Hiroshima Bay, and the Bay Renaissance Projects in enclosed coastal seas will be implemented. (MLIT, MAFF, MOE)

1-2-29 Promoting introduction of port structures with added functions for coexistence with living organisms

The government will implement aging measures and adopt port structures added with biosymbiotic functions. (MLIT)

1-2-30 Promotion of water purification measures in coastal areas

The government will create marine environments that are friendly to nature and living organisms, and create highly hydrophilic marine spaces, by promoting water purification measures such as sludge removal and sand covering. (MLIT)

Current status and target

Indicator	Current status	Target value
Percentage of achievement of the plan (port pollution control projects) by 2030	63% (FY2021)	100% (FY2023)

1-2-31 Restoration of tidal flats and seaweed beds, and backfilling of deep excavation sites by effectively utilizing dredged sediment

The government will effectively utilize dredged sediment generated from port development and promote the restoration of tidal flats and seaweed beds, and the backfilling of deeply dug sites. (MLIT)

1-2-32 Promotion of dredging of organic sludge accumulated on sea bottom

The government will promote dredging of organic sludge accumulated in the sea bottom with the aim of creating safe and secure aquatic areas, and creating waterfront spaces that are environment friendly to the surrounding urban areas and nature. (MLIT)

1-2-33 Study on restoration and recovery of degraded land

To achieve the 30by30 target which aims to conserve at least 30% of the national land by 2030, the government will conduct surveys on degraded areas that need ecological restoration and prepare a restoration manual for the application to Nationally Certified Sustainably Managed Natural Sites. Moreover, when investigating restoration methods for degraded ecosystems, efforts will be made to identify carbon sequestration potentials and contribute to net-zero greenhouse gas emissions as a side effect. (MOE)

1-2-34 Enhancing restoration of degraded ecosystems (Priority)

By steadily implementing nature restoration projects and Ecosystem Maintenance and Recovery Work, and so on, the government will work with local communities to promote efforts for the restoration and recovery of degraded natural environments and ecosystems, including natural vegetation damaged by wildlife and alien species, and ecosystems affected by habitat loss due to development and abandoned management. (MOE, MAFF, MLIT)

1-2-35 Promoting nature restoration

Based on the Law for the Promotion of Nature Restoration (Act No. 148 of 2002), the government will work with various entities such as NPOs, local residents, and relevant administrative agencies to promote nature restoration activities nationwide. The following activities will be carried out:

management of the nature restoration expert panel; provision of advice from an academic perspective, on-site guidance by the members of the committee, and information gathering; review of solutions to issues; and dissemination and awareness-raising activities. (MOE)

Current status and target

Indicator	Current status	Target value
Number of sites where nature restoration committees have been established under the Law for the Promotion of Nature Restoration	27 (FY2021)	30 (FY2025)
Number of Nature Restoration Project Implementation Plans developed	49 (FY2021)	54 (FY2025)

Action-oriented target 1-3: Reduce pollution (control emissions with the objective of reducing the impact on biodiversity to an appropriate level taking into account carrying capacity) and, implement measures contributing to preventing and reducing the negative impacts of invasive alien species (e.g., reduce the rate of establishment of invasive alien species by 50%)

Regarding pollution (e.g., chemicals in wastewater, pesticides, marine plastics, and others) and invasive alien species, which are also listed as one of the five direct drivers that seriously affect biodiversity loss identified in the IPBES Global Assessment Report, measures to reduce or mitigate their impacts are urgently needed based on the results of appropriate risk assessments and other information.

For this purpose, the government will promote and enhance risk assessment of chemical substances and pesticides and risk management based on the assessment results, including their appropriate use; improve the water quality of rivers and lakes; take measures against pollution through control and collection of marine debris; expand border measures, control and appropriate management of invasive alien species (particularly living organisms for which urgent measures are required at the stage where there are great risks of their establishment in Japan or living organisms widely bred and with large outdoor populations); promote lifelong care for domestic animals and ensure their appropriate management. In addition to ensuring the continuation and reinforcement of those measures, there is a need to collect and utilize scientific knowledge and take further effective countermeasures.

Specific Measures

1-3-1 Prevention of lead poisoning of birds due to lead shots (Priority)

Aiming to achieve zero occurrence of lead poisoning in birds caused by lead shots in Japan by FY2030, the government will determine the actual status of lead contamination and assess its influence to enable the phased introduction of a nationwide regulatory system of lead shots use starting in FY2025. If assessment results indicate the need to switch to non-lead shots, efforts will be made to examine establishing a necessary transition system to promote smooth transition.

(MOE)

Current status and target

Indicator	Current status	Target value
Number of confirmed cases of lead poisoning in birds (birds of prey) due to lead shots	5 (FY2021)	0 (FY2030)

1-3-2 Initial environmental risk assessment of chemical substances

The government will conduct initial environmental risk assessment (screening) of chemical substances, including aspects of their impact on the ecosystem, identify substances with high environmental risks, and urge the implementation of required measures to prevent the adverse effects of chemical substances on humans and aquatic organisms. (MOE)

Current status and target

Indicator	Current status	Target value
Number of substances for which an initial environmental risk assessment is carried out from the viewpoint of ecological impact	12 [*1] (FY2022)	Approx. 12 per year

[*1] 413 substances implemented by the end of FY2022

1-3-3 Promotion of chemical substance control

In accordance with Act on the Regulation of Manufacture and Evaluation of Chemical Substances (Act No. 117 of 1973, hereafter referred to as the "Chemical Substances Control Law"), the government will steadily implement safety assessment of all chemical substances taking into account their impact on the ecosystem, by requiring businesses manufacturing/importing above a certain volume to submit amounts used and submit toxicity information as needed. In addition, the government will review methods for assessing toxicity to higher predators, including birds, and develop the model of quantitative structure-activity relationships (QSAR) to estimate ecotoxicity based on chemical structural formulas and physicochemical properties and check how the model works. (MOE)

Target

For all chemical substances, including those that have existed on the market since before the Chemical Substances Control Law was established in 1973, chemical substances that must be evaluated for safety on a priority basis, based on the contents of the notification and known findings related to harmful effects, will be designated as priority assessment chemical substances and risk assessments will be conducted. Consequently, chemical substances with long-term toxicity recognized as posing a risk to human health or the habitat of flora and fauna in the human living environment due to a considerable amount of the substances remaining extensively in the environment will be designated as Class II Specified Chemical Substances and necessary measures will be taken.

Current status

Designation of 214 substances as priority assessment chemical substances (as of the end of March, 2022)

1-3-4 Operation of Pollutant Release and Transfer Registers (PRTR) system and use of data

Based on the Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement (Act No. 86 of 1999), the government will compile and publish data on the amounts of chemical substances released into the environment and/or transferred out of business facilities which may pose a risk of harm to human health or ecosystems, with a view to promoting voluntary improvements in the management of chemical substances by business operators and preventing any impediments to the preservation of the environment. (MOE)

Current status and target

Indicator	Current status	Target value
Number of PRTR factory search on MAP	16,548 views per fiscal year (FY2021)	19,051 views per fiscal year (FY2024)

- The system requires business operators to report the amounts of designated chemical substances released and /or transferred and the government compiles data submitted and make the results public every year.

1-3-5 Review of endocrine disrupting effects of chemical substances

Based on the Extended Tasks on Endocrine Disruption – EXTEND 2022, which outlines theendocrine disrupting effects of chemical substances on organisms in the environment and was released in October 2022, the government will develop test methods and proceed with testing and assessment using established test methods for chemical substances present in the environment, thereby facilitating risk management for such substances with potential environmental risks.

(MOE)

Current status and target

Indicator	Current status	Target value
Number of substances for which assessments are initiated	Approx. 10 per year	Approx. 10 per year

1-3-6 Review of environmental PPCPs risks

With regard to the effects of pharmaceuticals and personal care products (PPCPs) on living organisms in the environment, existing knowledge will be collected, risk assessments will be conducted based on extensive information on their status in the environment and ecotoxicity, and

substances with potential environmental risks will be identified. In addition, risk assessment methods will be investigated based on the characteristics of PPCPs. (MOE)

Current status and target

Indicator	Current status	Target value
Number of substances for which ecotoxicity tests are carried out	Approx. 2 per year	Approx. 2 per year

1-3-7 Measures on chemical substance in case of disaster incidents

To minimize damage caused by leakage incidents of chemical substance during major disasters, the government will share information with relevant organizations even in normal times and build a framework for cooperation during emergencies such as disasters. (MOE)

1-3-8 Prevention of environmental pollution by mercury

To prevent mercury pollution on a global scale, measures to control mercury throughout its entire life cycle will continue to be implemented in accordance with the Minamata Convention on Mercury and the National Implementation Plan for Preventing Environmental Pollution of Mercury and Mercury Compounds. (MOE)

1-3-9 Establishment of criteria for pesticide registration concerning prevention of damage to flora and fauna in the human living environment for currently registered pesticides (Priority)

Based on the Agricultural Chemicals Regulation Act (Act No. 82 of 1948), which was amended in 2018, the scope of fauna and flora subject to pesticide impact assessment have been expanded from aquatic flora and fauna to aquatic and terrestrial flora and fauna in the human living environment, including birds and wild bees, and the reevaluation of currently registered pesticides has been initiated. The evaluation will be continued, and if needed, criteria for pesticide registration concerning prevention of damage to flora and fauna in the human living environment will be set or revised to expand the ecological risk assessment and management in the pesticide registration system. (MOE)

Target

Implementation of reevaluation of all pesticides registered as of the end of FY2021 for flora and fauna in the human living environment (FY2038).

1-3-10 Introduction of chronic impact assessment on flora and fauna in the human living environment in examination for pesticide registration (Priority)

In the assessment of impacts on flora and fauna in the human living environment during examination for pesticide registration based on the Agricultural Chemicals Regulation Act, in

addition to the short term effects of pesticide exposure (acute effects), which are currently subject to this assessment, the assessment of the long-term effects of pesticide exposure (chronic effects) will also be introduced, thereby expanding the assessment of ecological risks in the pesticide registration system. (MOE)

Target

Introduction of chronic impact assessment in the evaluation of effects of pesticides on fish, crustaceans, and birds (After FY2025 or later).

1-3-11 Expansion of ecological risk assessment and review of monitoring methods for invertebrate biocontrol agents (Priority)

Regarding invertebrate biocontrol agents used for pest control by taking advantage of their parasitic and predatory properties in their living state, when conducting examination for pesticide registration under the Agricultural Chemicals Regulation Act, the government will introduce evaluation of biological traits such as settlement and predatory properties in areas where invertebrate biocontrol agents will be released, expand the evaluation of the ecological risks of invertebrate biocontrol agents, and review monitoring methods. (MOE, MAFF)

1-3-12 Promotion of appropriate use of pesticides

Pesticide registration and reevaluation will be implemented based on the latest scientific knowledge. Moreover, the government will promote the appropriate use of pesticides including through annual nationwide campaigns to prevent harm caused by pesticides, thereby preventing water pollution and damage to flora and fauna in the human living environment. (MAFF, MOE)

1-3-13 Promotion of proper use of pesticides on golf courses

Efforts will be made to identify the actual status of agricultural chemicals contained in water discharged from golf courses. Based on the results, guidance will be provided to golf courses on properly using registered agricultural chemicals and taking appropriate remedial measures such as reduction of usage. This will facilitate the proper use of agricultural chemicals on golf courses and prevent water pollution in water bodies around golf courses and damage to aquatic flora and fauna in the human living environment. (MOE)

1-3-14 Monitoring of river water for pesticides deemed to pose high ecological risks

Monitoring surveys of pesticide concentrations in river water will be carried out for pesticides whose ecological risk is considered relatively high due to the proximity of the criteria values for pesticide registration concerning prevention of damage to flora and fauna in the human living environment and predicted concentration in the environment, taking into consideration the state of pesticide

usage, to verify the validity of risk assessment results and the effectiveness of risk management. (MOE)

Target

Monitor the concentrations in river water of about 10 pesticides each year, which are considered to pose relatively high ecological risks.

1-3-15 Appropriate management of livestock waste

In order to prevent environmental impacts such as water pollution caused by the inappropriate management of livestock excrement, the government will implement appropriate management of livestock excrement in accordance with the Act on the Proper Management and Promotion of Use of Livestock Manure (Law No. 112, 1999). (MAFF)

1-3-16 Improvement of water quality by implementing environmentally friendly agriculture

Support will be provided to farming activities that are highly effective in preventing global warming and conserving biodiversity, such as efforts by farmer organizations to reduce chemical fertilizers and synthetic pesticides by basically over 50%. (MAFF)

1-3-17 Improvement of water quality in rural areas by building drainage facilities, and so on

- **Install fisheries community sewerage systems for fisheries communities**

  In order to improve the water environment of fishing ports and fishing grounds as well as the living environment of fishing communities, efforts will made to build efficient fisheries community sewerage systems for fishing communities in conjunction with sewage systems and septic tanks, based on the Prefectural Plan for sewage treatment. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of dissemination of fisheries community sewerage systems in fishing communities	80% (FY2021)	Approx. 95% (FY2026)

- **Improvement of water quality by building drainage facilities and others for rural communities**

- To conserve the water quality of agricultural wastewater and contribute to the conservation of water quality in Areas of Public Waters, efforts will be made to build efficient rural community sewage facilities together with sewage systems and septic tanks, based on the prefectural vision for wastewater treatment drawn up by prefectures.
- Water quality conservation facilities will be developed to conserve the environment in rural areas and purify the polluted water from agricultural drainage facilities.

- Facilities to prevent runoff of cultivated soil will be developed to prevent runoff of red soil and others and reduce water quality load from agricultural lands in Okinawa Prefecture and the Amami islands. (MAFF)

Current status and target

Indicator	Current status	Target value
Population coverage of sewage treatment	92.6% (FY2021)	More than 95% (FY2026)

1-3-18 Improvement of water environment through advanced sewage treatment, and so on

In order to conserve the quality of water in Areas of Public Waters, in addition to developing sewage systems, the government will incorporate advanced treatment methods at sewage treatment plants and improve combined sewage systems that contribute to the prevention of eutrophication in lakes and enclosed coastal seas. (MLIT)

Current status and target

Indicator	Current status	Target value
Percentage of advanced treatment implementation	59.9% (End of 2021)	65% (End of 2025)
Percentage of combined sewerage improvement	90.4% (End of 2021)	100% (End of 2023)
Population coverage of sewage treatment	92.6% (End of FY2021)	95% (End of FY2026)

1-3-19 Water quality conservation measures in dam reservoirs

Measures will be implemented to prevent cold water discharge, prolonged turbidity, and eutrophication in dam reservoirs. For preventing the discharge of cold water, selective intake facilities will be installed to choose water temperature zones close to the inflow water temperature for downstream discharge. For preventing prolonged turbidity, selective intake facilities and freshwater bypass will be installed to shorten the duration of turbid water discharge. For preventing eutrophication, aeration circulation equipment will be installed to control the proliferation of plankton. (MLIT)

1-3-20 Water quality environmental standards for aquatic life conservation

With respect to environmental standards concerning the conservation of aquatic organisms among the environmental standards established in accordance with Article 16 of the Basic Act on the Environment (Act No. 91 of 1993), the government will constantly monitor the status of water pollution in classified water areas, and establish and review necessary environmental standards based on up-to-date scientific knowledge. (MOE)

Current status and target

Indicator	Current status	Target value
Status of achievement of water quality environmental standards for the conservation of aquatic organisms in classified water areas	98.5% (2020)	100% (Every fiscal year)

1-3-21 Lake environment conservation measures

The government will promote various measures based on the Act on Special Measures concerning Conservation of Lake Water Quality (Act No. 61 of 1984). Specifically, comprehensive measures for the improvement of the lake environment will be studied in order to realize desirable water environments of lakes, including water quality, aquatic organisms, aquatic plants, and riparian areas, and so on. (MOE)

1-3-22 Conservation and restoration of Lake Biwa

The government will promote various measures based on Act for the Conservation and Restoration of Lake Biwa (Act No. 75 of 2015). Particularly, efforts will be made to examine the management of the lake, such as the deterioration of water quality caused by massive proliferation of phytoplankton, excessive growth of underwater grasses, proliferation of invasive alien plants, and impact of climate change on water circulations in lakes, and to implement the necessary measures in cooperation with relevant organizations. (MOE)

1-3-23 Response to marine environment-related treaties, and so on

The government will respond to international frameworks such as the London Convention, MARPOL Convention, International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), International Convention for the Control and Management of Ship's Ballast Water and Sediments, and Northwest Pacific Action Plan (NOWPAP), and properly implement domestic collateral, thereby contributing to marine environment conservation. (MOE)

1-3-24 Improvement of water environments in enclosed coastal seas through total pollutant load control, and so on

The government will improve the water environment in Tokyo Bay, Ise Bay, and Seto Inland Sea consistently in accordance with the 9th Basic Policy for Areawide Total Pollutant Load Control established in January 2022. Although efforts to date have contributed to a steady decrease in the pollution load from terrestrial areas, there remain issues that need to be addressed toward the realization of a "rich ocean." For this reason, comprehensive efforts will be promoted based on the local situation, such as detailed measures that take into account location and season, and the conservation and restoration of seaweed beds/tidal flats, which function to maintain biodiversity and biological productivity. (MLIT, MOE)

Current status and target

Indicator	Current status	Target value (FY2024)
COD in Tokyo Bay, Ise Bay, and Seto Inland Sea	Tokyo Bay 154 tons per day Ise Bay 131 tons per day Seto Inland Sea 374 tons per day	Tokyo Bay 150 tons per day Ise Bay 127 tons per day Seto Inland Sea 372 tons per day
Nitrogen content in Tokyo Bay, Ise Bay, and Seto Inland Sea	Tokyo Bay 162 tons per day Ise Bay 106 tons per day Seto Inland Sea 380 tons per day	Tokyo Bay 159 tons per day Ise Bay 106 tons per day Seto Inland Sea 389 tons per day
Phosphorus content in Tokyo Bay, Ise Bay and Seto Inland Sea	Tokyo Bay 12.1 tons per day Ise Bay 8.0 tons per day Seto Inland Sea 24.3 tons per day	Tokyo Bay 11.8 tons per day Ise Bay 7.9 tons per day Seto Inland Sea 24.6 tons per day

1-3-25 Categorical designation of environmental standards for dissolved oxygen in bottom layer

The government will promote consideration of a categorical designation for bottom layer dissolved oxygen. Among the environmental standards set under Article 16 of the Basic Act on the Environment, this is an indicator that can determine the direct impact on fish, shellfish, seaweed beds, and others, and is particularly important for the habitat and reproduction of organisms that utilize the bottom layer. (MOE)

1-3-26 Promotion of measures against excessive loads of sediments such as red soil, nutrient salts, and chemical substances originating from terrestrial areas in relation to the conservation of coral reef ecosystems

As a priority issue with particularly urgent needs to be solved set out in Action Plan to Conserve Coral Reef Ecosystems in Japan 2022-2030, the government will promote measures to reduce excessive loads of sediments, nutrient salts, and chemical substances from terrestrial areas and verification of the effectiveness of such measures. (MOE)

1-3-27 Response to oil spill incidents and recovery of drifting debris in enclosed coastal seas

- The government will control marine pollution impacting biodiversity by deploying large-scale dredging and oil recovery ships as a system for oil control in the event of large-scale oil spills, as well as deploying sea environment improvement vessels in enclosed coastal seas to collect drifting debris and floating oil.
- The government will develop a communication system and provide training for relevant personnel to ensure smooth rescue activities by related administrative agencies and organizations in the event of oil spills causing oil contamination of wild birds and animals.

(MLIT, MOE)

1-3-28 Promotion of measures against marine debris

Japan, as the proponent of the Osaka Blue Ocean Vision, which aims to reduce additional pollution by marine plastic litter to zero by 2050, will lead the establishment of an effective and progressive

framework involving many countries, including major emitting countries, in developing an international legally binding instrument (treaty) on plastic pollution, including in the marine environment. In Japan, based on the Act on Promotion of Resource Circulation for Plastics (Act No. 60 of 2021), the government will promote the resource circulation of plastics by all entities in accordance with the 3R+Renewable principle throughout the entire life cycle of plastic products, from design to waste disposal. In accordance with the Act on Promoting the Treatment of Marine Debris Affecting the Conservation of Good Coastal Landscapes and Environments as well as Marine Environments to Protect Natural Beauty and Variety (Act No. 82 of 2009, hereafter "Act on Promoting the Treatment of Marine Debris"), the government will support and promote effective measures for marine debris control according to the actual situation of each region, focusing on support for efforts by prefectures and other organizations in collecting and disposing of drifted debris from beaches and measures for controlling its generation based on regional plans. In addition, Japan accumulates scientific knowledge such as the actual status of the amount and distribution of marine litter including microplastics, and evaluates the ecological impact of marine plastic litter.

(MOE)

Current status and target

Indicator	Current status	Target value
Number of entities implementing projects to promote regional countermeasures against coastal drift and other debris (prefectures)	42 (FY2021)	43 (FY2023)
Number of regional plans formulated in accordance with the basic policy of the Act on Promoting the Treatment of Marine Debris	42 (FY2021)	47 (FY2023)

1-3-29 Development of marine biodegradable plastics

In addition to establishing methods for evaluating technologies and safety by clarifying the biodegradation mechanisms of marine biodegradable plastics in the ocean, the government will develop innovative technologies and new materials, and build the foundation for technological development. In addition, efforts will be made to develop marine biodegradable plastics that can control the timing and speed of biodegradation. (METI)

1-3-30 Development of environmentally friendly fishing gear and other

The government will develop fishing gear that minimizes impacts on marine species, including whales. (MAFF)

1-3-31 Specification of designated invasive alien species, and review of the Invasive Alien Species Management Action Plan and the List for Invasive Alien Species Management in Japan

Based on the revision of the FY2022 Invasive Alien Species Act, the government will specify

designated invasive alien species and unclassified alien species as appropriate, and review the Invasive Alien Species Management Action Plan and the List for Invasive Alien Species Management in Japan. (MOE, MAFF, MLIT)

Target

Review the Action Plan by FY2024, and start review of the List by taxa in FY2023.

1-3-32 Enhancement of border control, and initial control of designated invasive alien species (Priority)

Regarding designated invasive alien species, such as red imported fire ants (*Solenopsis invicta*), which have not yet established in Japan but feared to be established with the recent increase in invasions by attaching to imported goods and others, the government will strengthen international cooperation, establish schemes for early detection of invasions and implementation of control measures, and develop methods to control, to prevent their establishment in Japan. Moreover, the government will monitor areas where locally distributed designated invasive alien species may spread and implement control efforts in cooperation with local governments in areas where the species have settled, in order to prevent the scope of their distribution area in Japan from expanding.

(MOE, CAS, MIC, MOFA, MOF, MEXT, MAFF, METI, MLIT)

Current status and target

Indicator	Current status	Target value
Number of sites where fire ants have established	0	0

1-3-33 Prevention of pests introduction by imported plant quarantine

Plant protection stations will conduct inspections (imported plant quarantine) of imported plants, their containers and packages for pests that may cause damage to useful plants, such as agricultural crops. (MAFF)

1-3-34 Inspection of ballast water management systems

Based on the International Convention for the Control and Management of Ship's Ballast Water and Sediments which took effect in 2017, ocean-going vessels are required to be equipped with ballast water management system to prevent the transfer of alien species in ballast water between marine areas. The government will conduct periodic inspections to ensure that the system installed on Japan-registered vessels conforms to the requirements of the Convention. (MLIT)

Current status and target

Indicator	Current status	Target value
Number of periodic inspections carried out to ensure that ballast water management system on Japan-registered vessels comply with the requirements of the Ballast Water Management Convention	302 (FY2021)	Approx. 300 per fiscal year

1-3-35 Support for dealing with established designated invasive alien species (Priority)

The government will establish guidelines for implementing effective damage prevention measures for non-native fish, including largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), bluegill (*Lepomis macrochirus*), raccoons (*Procyon lotor*), and other species, and strengthen support for local governments and other organizations as well as public awareness to enhance measures against established designated invasive alien species, including red swamp crayfish (*Procambarus clarkii*) and common slider (*Trachemys scripta*), which are scheduled to be specified as designated invasive alien species. (MOE, MAFF)

Target

The government will establish or revise national guidelines by FY2024 for non-native fish, including largemouth bass, largemouth bass, bluegill, raccoons, and other species.

1-3-36 Development of technologies that contribute to the prevention of the spread of alien species in agricultural lands and waterways

The government will promote control of alien species, including golden mussels (*Limnoperna fortunei*) and Asian clam (*Corbicula fluminea*), which interfere with the passage of water through agricultural canal, as well as invasive weeds, including burrcucumber (*Sicyos angulatus*) and alligatorweed (*Alternanthera philoxeroides*), and the development of management technologies for them. (MAFF)

Target

- Establish management systems that can be applied to more than three aquatic and three plant invasive alien species by FY2023.
- Verify established management systems that can be applied to invasive alien species in more than three areas by FY2023.

1-3-37 Prevention of forest and forestry damage caused by alien species

The government will implement measures for adaptive extermination and prevention of habitat spread while taking into consideration the impact on the current forest ecosystem, to integrally promote measures against alien species, required for the conservation of forest biodiversity in the region. (MAFF)

1-3-38 Prevention of damage to crops caused by alien species

The government will work with prefectures and other organizations to promote timely and appropriate control for alien species that damage agricultural products, including red-necked longhorn beetles (*Aromia bungii*) and apple snail (*Pomacea canaliculata*). (MAFF, MOE)

1-3-39 Implementation of efforts to prevent damage by alien species in rivers

Based on the Invasive Alien Species Management Action Plan (compiled by the Ministry of the Environment, Ministry of Agriculture, Forestry and Fisheries, and Ministry of Land, Infrastructure, Transport and Tourism in March 2015), the government will raise public awareness of the need for measures against alien species in rivers. (MLIT)

1-3-40 Prevention of damage to inland fisheries caused by designated invasive alien species

The government will develop and disseminate effective control methods, and support inland water fisheries cooperatives that tackle the control of designated invasive alien species, including largemouth bass, largemouth bass, and bluegill that cause harm to the fisheries industry, and promote the prevention of the expansion of damage to inland water fisheries such as feeding damage by alien fish. (MAFF)

1-3-41 Control of designated invasive alien species and other species in areas critical for sustaining biodiversity

The government will continue to exert pressure to eradicate the small Indian mongoose (*Herpestes auropunctatus*), which is a threat to endangered species on Amami-Oshima Island, and develop methods to confirm eradication, and achieve eradication. In addition, control efforts will be made for designated invasive alien species in areas important for sustaining biodiversity, such as the Ogasawara Islands and Okinawa Island. (MOE)

Target: Confirm mongoose eradication on Amami-Oshima Island by FY2025.

1-3-42 Measures against alien species in national parks and other

The government will implement control efforts such as capturing for alien species that are adversely affecting ecosystems in national parks. With respect to alien species that may have adverse effects, the government will establish policies for species handling to prevent invasion and adverse effects and review risk assessment methods, as well as implement regulations on the release of alien species in Special Protection Zone and other areas. Moreover, in greening efforts carried out in national parks and other areas, based on the guidelines for slope-greening in natural parks, the necessary consideration will be given to the use of native species and seedlings to prevent genetic disturbance, and also ensure that foreign greening plants are not used. (MOE)

1-3-43 Measures against large earth bumblebees (*Bombus terrestris*)

The government will provide support for conducting verifications and training sessions for converting large earth bumblebees used for pollination to native bumblebees, and raise awareness of the need for proper management, such as preventing the spread of large earth bumblebees into the habitat of native species. (MAFF, MOE)

1-3-44 Review of utilization of alien species for recreational fishing

In lakes where largemouth bass is used for recreational fishing in accordance with fishing rights, efforts will be made to investigate ways of livelihood that do not rely on alien species in cooperation with related organizations. (MAFF, MOE)

1-3-45 Prevention of use and spread of alien species in public works projects

In public works projects, the use of alien species listed in the List for invasive alien species management in Japan must be avoided as a basic rule. If no alternative species exist, appropriate management will be ensured to prevent alien species from escaping from the areas where they were used. Moreover, in greening efforts using native species, the necessary consideration will be given to the use of native species and seedlings to prevent genetic disturbance, and also to ensure that foreign greening plants are not used. (MAFF, MLIT, MOE)

1-3-46 Appropriate management of domestic animals

Given that the release and establishment of domestic animals into wild could affect the local ecosystem, efforts will be made to promote lifelong care of animals by owners and animal handling businesses, as well as to promote proper animal care and management to ensure that animals are managed properly. In particular, efforts will be made to promote individual management of dogs and cats, implement measures to increase the number of registered dogs and cats with microchips. (MOE)

Current status and target

Indicator	Current status	Target value
Number of registered microchipped dogs and cats	400,000	10 million (2022-2030 cumulative)

Action-oriented target 1-4: Minimize adverse impacts of climate change on biodiversity

In the IPBES Global Assessment Report, climate change is identified as the third largest direct driver of changes in the nature across the globe. Climate change imposes a wide range of adverse impacts on nature and humans in various ways, such as loss of species, degradation of the natural environment, increased frequency and intensification of weather-related disasters, and reduced agricultural production.

In order to reduce those adverse impacts, there is a need to undertake appropriate measures based on scientific knowledge. Accordingly, the government will accumulate various information and data on climate change and its impacts, and analyze and evaluate the data, as well as enhance measures to address the impact of climate change, and facilitate efforts to minimize its damage.

1-4-1 Evaluation of impacts of climate change (Priority)

The government will accumulate scientific knowledge on climate change and its impacts in Japan, and conduct reviews on comprehensive evaluation of climate change impacts in various fields such as natural ecosystems, agriculture, forestry, fisheries, natural disasters and coastal zones, and so on. (MOE)

1-4-2 Mitigation of impacts of climate change on ecosystems in protected areas

In order to reduce climate change impacts on natural ecosystems in protected areas such as national parks, the government will evaluate damages and impacts, and implement adaptive measures such as enhancing measures to address adverse impacts. (MOE)

Action-oriented target 1-5: Implement protection in accordance with laws and regulations for rare species of wild fauna and flora, and promote efforts to improve the current status of wildlife

In order to protect rare species of wild fauna and flora for the future and prevent species extinction, it is imperative to accumulate scientific knowledge and implement regulations on capture and collection, as well as transfer, display and advertisement for sale in accordance with laws and regulations, and to conserve their habitat environment.

There are many endangered plants and animals, and the risks of species extinction is increasing over the long run especially in inland water ecosystems. The Japanese Red List 2020 (published in March 2020) lists 3,716 threatened species in Japan. If the 56 threatened species in the Marine Life Red List (published in March 2017) are added, the number of threatened species in Japan comes to a total of 3,772. From the 5th Japanese Red List scheduled for publish in FY2024 or later, the Red List will combine terrestrial and marine areas, which had been under separate review systems until now.

Of the Red List species, those that are particularly threatened with extinction and for which laws and regulations are considered to be effective are designated as nationally rare species of wild fauna and flora based on the Act on Conservation of Endangered Species of Wild Fauna and Flora (Act No. 75 of 1992, hereafter “Species Conservation Act”), and capture, transfer, and other activities are regulated. For species whose breeding, habitat, and other factors need to be improved, Protection and Reproduction Program Plans are formulated and projects are carried out accordingly. If a habitat environment needs to be conserved, it is designated as a Habitat Protection Zone, and development activities are regulated. As of January 2023, 442 species have been designated as nationally rare species of wild fauna and flora, and 56 Protection and Reproduction Program Plans have been drawn up for a total of 75 species, and 10 Habitat Protection Zones have been designated nationwide.

In continuing those efforts steadily, the government will review the Red List and designate nationally rare species of wild fauna and flora appropriately, while taking into account the effectiveness of measures based on the Act and priorities for conservation. In implementing Protection and Reproduction Program, specific targets will be set, such as the level of population to be maintained and restored and the conditions of habitats, with the aim to release the designation of the target nationally rare species of wild fauna and flora. In implementing measures, basically *in-situ* conservation will be carried out by maintaining and improving habitats and exterminating alien species and other threatening factors. However, for species that are likely to face extreme difficulties within their original habitats to survive in the near future if only *in-situ* conservation measures are carried out, efforts for *ex-situ* conservation such as captive breeding, or rehabilitation in the wild will be adopted as supplementary to *in-situ* conservation.

With regard to the protection of foreign endangered species, species listed in Appendix I of the CITES and species reported under the bilateral conventions for the protection of migratory birds are designated as internationally rare species of wild fauna and flora under the Species Conservation Act. As of March 2023, 812 species have been designated. These species are regulated for import and export under the Foreign Exchange and Foreign Trade Act (Act No. 228 of 1949). In Japan, the Species Conservation Act generally prohibits the transfer, display, and advertising of these species. Given that international cooperation is vital for the conservation of species, domestic laws will be appropriately adjusted to changes in target species made by the Conference of the Parties to the Convention. In addition, laws will be appropriately operated through cooperation with relevant organizations, and illegal activities concerning rare species of wild fauna and flora will be rigorously monitored.

Regarding common species with relatively large populations, as they also play important roles in sustaining biodiversity and ecosystems, efforts will be made to evaluate their actual status to conserve them.

For the effective promotion of those efforts, the government will carry out measures concurrently with policies corresponding to other action-oriented targets, to prevent species extinctions caused by human activities as much as possible and to improve the status of wildlife.

Specific Measures

1-5-1 Publishment of the Japanese Red List and designation of nationally rare species of wild fauna and flora

As for the Japanese Red List that provides basic data for the conservation of threatened species of wild fauna and flora, the 5th Japanese Red List will combine terrestrial and marine areas, which have been reviewed separately until now, for release in FY2024 or later, and to this end, scientific knowledge will be accumulated and the threat of extinction will be quantitatively evaluated to the extent possible. In addition, the Red Data Book, which provides information about each species, will be compiled and made widely available to raise awareness of conservation. Particularly for species that are at high risk of extinction and for which measures based on legal restrictions are

considered effective, efforts will be made to promote their designation as nationally rare species of wild fauna and flora in accordance with the Species Conservation Act, with conservation priorities also taken into consideration. (MOE)

Current status and target

Indicator	Current status	Target value
Percentage of threatened species designated under the Species Conservation Act	12%	15% (FY2030)

1-5-2 Conservation of endangered species through Protection and Reproduction Program and other programs

Based on the characteristics of each species and their status, Protection and Reproduction Program will be undertaken in collaboration with local governments, conservation bodies, researchers, zoos and botanical gardens, and other, with quantitative targets set aiming to complete the projects and improve their status. This is expected to lead to several species being moved to a lower threatened category on the Japanese Red List, or no longer be in a threatened state, creating cases where Protection and Reproduction Program has been completed. For other species, conservation activities initiated by local communities and private entities will be supported and encouraged by developing guidelines for conservation measures and by building understanding and cooperation among local residents and other stakeholders. (MOE)

Current status and target

Indicator	Current status	Target value
Number of species whose status have improved as a result of the implementation of the Protection and Reproduction Program, and for which the objectives of the program have been achieved and completed	0 (FY2022)	Approx. 5 (FY2030)
Number of species in Protection and Reproduction Program for which quantitative targets have been set under the program	12 (FY2022)	24 (FY2030)

1-5-3 Conservation of ecosystems including habitat management by designating plants and animals

The government will reassess and select plants and animals subject to regulations on capture and collection, and enhance the conservation of plants and animals, including threatened species, that grow and live in national parks. (MOE)

Target

In order to ensure appropriate protection and management of protected areas, the government will undertake review work in national parks across Japan.

1-5-4 Appropriate regulation of endangered species of wild fauna and flora

In order to regulate international and domestic trade of endangered species of wild fauna and flora in accordance with CITES, Foreign Exchange and Foreign Trade Act, and the Species Conservation Act, the government will carry out appropriate legal operations, and review and implement effective management methods, including thorough monitoring and appropriate crackdowns on illegal activities through collaboration and cooperation among relevant ministries and agencies as well as relevant organizations. (MOE, NPA, MOFA, METI, MOF, MAFF)

1-5-5 Conservation of habitats for living organisms, including nature close to human

The government will promote consideration of ecosystems such as reducing environment burdens and impacts in the development of agricultural lands, irrigation and drainage facilities etc.

(MAFF)

1-5-6 Conservation of natural environment, close to human, inhabited by common species (Priority)

For so-called common species that are not considered endangered, the government will grasp their current status and secular changes, and implement measures such as conservation of habitats and breeding grounds as necessary, given that they form the basis of ecosystems and play a key role in the provision of a wide variety of ecosystem services. Bearing in mind that nearby nature provides habitats for living organisms including common species, and constitutes a component of the ecological network, efforts will be made to promote upkeep and management through cooperation among various entities. (MOE)

1-5-7 Review of indicator species focusing on natural ecosystem functions (Priority)

For insect species that are called common species because of their relatively high occurrence rate and large population, the government will select species that can serve as environmental indicators and compile information on their characteristics such as ecology, morphology, trends of increase/decrease in recent years, survey methods, and so on. Moreover, these results will be utilized to visualize the values and specific functions for biodiversity conservation when proceeding with measures such as green infrastructure and Eco-DRR in the future, and as a standard for certifying OECMs and for monitoring after certification. (MOE)

1-5-8 Revision and dissemination of guidelines for measures against light pollution

Light generated from using inappropriate outdoor lighting lamps adversely affects the status of plants and animals. In addition, excessive brightness wastes energy and causes global warming. For this reason, the contents of the guidelines will be reviewed as needed, based on improvements in lighting-related technologies, and further improved, and made more widely available to the general public. (MOE)

1-5-9 Promotion of integrated wildlife management (Priority)

From the multiple perspectives related to wildlife protection and management, the government will reassess and review efforts in various areas such as endangered species conservation, alien species control measures, and protection and control of wild birds and animals, and undertake necessary measures. (MOE)

Action-oriented target 1-6: Implement measures taking into account conservation of genetic diversity

Genetic diversity constitutes a component of biodiversity, along with ecosystem diversity and species diversity. Decreased diversity at the genetic level can jeopardize the survival of species and raise the threat of extinction. It is also likely for genetic diversity to be declining not only in endangered species with small populations, but also in species whose habitats have been fragmented and their population size reduced.

For this reason, the government will grasp the actual status and conserve genetic resources through seed preservation for species facing high extinction risk

Moreover, given the high probability of genetic differences between native species that are naturally distributed in Japan and the same species found outside of Japan, there exists concerns that the importation or man-made release of species from outside Japan may lead to hybridization with native species, which could affect the conservation of local biodiversity. Accordingly, the government will organize concepts on handling of those same species from outside Japan, and take necessary measures to avoid significant impact on biodiversity. With respect to living modified organisms, appropriate measures will be taken based on the Act on the Conservation and Sustainable Use of Biological Diversity through Regulations on the Use of Living Modified Organisms (Act No. 97 of 2003, hereafter referred to as the “Cartagena Act”). For organisms obtained through the use of genome editing technology which are not subject to the regulations of the Cartagena Act, the government will take appropriate measures based on notifications that stipulate their handling.

Specific Measures

1-6-1 Review of measures regarding the release of organisms (Priority)

From the perspective of ensuring genetic diversity, the government will clarify the concept of human-induced release of organisms into the wild, and take necessary measures. (MOE)

1-6-2 Prevention of impact on biodiversity by organisms derived from genetic modification technology

Through appropriate enforcement of the Cartagena Act, the government will ensure biodiversity by preventing the effect of the use of genetically modified organisms on biodiversity. Regarding the use of organisms derived from genome editing technology that are not subject to regulations under the Cartagena Act, in order to accumulate knowledge on their effect on biodiversity and to

understand their circumstances, the government will collect information for the time being. Furthermore, efforts will be made to raise awareness about Cartagena Act regulations, genetically modified organisms, and so on. (MOE, METI, MOF, MEXT, MHLW, MAFF)

Current status and target

Indicator	Current status	Target value
Number of biodiversity impacts caused by genetically modified organisms	0	0

1-6-3 Maintenance and securing of genetic diversity of endangered species

The government will promote conservation by population (*in-situ* conservation) based on evaluation of genetic diversity, particularly for species subject to Protection and Reproduction Programs. To complement *in-situ* conservation efforts, the government will cooperate with zoos, aquariums, botanical gardens, insectariums, and others, to maintain and secure the genetic diversity of endangered species by combining effective *ex-situ* conservation efforts in accordance with the status and characteristics of the species. (MOE)

Current status and target

Indicator	Current status	Target value
Number of species subject to Protection and Reproduction Programs for which *in-situ* conservation is undertaken by population based on genetic diversity evaluation	18 (2022)	36 (2030)

1-6-4 Promotion of plant diversity conservation in Shinjuku Gyoen National Garden

Shinjuku Gyoen National Garden has been participating in the National Network of Botanic Gardens for the Conservation of Plant Diversity of the Japan Association of Botanical Gardens since 2006. Facilities owned by Shinjuku Gyoen National Garden, such as the greenhouse, will continue to be utilized, to contribute as a core component in the *ex-situ* conservation of wild plants in Japan and the systematic preservation of beneficial plant resources in collaboration with the Japan Association of Botanical Gardens and member botanical gardens. (MOE)

1-6-5 Preservation of germplasm and seed of threatened species

The government will promote the preservation of germplasm, seeds, and others as a means of *ex-situ* conservation of threatened species. For animals, the government will collaborate with relevant organizations such as the National Institute for Environmental Studies, the Japanese Association of Zoos and Aquariums, and universities to promote cryopreservation of germ cells of species and populations at high risk of extinction. For plants, the Shinjuku Gyoen National Garden, which has served as a seed preservation facility since 2006, will expand its functions and reinforce cooperation with the Japan Association of Botanical Gardens. In doing so, further efforts will be made to reduce

the risk of extinction of threatened species and secure genetic resources. (MOE)

Current status and target

Indicator	Current status	Target value
Number of animal species or local populations subject to Protection and Reproduction Programs for which germ cells and others have been preserved	5 species (2022)	10 species/populations (2030)
Number of Japanese threatened plant species preserved with native habitat information	Preservation of seeds and spores with native habitat information for 475 threatened plant species in Japan	Preservation of seeds and spores with native habitat information for 600 threatened plant species in Japan

1-6-6 Collection, conservation, and use of genetic resources

- The Genebank Project for Agricultural Biological Resources, conducted by the National Agriculture and Food Research Organization (NARO), is responsible for the domestic and foreign genetic resources in the agricultural field including exploration, collection, evaluation, characterization, conservation, distribution, and information disclosure.
- Regarding genetic resources such as local chicken, the government will support efforts to organize training sessions on acquiring techniques such as cryopreservation of genetic resources by using primordial germ cells (PGCs), and to introduce such techniques.
- The government will promote to collect, preserve, and evaluate important forest tree genetic resources from the perspective of conserving biodiversity.
- At the Research Center for Medicinal Plant Resources, the government will promote research on the sustainable utilization of medicinal plant genetic resources, such as the proactive collection of medicinal plant resources, research on technologies necessary for permanent preservation, cultivation, breeding of excellent varieties, tissue culture, research on chemical and biological evaluation of active ingredients of medicinal plants, and research on the development of unutilized plant resources. (MAFF, MHLW)

Current status and target

Indicator	Current status	Target value
Collection and conservation of unexplored genetic resources in Asia and elsewhere	600 (FY2021)	More than 3,000 (FY2021-2025 cumulative)

Chapter 2: Application of Nature-based Solutions (NbS) to Address Social Challenges

Action-oriented target 2-1: Promote visualization of ecosystem functions and their further utilization

Efforts to leverage nature's blessings for resolving various social issues are referred to as "nature-based solutions (NbS)." NbS includes green infrastructures that utilize the various functions of natural environments, Ecosystem-based Disaster Risk Reduction (Eco-DRR), which makes use of ecosystems, and Ecosystem-based Adaptation (EbA) which utilizes ecosystems when solving social issues such as climate change countermeasures and disaster prevention and mitigation. Japan is also seeing growing momentum for the proactive use of such an approach for disaster prevention and mitigation and community development. Japan is known as a disaster-prone country due to the frequency of natural disasters such as earthquakes and torrential rains, and in addition, in recent years, the country has been facing social problems such as aging social infrastructures, along with the environmental changes brought about by extreme disasters caused by climate change. There is thus, in particular, an urgent need to review land use for averting disasters and to pursue efforts for green infrastructure and Eco-DRR, some of which take traditional knowledge on community development into consideration in utilizing nature. At the same time, there is a shortage of information, knowledge, and know-how that can form the basis for on-the-ground application of these efforts.

The government will examine systematic area designation and effective management methods through visualizing areas that should be conserved and restored based on diverse information and areas with high disaster prevention/mitigation effects and designating areas with multifunctionality, such as protection forests, in order to spread the use of green infrastructure and Eco-DRR with the aim of maximizing the use of ecosystem functions.

Specific Measures

2-1-1 Integrated efforts to address climate change and biodiversity conservation (Priority)

Based on the relationship between climate change and biodiversity loss, and the fact that ecosystem restoration plays an important role in adaptation to and mitigation of climate change, the government will promote efforts for the implementation of NbS through defining the significance of making use of NbS also as adaptation measures for disaster risk reduction and against heat, and policies for proceeding with surveys, research and local implementation in the Climate Change Adaptation Plan.

(MOE)

2-1-2 Local implementation of NbS (Priority)

For the implementation of NbS, the government will provide technical information and data necessary for visualization of ecosystem functions and effective ecosystem conservation and management, in order to facilitate the positioning of NbS in plans for conservation and sustainable use of biodiversity or land use at a local level, and the implementation of projects based on these plans. Moreover, efforts related to local nature will be made to drive NbS from a broader perspective,

such as contribution to health and local economy. (MOE)

2-1-3 Promotion of Eco-DRR (Priority)

Particularly with regard to Eco-DRR, among NbS, the government will encourage efforts by drawing up the Ecosystem Conservation/Restoration Potential Maps to visualize areas that are expected to be effective both ecosystem conservation and disaster risk reduction. In particular, enhanced support will be provided for the formulation of plans using the map and the implementation of on-site initiatives by local governments and community groups. (MOE)

Current status and target

Indicator	Current status	Target value
Number of prefectures that have positioned Eco-DRR in their LBSAPs	0 (2022)	47 (2030)

2-1-4 Promotion of implementation of green infrastructure across society (Priority)

Efforts will be made to promote green infrastructures through cross-sectoral and public-private partnerships and by expanding activities such as reviewing financing methods, conducting surveys and research on green infrastructure technologies, and diffusion of green infrastructures in the Green Infrastructure Public-Private Partnership Platform, participated by various entities from industry, academia, and government.

Moreover, the government will promote technological development related to the planning, development, maintenance, and management of green infrastructures, and conduct regional model verifications and other activities to promote their introduction to the region. In addition, green finance and ESG investment will be increased by utilizing private financing methods such as green bonds. (MLIT)

Current status and target

Indicator	Current status	Target value
Number of local governments registered on the Green Infrastructure Public-Private Partnership Platform that have commercialized green infrastructure initiatives	16 (2021)	70 (2025)

2-1-5 Promotion of green infrastructure by hosting International Horticultural Expo 2027 (Priority)

International horticultural expositions are held in various countries to contribute to the global promotion of horticulture and landscaping, and the creation of lifestyles enriched by flowers and greenery, etc. The Expo aims to serve as a tangible opportunity to disseminate sustainable urban development models that implement green infrastructure and utilize private-sector funding, to Japan and abroad, thereby driving efforts toward achieving SDGs and building a green society. The implementation of green infrastructure at the Expo will help disseminate green infrastructure both

domestically and internationally, encourage technological development by various entities, and facilitate its adoption both in Japan and overseas as a Japanese model even after the event.

(MLIT, MAFF)

Current status and target

Indicator	Current status	Target value
Number of participants at the Expo 2027 (including various forms of participation such as ICT use and regional cooperation)	-	15 million
Number of paying visitors at the Expo 2027 (within the number of participants at the Expo 2027)	-	10 million

2-1-6 Promotion of forest conservation measures

The government will install facilities in protection forests and other areas, rehabilitate forests whose functions have degraded, and develop coastal forests, and so on. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of coastal forests and others that are appropriately preserved	96% (FY2018)	100% (FY2023)

2-1-7 Systematic promotion of designation as protection forests

- The government will systematically promote the designation of protection forests for forests particularly required to demonstrate functions for public benefit, such as water source conservation and prevention of sediment run-off.
- As for forests required to demonstrate functions for public benefit, such as protection forests for fish breeding, the government will systematically promote the designation as protection forests. (MAFF)

Current status and target

Indicator	Current status	Target value
Area of protection forests that comprehensively and highly demonstrate the multifunctionality of forests	12.25 million ha (FY2020)	13. 01 million ha (FY2033)

2-1-8 Promotion of the resilience of agriculture and rural areas

The government will promote the development of drainage facilities, measures for irrigation ponds and efforts for River Basin Disaster Resilience and Sustainability by All in response to disasters that are getting more frequent and severe. (MAFF)

Current status and target

Indicator	Current status	Target value
Area of agricultural land and surrounding areas where flooding and other damage is prevented	Approx. 58,000 ha (FY2021)	Approx. 210,000 ha. (FY2025)

Action-oriented target 2-2: Promote community development making the most of nature while respecting the connection between forests, the countryside, rivers, and the seas, and the preservation of local traditional culture

As Japan faces profound social changes, such as a declining population, aging society with declining birthrates, and the need to adapt to a with-Covid/post-Covid era, it is becoming increasingly important to build a community that embraces a self-reliant and decentralized approach toward realizing a sustainable, resilient society in harmony with nature. Enhancing the recycling and reuse of local resources could facilitate a shift from a society dependent on non-renewable resources to one grounded in renewable resources. As remaining aware of the connections among forests, the countryside, rivers, and the seas that make up the watersheds, local communities can leverage their resources and uniqueness to support each other, which will maximize regional vitality and help realize SDGs and Society 5.0.

It is also necessary to encourage understanding of the cultural and spiritual abundance that comes from working and living in nature. Rural areas are facing increasing aging and depopulation, at the same time, they also boast abundant blessing of nature and traditions and culture deeply rooted in their natural environment. Inheriting resources unique to a region built on biodiversity, beautiful landscapes, and rich cultures based on such resources generates pride and affection for the region, making the region unique, drawing people to it, contributing to its vitality and self-reliance.

Hence, by utilizing the nature, resources, and cultural traditions of regions, working to promote tourism, create new industries and jobs, and broaden exchanges with cities, a virtuous cycle of protection and use of the natural environment can be formed, thereby contributing to the creation of prosperous and vibrant regions. Specifically, the government will collectively promote the Circular and Ecological Economy, roll out the Project to Fully Enjoy National Parks, extend links between urban and rural areas through ecotourism and *workation* (work-vacation), train new workers in local industries, demonstrate the multifunctionality of agriculture, forestry and fisheries, and conserve and make use of natural scenic spots and cultural assets.

Specific Measures

2-2-1 Platform project creating the Circular and Ecological Economy to revitalize regions through environment

To establish a regional platform for creating the Circular and Ecological Economy as called for in the 5th Basic Environmental Plan, efforts will be made to develop an environment that will allow excavation of human resources, organizing stakeholders who are core in the region, and development of a concrete concept for drawing up project plans in regions and local governments

working to create the Circular and Ecological Economy. In addition, support will be provided to regions and local governments in drafting project plans for their comprehensive regional efforts by dispatching teams of experts and other necessary support. (MOE)

Current status and target

Indicator	Current status	Target value
Number of regions engaged in the creation of the Circular and Ecological Economy (cumulative)	106 (As of Oct. 2020)	300 (2030)

2-2-2 Grants for establishing a Sound Material-Cycle Society

Through Grant for Establishing a Sound Material-Cycle Society, efforts will be made to develop facilities in municipalities for converting waste biomass into compost, animal feed, methane, biodiesel fuel, and so on. (MOE)

2-2-3 Promotion of quality nature experience activities in national parks and quasi-national parks (Priority)

By leveraging the nature experience activity promotion planning system of the revised Natural Parks Act that came into effect in April 2022, the government will promote nature experience activities in national parks and quasi-national parks based on a unified policy agreed upon by the local community, and enhance quality nature experience activities based on the natural characteristics of these parks. (MOE)

Current status and target

Indicator	Current status	Target value
Number of park plans with vision and use experience activity plans	-	Plans are described in 34 national parks across the country (2030)
Number of nature experience activity promotion plans approved under the Natural Parks Act	-	17 (2030)
Nature experience content that meets the content guidelines for nature experience in national parks	-	34 national parks across the country

2-2-4 Improvement of quality of visitor facilities in national parks and quasi-national parks (Priority)

In order to enhance the attractiveness of national parks and other parks, and encourage visitors to the parks, the visitor facilities maintenance and improvement plan system under the revised Natural Parks Act, which came into effect in April 2022, will be used for the formulation and sharing of plans based on locally agreed unified policies on visitor facilities, such as Facility Complex Zone and hot spring areas in each national park and quasi-national park. At the same time, the government will implement landscape improvement measures, such as removing abandoned buildings based on

the plans, to improve the quality of the accommodation environment in the visitor facilities sites.

(MOE)

Current status and target

Indicator	Current status	Target value
Number of certified visitor facilities maintenance and improvement plans in accordance with Natural Parks Act	0 site (As of Apr. 2022)	5 sites (2025)
Number of visitor facilities that have been developed and improved in accordance with a visitor facilities maintenance and improvement plan or visitor facilities plan	25 sites (FY2021)	35 sites (2025)

2-2-5 Promotion of the Project to Fully Enjoy National Parks

- **The Project to Fully Enjoy National Parks**

The Project to Fully Enjoy National Parks will be promoted nationwide to enhance the brand power of Japan's national parks and attract visitors from within and outside Japan. Through a virtuous cycle of protection and utilization of national parks, the government aims to protect outstanding nature, revitalize local areas, and create memorable experiences for visitors.

(MOE)

Current status and target

Indicator	Current status	Target value
Number of foreign visitors who visited national parks	-	6.67 million (FY2025)
Total number of Japanese visitors in the national park area	19,526,000 (FY2021)	32.05 million (FY2025)

- By 2025, restore the number of foreign visitors to Japan who use national parks to pre-pandemic levels.
- By 2025, restore the number of Japanese visitors using national parks to pre-pandemic levels, and aim for high quality tourism.

- **Enhance appeal of visitor facilities leveraging national park use focusing on accommodation services proposed by the private sector**

In order to promote stay type high-value-added tourism with a focus on moving experiences in beautiful natural sceneries of national parks, model areas will be selected to improve the overall attractiveness of visitor facilities in national parks, centering on high-value-added accommodations proposed by the private sector. (MOE)

Current status and target

Indicator	Current status	Target value
Number of model project sites	-	More than 2 districts (FY2025)

- **Establishing local committee and drafting policies and plans**

The government will promote the establishment of the local committee in each park so that diverse local entities can work together on the Project to Fully Enjoy National Parks. Efforts will be made to determine the importance of usage policies in the park plan and management plan, and pursue the development of step-up programs, as action plans for such policies. (MOE)

Current status and target

Indicator	Current status	Target value
Number of parks with local committees for the Project to Fully Enjoy National Parks	12	-
Number of parks where step-up programs have been developed	12	-
Times of the Project to Fully Enjoy National Parks Local Committee meetings	14	-

- **Improving and further developing contents for nature experience**

In order to provide visitors to national parks with activities to learn about the stories of nature and its people, the project will create and improve content for experiencing attractive nature in accordance with the use policies of each park, develop experience courses, train staff, develop new uses such as *workation* and promote sustainability tours, encourage wide-area use, and publicize the parks both in Japan and abroad. (MOE)

Current status and target

Indicator	Current status	Target value
Number of high value-added nature experience content	383※1 (As of Feb. 2022)	34 national parks nationwide (2025)※2
Number of national parks where facilities have been developed to enable regular *workation* to take place	16 (As of Feb. 2022)	25 (2025)
Number of regions participating in human resources development projects	49 (FY2021)	70 (FY2025)

*1 Number of improved contents. Figures do not include whether guidelines are met or not.

*2 Nature experience content in national parks that meets the content guidelines for nature experience in national parks.

- **Improving landscapes and developing facilities**

In order to provide attractive facilities and services to visitors to national parks, the attractiveness of visitor facilities in Facility Complex Zones and hot spring areas will be enhanced by

improving the landscape through removing abandoned buildings and attracting diverse accommodation facilities, while promoting the release of public facilities to the private sector, and facilitate the development and management of attractive facilities through digital and multilingual exhibition interpretation. (MOE)

Current status and target

Indicator	Current status	Target value
Number of users of visitor centers	1,037,955※1 (2021)	-
Number of sites where abandoned buildings have been removed	17 (As of Feb. 2022)	-

*1 Number of users of 12 directly controlled VCs with the highest number of users

- **Promote zero-carbon parks for decarbonization**

Contribution will be made to the sustainable progress of the region by promoting zero carbon parks and others, with the goal of advancing efforts such as decarbonization in visitor facilities in national parks to enable visitors to experience and appreciate the sustainability of the region. (MOE)

Current status and target

Indicator	Current status	Target value
Number of registered zero carbon parks	7 (As of Apr. 2022)	-

- **Create a mechanism for user fees/cost sharing and for providing users with exclusive experiences**

In order to encourage visitors to national parks to experience and appreciate the sustainability of the region, a virtuous cycle of conservation and use will be promoted by developing a mechanism for user fees/cost sharing that incorporates ICT, establishing rules for use, and offering exclusive experiences. (MOE)

Current status and target

Indicator	Current status	Target value
Number of new systems for user fees/cost sharing	21 (As of Feb. 2022)	-

2-2-6 Efforts to improve the quality of life through interactions with nature

Interacting with nature is said to be an inspirational experience that cannot be gained every day, and it is also said to help ease stress. According to the report on the promotion of nature experience activities for youth (FY2020), children exposed to more experiential activities in elementary school showed a tendency to have higher self-esteem later in life. To this end, programs for experiencing

nature with all five senses, including interpretation, will be provided in national parks and others.
(MOE)

Current status and target

Indicator	Current status	Target value
Number of park plans with vision and use experience activity plans	0	Plans are described in 34 national parks across the country (2030)
Number of high value-added nature experience content	383※1 (As of Feb. 2022)	34 national parks across the country (2025)※2
Number of regions participating in human resources development projects	49 (FY2021)	70 (FY2025)

*1Number of improved contents. Figures do not include whether guidelines are met or not.

*2 Nature experience content in national parks that meets the content guidelines for nature experience in national parks.

2-2-7 Promotion of long nature trails (long trails)

The government will develop long nature trails and promote their use to experience Japan's abundant nature, history and culture, to rediscover the country's land and climate, and to raise awareness of the importance of nature conservation. (MOE)

Current status and target

Indicator	Current status	Target value
Number of trail users	50.53 million (2020)	77.58 million (2024)

2-2-8 Promotion of efforts in Biosphere Reserves (BR) (Priority)

To revitalize efforts in the BRs that aim to reconcile the conservation of ecosystems with their sustainable use, the government will promote community development that make the most of nature through effort in BR by sharing information on international trends and good practices in Japan, holding workshops, and working with various projects of national parks, and so on.
(MEXT, MAFF, MOE)

2-2-9 Promotion of geopark

- **Promote UNESCO Global Geopark**

  To revitalize UNESCO Global Geoparks, which aim to realize harmony between nature and humans and sustainable developments by protecting geological heritages having international geological significance and making use of them for science, education, and community development, and so on, the government will cooperate in submission of application for UNESCO Global Geoparks in Japan to UNESCO and in assessment, and also disseminate

information. (MEXT)

- **Promote efforts in cooperation with Geoparks in national parks**

  In areas where national parks and Geoparks overlap, the government will develop conservation and utilization plans for landforms and geology linked to national parks, and hold symposiums and other events on cooperative efforts to publicize the attractiveness of national parks and promote local revitalization by leveraging landforms and geology. (MOE)

Current status and target

Indicator	Current status	Target value
Number of regions where projects to promote conservation and utilization of landforms and geology in conjunction with Geoparks are implemented	14	20 (FY2030)

2-2-10 Promotion of sustainable tourism

In order to promote tourism that takes global environmental considerations into account, with a view to realizing sustainable tourism, efforts will be made to improve the endeavors by tourism operators and the awareness/behaviors of tourists. In addition, efforts such as the establishment of local management systems through model formation will be developed nationwide. Furthermore, efforts will be made to establish the environment for receiving tourists to prevent the adverse effects of overtourism, and to produce contents that make the best use of local resources. (MLIT)

Target

Stimulate the local socioeconomy, and conserve and revitalize the local culture and environment through local community-led efforts, by circulating profits gained from tourism in the region without causing overtourism.

2-2-11 Promotion of ecotourism

- The government will support the dissemination of information on regions where Overall Concept for Promoting Ecotourism is certified, award particularly outstanding ecotourism efforts, and provide human resource development for guides, coordinators, and others for regions engaged in local revitalization through the use of natural resources.
- The government will promote ecotourism in regions based on the basic principles of the Ecotourism Promotion Act ((1) Consideration for natural environment, (2) Contribution to promotion of tourism, (3) Contribution to community development, and (4) Utilization for environmental education). (MOE)

Current status and target

Indicator	Current status	Target value
Number of prefectures with at least 1 certified Overall Concept for Promoting Ecotourism	15	47 (FY2028)

2-2-12 Promotion of tourism contributing to wildlife conservation

In order to ensure that the use of local wildlife as a tourism resource is sustainable and contributes to wildlife conservation, information will be provided on how local rules are created and how part of the profits are used for conservation, as well as supporting tour creation and promotion. (MOE)

2-2-13 Promotion of sustainable tourism in coral reef ecosystems

The government will implement measures to reduce excessive and inappropriate use of coral reefs, which was recognized as one of the most urgent priority issues in the Action Plan to Conserve Coral Reef Ecosystems in Japan 2022-2030, build model cases of sustainable tourism and develop effective multi-lingual tools to deepen understanding of conservation which will raise people's awareness of nature and local culture. (MOE)

2-2-14 Hot spring revitalization projects utilizing local resources including nature

The government will revitalize hot spring resorts by promoting *Shin-Toji*, a new style of enjoying local resources such as bathing in hot springs, surrounding nature, history and culture, and food to refresh both the body and mind. (MOE)

Current status and target

Indicator	Current status	Target value
Team *Shin-Toji*, the network of supporters of new style *Toji* (traditional *Toji* is a stay in hot spring resorts for the purpose of therapeutic hot-spring medical treatment)	366 organizations/individuals (End of FY2021)	10% increase on previous year

2-2-15 Promotion of the geothermal energy in harmony with local nature and local communities

In order to promote the geothermal energy in harmony with local nature and local communities, the government will conduct surveys that monitor and analyze scientific data on hot spring resources, and share those data, with the aim of avoidance and reduction of negative impacts on surrounding hot spring resources and the local natural environment and gaining the understanding of local stakeholders. (MOE)

Current status and target

Indicator	Current status	Target value
Number of regions and units of continuous hot spring monitoring equipment installed	1 region, 1 unit (End of FY2021)	20 regions, 50 units (FY2024)

2-2-16 Promotion of *workation* and satellite offices that utilize nature

The government will encourage the use of national parks and countryside stay regions for *workation* and other endeavors that leverage the natural environment. (MOE, MAFF)

Current status and target

Indicator	Current status	Target value
Number of national parks where facilities have been developed to enable regular *workation* to take place	16 (As of Feb. 2022)	25 (2025)

2-2-17 Efforts to sustain effort in mountain village regions

- The government will provide financial support necessary for implementing job-engagement guidance and training of forestry workers in order to secure and train new workers in forestry.
- The government will undertake projects to create and promote forest service industries which create new employment and income opportunities by making use of forest space in the fields such as health, tourism, education. (MAFF)

Current status and target

Indicator	Current status	Target value
Number of new workers with safe and efficient skills	720 (FY2021)	1,200 Every fiscal year until 2025
Number of regions involved in the forest service industry	21 (End of FY2021)	45 (FY2025)

2-2-18 Establishment of hubs for the conservation and utilization of *satochi-satoyama*

In order to facilitate the development of new schemes for comprehensively resolving environmental and socioeconomic issues in areas critical for biodiversity conservation such as Important Satochi-Satoyama Areas for the Conservation of Biodiversity (Important Satochi-Satoyama), the government will provide support for pioneering and effective activities that contribute to the conservation and utilization of *satochi-satoyama*, such as the creation of small-scale businesses utilizing the resources of *satochi-satoyama*. (MOE)

2-2-19 Promotion of outreach to *satoyama* forests by various entities

- Sustainability of mountain village communities will be ensured by demonstrating the multifunctionality of forests and by creating populations of people who will participate.
- Forest conservation and management activities will be supported by local residents and so on, in order to revitalize the forests.
- Efforts will be made to encourage the use of woody biomass as energy in ways that ensure the sustainability of forests. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of active organizations that have achieved the targets related to the multifunctionality of forests set for each support item	80% (FY2020)	80% (FY2026)
Fuel use of wood	7,000,000 m^3 (FY2019)	8,000,000 m^3 (FY2025)

2-2-20 Diverse efforts for biodiversity conservation towards revitalizing rural areas

- In order to ensure that the multifunctionality of agriculture and agricultural villages is inherited by next generations and its benefits are widely enjoyed by the people, the efforts will be made to increase the number of participants in local cooperation activities while collaborating with diverse human resources and organizations such as land improvement districts, both within and outside the community.
- Support will be provided for initiatives that contribute to improvement of the rural environment for conservation of water quality and ecosystems, in combination with efforts to conserve and manage resources such as agricultural land and water on a community-wide basis with the participation of not only local farmers but also various entities.
- Support will be given to efforts to promote the awareness of the Globally Important Agricultural Heritage Systems and the Japanese Nationally Important Agricultural Heritage Systems by disseminating information. (MAFF)

Current status and target

Indicator	Current status	Target value
Total number of participants in community-wide conservation and management of agricultural land and water	Total 13.01 million people /organizations (FY2016-2020)	Total 14 million people /organizations (FY2021-2025)
Preventing a decrease in the area of agricultural land in hilly and mountainous areas, etc	72,000 ha (FY2020)	75,000 ha (FY2024)
Percentage of agricultural land area that is conserved and managed on a wide scale through local cooperation activities for the conservation and management of agricultural land and water	46% (FY2020)	60% (FY2025)

2-2-21 Support for hilly and mountainous areas to maintain agricultural production activities

Support will be provided to activities to maintain agricultural production for the future in hilly and mountainous areas by compensating for the physical disadvantages of these location for agricultural production. (MAFF)

Current status and target

Indicator	Current status	Target value
Preventing a decrease in the area of agricultural land in hilly and mountainous areas, etc	72,000 ha (FY2020)	75,000 ha (FY2024)

2-2-22 Support for efforts to enable fishing villages to have multifunctionality

Support will be provided to regional activities, undertaken by fisheries operators and others, which contribute to the demonstration of the multifunctionality of fisheries and fisheries villages such as maintaining and restoring environments and ecosystems, and ensuring safe and secure marine areas for their activities. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of increase in biomass in target water areas	0% (FY2021)	20% increase (By FY2025)

2-2-23 Creation of attractive waterside spaces such as *Kawamachizukuri* Approach (Priority)

Given the importance of the waterfront as a place where people can enjoy interacting with water and living organisms, the government will develop waterfront revetments for safe access to the waterfront, and utilize them as spaces for familiarizing with the waterfront and as environmental education sites where people can interact with water and living creatures. By fostering opportunities to proactively extract private-sector vitality, encouraging local creativity and encouraging the construction of community development hubs, efforts will be made to create attractive waterside spaces with unique local scenery, history, culture, and tourism infrastructure, such as *Kawamachizukuri* Approach, as an integral part of city planning. (MLIT)

Current status and target

Indicator	Current status	Target value
Number of municipalities that have implemented projects to bring the waterfront and the town together to create a lively waterfront area	433 (FY2020)	658 (FY2025)

2-2-24 Maintenance of scenic beauty in urban areas by utilizing scenic beauty areas

Since the scenic beauty areas help maintain and create excellent natural environments such as woodlands and riparian areas, thus providing habitat for living organisms in urban areas, the scheme for scenic beauty areas will continue to be properly administered. (MLIT)

2-2-25 Preservation of historical landscapes that contribute to biodiversity

Historical landscapes embody the traditions and culture of ancient cities in which buildings, ruins, and other structures of historical significance in Japan are integrated with the surrounding natural environment, and represent and form the land conditions of these ancient cities. To preserve the

landscapes, the government will provide support through government subsidies for compensation for losses associated with action regulations implemented by local governments, purchase of land, development of facilities, and removal of properties that impede landscape. (MLIT)

2-2-26 Preservation and utilization of natural scenic sites

The government will designate scenic sites composed of the natural environment, such as gardens with high artistic or ornamental value to Japan, and promote their protection efforts. Specifically, the government will provide grants for surveys and partially subsidize projects by local governments to convert designated scenic sites into public property. (MEXT)

2-2-27 Support for creation of regional plans relating to the protection and utilization of cultural properties

The government will provide support to municipalities in preparing the regional plans relating to the protection and utilization of cultural properties, a master plan/action plan for the conservation and utilization of cultural properties in the municipality concerned, which is a new scheme established by the 2018 amendment of the Act on Protection of Cultural Properties (Act No. 214 of 1950). (MEXT)

2-2-28 Preservation and utilization of cultural landscapes

In order to protect cultural landscapes that have been nurtured through the interaction between nature and humans, the government will select important cultural landscapes that have been protected by appropriate protection measures. Also, the government will provide subsidies to restoration and repair projects in the selected area and for efforts to promote awareness of the importance of cultural landscapes. (MEXT)

2-2-29 Fukushima Green Reconstruction Project

With the aim of passing on the benefits of nature and their sustainable use to future generations, the Fukushima Green Reconstruction Project will be promoted in cooperation with Fukushima Prefecture through conserving the plentiful nature of Fukushima Prefecture, and restoring the number of users of natural parks by improving their attractiveness and establishing a system for sightseeing tours. (MOE)

2-2-30 Development of parks and open green spaces that contribute to reconstruction

The government will inform the public about the technical guideline for the improvement of parks and green spaces related to the reconstruction in the wake of the Great East Japan Earthquake and promote efforts to restore and conserve local ecosystems during the development of parks and green spaces that contribute to the reconstruction. (MLIT)

Action-oriented target 2-3: Promote nature restoration that will also contribute to climate change mitigation and adaptation, and promote conservation and use of ecosystems beyond current levels as measures for carbon sink and reduction of greenhouse gas emissions

In face of social challenges such as declining population, depopulation of rural areas, and aging social infrastructure in Japan, the application of NbS adapted to local characteristics, land use conditions, and local needs is expected to be useful for climate change mitigation and adaptation.

In FY2020, the sink amount from forests in Japan totaled 44.5 million tons (about 3.9% of the total emissions of 1.15 billion tons in FY2020). Of this amount, 40.5 million tons was absorbed via forest sink measures, 2.7 million tons via agricultural soil carbon sink measures, and 1.3 million tons via the promotion of urban greening, and others.

Additionally, carbon uptake by marine ecosystems, so-called blue carbon, is coming to international attention as a new alternative for sinks. Examples of marine ecosystems that immobilize carbon (blue carbon ecosystems) include seagrass beds, sea algae beds, wetlands and tidal flats, and mangrove forests, and studies are being conducted to evaluate these ecosystems. Furthermore, functions such as mitigation of heat island effect by urban green spaces, and rainwater retention and infiltration by retarding basin play crucial roles in adaptation to climate change.

The government will promote measures for climate change mitigation and adaptation utilizing the multifunctionality of forests and other natural ecosystems along with surveys, research, and technological development pertaining to their methods and assessments. In addition, to ensure that ecosystems can continue to function sustainably and to their maximum extent, the government will restore and conserve ecosystems based on scientific knowledge, and appropriately manage natural capital.

Specific Measures

2-3-1 Promotion of climate change measures utilizing ecosystem functions

Regarding Ecosystem-based Adaptation (EbA) and Ecosystem-based Disaster Risk Reduction (Eco-DRR), efforts to evaluate and visualize ecosystem functions will be undertaken, along with the dissemination and utilization of guidelines for local governments policymakers, as part of local initiatives. (MOE)

2-3-2 Measures for forest carbon sinks

Measures for the enhancement of forest carbon sinks include appropriate forest practices such as thinning, a rotational cycle of “harvesting, wood utilization and planting after harvest” on planted forests, expanded use of wood as well as creation of young forests with vigorous growth after harvest by means of the “Elite Trees” seedlings, which are developed by forest tree breeding of indigenous tree species with significant potential of growing faster than conventional seedlings of the same species. (MAFF)

2-3-3 Forest conservation by forest pest and disease control measures and forest fire prevention

With the aim of conserving forest ecosystems, the government will work with prefectures and other stakeholders to implement forest fire prevention and forest pest and disease control to prevent pine trees from weevil damage and oak trees from wilt damage and develop technologies for reducing forest damage by means of pest resistant varieties and promoting coexistence with potential threats.

(MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of prefectures where the rate of damage to pine forests to be conserved is maintained less than 1% (slight damage)	85% (FY2021)	100% (FY2025)

2-3-4 Promotion of carbon sink measures through urban greening and other measures

As a sink measure for greenhouse gases by urban greening, the government will develop a method for calculating the amount of greenhouse gases absorbed, raise awareness of the significance and effects of urban greening and other measures, and provide support in the development of urban parks and the preservation of green spaces that serve as sinks for greenhouse gases. In addition, the government will promote efforts to reduce indirect carbon dioxide emissions, such as reducing air conditioning and heating demands, through measures to counteract heat island effects such as improving ground surface cover in urban parks and building sites through greening. (MLIT)

Current status and target

Indicator	Current status	Target value
Area of development of urban parks and others	84,000 ha (FY2020)	85,000 ha (FY2030)

2-3-5 Promotion of biomass utilization

- The cabinet approved the 3rd Basic Plan for Promoting Biomass Utilization in September 2022 with the aim to comprehensively and systematically implement measures to promote biomass utilization, and set targets to be achieved by 2030. Measures will be promoted to achieve the target.
- Biomass industrial city will be promoted with the aims of creating environmentally friendly and disaster-resistant towns/villages based on biomass industries that utilize regional characteristics.
- The government will promote the development of facilities to realize local production for local consumption of energy by utilizing local biomass through the MIDORI Strategy.

(MAFF, relevant ministries and agencies)

Current status and target

Indicator	Current status	Target value
Utilization rate of biomass (Utilization rate of biomass relative to annual biomass production)	Approx. 74%	Approx. 80% (2030)
Scale of the biomass industry (Market share of domestic biomass-related industries in the product and energy industry)	1%	2% (2030)
Number of prefectures that have developed biomass utilization promotion plans Number of municipalities utilizing biomass-related plans	19 prefectures 392 municipalities	All prefectures All municipalities (2030)

2-3-6 Promotion of utilization of sewage biomass

The government will promote region-wide cooperation such as consolidating biomasses that are generated in the region such as raw garbage, food waste, and livestock waste at sewage treatment plants and exchanging heat with waste management plants, while promoting conversion sewage treatment plants to regional energy hubs that proactively generate energy by the extensive and efficient use of biosolids as well as energy conversion by methane fermentation and drying/carbonization processes. In addition, the government will promote the use of biosolids for green or agricultural land such as the conversion to fertilizer and phosphorus recovery through efforts such as gaining understanding among users and supporting supply-demand matching in collaboration with related ministries and agencies. (MLIT)

Current status and target

Indicator	Current status	Target value
Rate of sewage biomass recycling	37% (FY2021)	50% (FY2030)

2-3-7 Promotion of climate change adaptation measures (Priority)

In light of the comprehensive assessment of climate change impacts, the government will review measures in various fields and promote climate change adaptation so as to address climate change impacts that have been scientifically confirmed. To implement climate change adaptation in accordance with the actual situation in each region, support will be provided to local governments in developing and implementing local climate change adaptation plans smoothly, including those for natural ecosystems, through the development of manuals and the implementation of training programs. (MOE)

2-3-8 Promotion of River Basin Disaster Resilience and Sustainability by All utilizing various functions of the natural environment (Priority)

In promoting River Basin Disaster Resilience and Sustainability by All, the government will leverage green infrastructures that capitalize on the various functions of the natural environment,

and promote the following efforts.

- Secure and enhance rainwater harvesting and infiltration functions by using retarding basins and others.
- Promote the establishment of ecological networks through proactively conserve or restore ecosystem functions that contribute to the reduction of disaster risks.
- Promote the project to develop green belts in urban mountain foothills to create a series of forested areas as a green belt on the foothill slopes adjoining city areas.

(MLIT, MAFF, MOE)

2-3-9 Developments and reviews related to adaptation to climate change and coastal conservation giving due consideration to the natural environment

There are concerns about sea level rise over time due to climate changes, which may have serious effects on coasts, such as increased coastal erosion, increased zero-meter zones, intensified storm surge damage, and changes in biological habitats. Efforts will be made to monitor tidal levels, waves, and other factors, and respond to these changes by reviewing the basic plan for coastal conservation in accordance with the effects of climate change, and by promoting the required development and reviews. In addition, measures will be taken to prevent coastal erosion through beach nourishment, submerged dikes, and artificial reefs, as well as to conserve and restore beaches and create pleasant spaces where people can interact with nature. (MLIT, MAFF)

Current status and target

Indicator	Current status	Target value
Number of coasts where climate change impacts have been incorporated into protection targets	0 (2021)	39 (2025)
Number of beaches where adaptive beach management has been implemented to enable adaptation to impacts such as sea level rise	1 (2021)	20 (2025)

2-3-10 Acceleration of efforts to expand CO_2 sinks by utilizing blue carbon ecosystems (Priority)

The government will promote surveys and research on quantitative evaluation methods for climate change mitigation functions using carbon sequestration and storage (blue carbon) in oceans. In addition, efforts will be made to tackle the creation, restoration, and conservation of seaweed beds and tidal flats, and others. (MLIT, MAFF)

2-3-11 Implementation and dissemination of natural resource-derived materials (cellulose nanofibers: CNF) to realize innovative CO_2 reduction

For businesses aiming to commercialize products that utilize CNF, efforts will be made to match products and materials, and conduct LCA assessments of climate change countermeasures and resource circulation. As for CNF products expected to reduce CO_2 emissions over their life cycles,

the government will support the installation of facilities necessary for their commercial-scale production, and promote the development of process technologies and composite/processing technologies that help to reduce production costs. (MOE, METI)

Action-oriented target 2-4: Promote due consideration of biodiversity in introduction of renewable energy

Climate change constitutes one of the major drivers of biodiversity loss, triggering habitat shrinkage and degradation due to increasing temperatures and the decline of species vulnerable to climate change. In this context, it is imperative to promote climate change countermeasures such as the introduction of renewable energy sources also from the perspective of biodiversity conservation. At the same time, in adopting renewable energies such as wind, solar, and geothermal, there are challenging issues to be addressed, including avoiding negative impact on the behavior of living organisms, their habitats and key areas for conservation.

In order to introduce renewable energy while minimizing adverse impacts on ecosystems as well as to balance biodiversity conservation and climate change mitigation, it is of paramount importance to implement necessary measures at the planning stage of introducing renewable energy, such as selecting ecologically appropriate sites by identifying areas that are important for biodiversity conservation in advance and avoiding them. In addition, it is also essential to build sufficient consensus to gain the understanding and cooperation of the local community.

Specific Measures

2-4-1 Promotion of regional decarbonization promotion projects based on the Act on Promotion of Global Warming Countermeasures (Priority)

In accordance with the scheme for regional decarbonization promotion projects based on the Act on Promotion of Global Warming Countermeasures, the government will promote renewable energy projects that contribute to the region, in due consideration of the environmental conservation, including conservation of biodiversity, while ensuring smooth consensus-building in the region. (MOE)

Targets

In accordance with the scheme for regional decarbonization promotion projects based on the Act on Promotion of Global Warming Countermeasures, increase the implementation of renewable energy projects that contribute to the region, by designating promotion areas giving appropriate consideration to the environment, including the conservation of biodiversity, while ensuring smooth consensus-building in the region.

2-4-2 Promotion of environmental impact assessment in introducing renewable energies

In implementing renewable energy projects, environmental impact assessment systems will be

appropriately promoted to ensure proper environmental considerations and to contribute to conservation of biodiversity. (MOE)

2-4-3 Mainstreaming biodiversity considerations in selecting sites for renewable energy power generation facilities

In order to avoid trade-offs between the sustainable benefits of biodiversity conservation and ecosystem services and the introduction of renewable energy power generation facilities, the government will compile guidelines summarizing appropriate site selection methods, including the visualization of information on maps, and provide data necessary for the visualization. Furthermore, both biodiversity conservation and climate change countermeasures through investments and financing will be achieved through providing information on how to avoid trade-offs not only to business operators but also to investors. (MOE)

2-4-4 Measures to prevent bird strikes against wind power generation facilities

In order to deploy renewable energy to the maximum extent possible, efforts to secure suitable sites that coexist with local communities are required. The prevention of bird strikes against wind power generation facilities has become one of the most critical tasks from the viewpoint of biodiversity conservation. Efforts will thus be made to secure collaboration among related organizations, such as business operators, to gather knowledge and identify more effective bird strike countermeasures, including ascertaining cumulative impacts. (MOE)

Current status and target

Indicator	Current status	Target value
Number of guidelines developed and guidance revised to contribute to bird strike prevention	1 (2022)	3 (2030)
Percentage of citations in environmental impact assessment documents (wind power facilities) for sensitivities maps showing vulnerability of birds to the installation of wind power facilities	94% (2022)	98% (2030)

Action-oriented target 2-5: Enhance efforts to mitigate human-wildlife conflicts

As the number of wildlife such as Sika deer and wild boars increases and their distribution areas expand, they continue to severely impact the ecosystem, causing damage to the agriculture, forestry, and fisheries industries as well as the living environment. Although the value of damage to crops caused by wildlife has been decreasing in recent years, damages in FY2021 still amounted to 15.5 billion yen, remaining at a high level. The appearance of large animals such as bears in urban areas has also become an urgent problem for local communities. In addition, infectious diseases associated with wildlife have the potential to significantly affect not only human health and socioeconomic activities, but also the conservation of biodiversity in Japan.

Damage to agriculture, forestry, and fisheries caused by wildlife has led to loss of enthusiasm for

farming, increasing abandonment of farming, and soil erosion resulting from the disappearance of forest understory vegetation, thereby seriously affecting community development in rural areas facing declining and aging populations.

On the other hand, Sika deer, wild boars, and other animals, which are causing serious damage, are valuable as resources in that they can be used for edible meat. Regarding the use of captured wildlife, the amount of processed wild game meat utilized in FY2021 was 2,127 tons, 1.7 times the amount in FY2016. This amount used is seen to be increasing with increased use and rooted use in the food service industry, as well as the development of other applications such as pet food.

To reduce damage caused by wild birds and animals and ease conflicts between humans and wildlife, the government will separate humans and wildlife through the use of resources and zoning in *satochi-satoyama*, as well as promote coexistence without conflicts between humans and wildlife through damage prevention countermeasures, population control through capture, environmental management to prevent them from emerging in urban areas, and community development by effectively using captured wildlife. In addition, efforts will be made to secure and train personnel specializing in capturing and utilizing wildlife. Furthermore, based on the One Health approach, which comprehensively addresses the three areas; human health, animal health, and environmental health, and resolves issues in a cross-sectoral manner, measures against infectious diseases will be promoted.

Specific Measures

2-5-1 Promotion of countermeasures to prevent damage by wildlife (Priority)

In order to further reduce the serious damage posed by wildlife to agriculture, forestry, fisheries, and ecosystems, the government will promote the development of damage prevention plans by municipalities based on the Act on Special Measures for Prevention of Damage Related to Agriculture, Forestry and Fisheries Caused by Wildlife, and provide comprehensive support for habitat environment management through the setup of buffer zones, damage control by installing protective fences, and population control to ensure appropriate population density of wildlife. Furthermore, effective damage control countermeasures will be promoted through wide-area capturing undertaken by prefectures and the use of new technologies such as ICT, and so on.

(MAFF, MOE)

2-5-2 Prevention of forest damage by Sika deer and other animals

In order to effectively control damage caused by Sika deer, wide-area capture by prefectures will be promoted, and the outcomes of measures taken by forestry-related parties to improve the efficiency of deer capture will be horizontally deployed. In addition, in implementing effective deer damage prevention measures, the development and verification of new capture technologies using ICT, which is particularly effective, will be carried out. Also, efforts will be made to promote deer capture projects aimed at national land conservation in backcountry natural forests in the national forests

where deer damage is serious, and in areas that span multiple prefectures. At the same time, measures will be studied and verified to prevent Japanese hare (*Lepus brachyurus*) feeding damage, which is becoming increasingly serious in recent years. (MAFF, MOE)

Current status and target

Indicator	Current status	Target value
Percentage of municipalities that have reduced the area of deer damage, among municipalities that have set forest area under protection from wildlife damage	59% (FY2020)	More than the previous year

2-5-3 Reduction of inland fisheries damage caused by great cormorants (*Phalacrocorax carbo*) feeding damage

In order to reduce damage to inland fisheries due to feeding by great cormorants (*Phalacrocorax carbo*), the government will develop and disseminate effective population management and control methods, and promote wide-area collaboration among the Ministry of Agriculture, Forestry and Fisheries, Ministry of the Environment, and prefectures, to efficiently and effectively implement various measures, mainly capture and control, throughout the country. (MAFF, MOE)

2-5-4 Reduction of fisheries damage caused by Steller sea lions (*Eumetopias jubatus*)

In order to reduce the damage caused to fisheries by Steller sea lions, the government will implement measures such as management of migratory populations based on scientific knowledge, while giving due consideration to biodiversity. (MAFF)

2-5-5 Protection and management of harbor seals (*Phoca vitulina*)

In view of the increasing seriousness of damage caused by harbor seals, a rare wildlife species, the government will implement comprehensive protection and management of harbor seals while giving due consideration to the conservation of the species. In particular, to ensure coexistence of harbor seals in the Erimo area with local communities in the future, including coastal fisheries, efforts will be made to continue to conduct population monitoring, population management (population control), and damage prevention projects to reduce fishery damage, while giving consideration to the sustainability of the local population based on the specified wildlife control plan for harbor seal in Erimo. (MOE)

Target: Reduce the population to 80% of the 2014 level and keep it at that level

2-5-6 Promotion of measures for wildlife protection and control based on the basic guidelines

In order to mitigate human-wildlife conflicts and build appropriate relationships between people and animals, the government will review the basic guidelines based on the Wildlife Protection, Control and Hunting Management Act every five years in line with changes in the status of the protection

and management of wildlife and social changes. At the same time, the national government, local governments, research institutions, and private organizations will work together to comprehensively promote measures based on the basic guidelines. (MOE)

2-5-7 Promotion of appropriate management of designated wildlife species for control such as Sika deer and wild boar (Priority)

Regarding Sika deer and wild boars which are serious threats to agriculture, forestry, fisheries, and ecosystems, the government will continue to enhance the capture of these animals through projects for capturing designated wildlife specifies for control, in order to reach the target of halving the number of such animals in FY2023. Based on the status of efforts up to that time, ideal targets will be reviewed for FY2024 and beyond, to continue/strengthen intensive and wide-area management. (MOE, MAFF)

Current status and target

Indicator	Current status	Target value
Number of individuals of Sika deer	2.85 million (2020)	1.47 million (2020)
Number of individuals of wild boar	870,000 (2020)	600,000 (2020)

2-5-8 Enhancement of scientific and systematic protection and control of specified wildlife (Priority)

Regarding specified wildlife such as Sika deer, wild boars, monkeys, bears, and great cormorants, the government will enhance scientific and systematic protection and control by setting, evaluating, and reviewing appropriate management targets based on the Category 2 Specified Wildlife Control Plan. For wildlife species that move over wide areas beyond prefectural borders, relevant organizations will work together to enhance wide-area management. Moreover, a framework will be established to deal with the recent increase in bears, wild boars, and other species appearing in urban areas. (MOE)

Current status and target

Indicator	Current status	Target value
Percentage of prefectures that have achieved the targets of Category 2 Specified Wildlife Control Plan (Sika deer and wild boar)	Sika deer: 13% Wild boar:19%	Sika deer: 100% Wild boar: 100% (2030)
Percentage of development of specified wildlife control plan in prefectures where Japanese macaques (*Macaca fuscata*) and bears are present throughout the year	Japanese macaque: 62% Bears: 67%	Japanese macaque: 100% Bears: 100% (2030)
Establishment of wide-area committees consisting of several prefectures for the purpose of bird and animal management	Bears: 4 Great cormorant: 4	Bears: 16 Great cormorant: 5 (2030)

2-5-9 Appropriate hunting of wildlife

Given that hunting plays a certain role in managing wildlife populations, the government will review the ideal form of hunters and hunting license system from the viewpoint of promoting appropriate wildlife protection and control. In parallel with efforts to enhance the management of wild animals such as Sika deer and wild boar, there is growing concerns that the use of traps may lead to an increase in the number of mistaken captures. Consequently, information on the types and number of wildlife being caught by mistake will be collected, and measures will be studied. The prevention of accidental captures is critical from the perspective of protecting non-target species from capture, and it also contributes to the systematic management of wildlife. Thus, measures such as reassessing the shape of traps and regulating their use will be considered if such measures are expected to be effective in preventing accidental captures. (MOE)

Current status and target

Indicator	Current status	Target value
Number of prefectures collecting and utilizing information on accidental captures	25	47 (FY2030)

2-5-10 Promotion of digitization in protection and management of wildlife

In order to promote scientific and systematic protection and management of wildlife while dealing with the digitization process across the government, efforts will be made to convert all procedures based on the Wildlife Protection, Control and Hunting Management Act to electronic procedures, and centrally compile and manage capture information collected by prefectures and others using the wildlife capture information system and provide it as open data that is easy to make use of, thereby improving the efficiency and labor-saving aspects of protection and management of wildlife.

(MOE)

Current status and target

Indicator	Current status	Target value
Percentage of use of the wildlife capture information system by prefectures	68% (FY2022)	100% (FY2030)

2-5-11 Efforts to utilize captured wildlife as regional resources

The government will provide support for countermeasures such as habitat environment management, population control, and damage control, as well as support for the development of handling and processing facilities of captured wildlife, improvement of sanitary management, and cooperative efforts between handling and processing facilities and parties involved in distribution and sales, in efforts to maximize the use of wildlife as regional resources. (MAFF)

Current status and target

Indicator	Current status	Target value
Amount of wild game meat utilized	2,127 tons (FY2021)	4,000 tons (FY2025)

2-5-12 Securing and fostering the next generation of leaders in wildlife protection and control

In order to secure and educate players of wildlife protection and control, such as hunters and Certified Wildlife Capture Program Implementers, the government will clarify the human resources required for wildlife protection and control, and review measures to secure and educate them systematically. To achieve these goals, the government will launch various activities such as; technical training programs for officials of local governments, hunters, and Certified Wildlife Capture Program Implementers, and so on; training of professional human resources in collaboration with universities and academic societies, and so on; use of human resource registration programs to register and utilize persons with specialized knowledge and skills; and event planning and content production to promote the acquisition of hunting licenses. (MOE, MAFF)

Current status and target

Indicator	Current status	Target value
Number of hunters in their 40s or younger holding hunting licenses	55,000 (FY2018)	66,000 (20% increase) (FY2030)
Percentage of Certified Wildlife Capture Program Implementers who are accredited for night gun hunting, etc	14% (FY2021)	25% (FY2030)
Average number of staff with expertise per prefecture	3.7 (FY2022)	5.0 (FY2030)

2-5-13 Securing and training of personnel responsible for countermeasures to prevent damage caused by wildlife

The government will promote establishment of wildlife damage control team and encourage participation by various entities, such as farmers, and develop and secure leaders in wildlife damage prevention countermeasures. In addition, human resource development will be enhanced and strengthened through systematic training, and human resource development for hunters and those engaged in handling and processing facilities will be promoted. (MAFF, MOE)

Current status and target

Indicator	Current status	Target value
Number of members of wildlife damage control team	42,053 (FY2022)	43,800 (FY2025)

2-5-14 Responding to infectious diseases related to wildlife

Given that infectious diseases of wildlife can have significant impact not only on human health and socioeconomic activities, but also on the conservation of Japan's biodiversity, in order to minimize

or reduce the impact as much as possible, the government will assess risks to biodiversity conservation, identify outbreaks of infectious diseases at an early stage, and establish a system for prompt response in cooperation with relevant parties, taking into account the One Health approach. Regarding highly pathogenic avian influenza and classical swine fever, which have major impacts from the perspective of biodiversity conservation and livestock sanitation, related ministries and prefectures will work together to conduct surveillance and strive towards early detection of the viruses and prompt and smooth response in the event of an outbreak. With regard to the movement of migratory birds that may carry virus and the situation of infectious disease outbreaks, the government will provide easy-to-understand information to the public and share the information with relevant organizations. Furthermore, as classical swine fever infection in wild boars is a cause of swine fever outbreaks on farms, the government will provide easy-to-understand information to the public on the status of swine fever infection in wild boars, and reduce open-air virus concentrations by spraying oral vaccines. Moreover, efforts will be promoted to prevent the spread of African swine fever to wild boars and enhance the quarantine system in the event of its entry.

(MOE, MHLW, MAFF)

Current status and target

Indicator	Current status	Target value
Number of confirmed mass deaths of wildlife that threaten the survival of species or have a negative impact on rare wildlife species due to infectious diseases related to wildlife	1 (As of Dec. 2022)	0 (Every year)
Number of infectious diseases related to wildlife species of biodiversity conservation importance, for which national surveillance, countermeasures, and other efforts are conducted in cooperation with relevant agencies	3 (FY2021)	3 (Every year)
Number of infectious diseases identified as high priority in the biodiversity conservation risk assessment, for which specific measures and other efforts have been reviewed	2/30 (FY2021)	10/30 (FY2023)

2-5-15 Responding to infectious diseases related to companion animals

When raising awareness among pet owners, and others, efforts will be made to contribute to biodiversity conservation by raising awareness of the need to prevent the transmission of zoonoses between wild animals, companion animals, and humans, based on the perspective of the One Health approach. (MOE, MHLW, MAFF)

Chapter 3: Realization of Nature Positive Economies

Action-oriented target 3-1: Promote quantitative assessment of dependence and impact on biodiversity, analysis of current status, science-based target-setting, and information disclosure, by businesses, develop a foundation for promoting investments and financing by financial institutions and investors, and promote activities to conserve and restore biodiversity from perspective of investment and financing

Business activities depend on biodiversity and natural capital in various ways, thus appropriate conservation and management of biodiversity and natural capital will enhance sustainability of their business activities.

For a virtuous cycle between biodiversity conservation and economic activities, increasing efforts are being made with appropriate assessment by businesses of the impact of and dependence on biodiversity and natural capital from business activities, including their own activities and ones in upstream and downstream activities of their supply chains, and analyze of business risks and opportunities, to incorporate those results into business strategies and disclose information on those matters in an appropriate manner. Unlike greenhouse gas emissions, there are limited number of quantitative indicators for biodiversity, and it is not easy to quantify impact of business activities. Thus, in comparison to effort addressing climate change, not enough has been done to make efforts. However, in recent years, there is rapid progress in discussions on establishment of international rules such as the TNFD and the SBTs for Nature, and an interest in biodiversity is growing in the field of ESG investment as well.

In order to take advantage of this trend and respond to international frameworks such as the TNFD, various entities, including the national governments and businesses, will make efforts to develop a mechanism for biodiversity assessment and information disclosure, data sharing for supply chains, and a platform for sharing know-how and information, in collaboration among these entities.

At the same time, in order to further increase investments and financing that contribute to conservation and restoration of biodiversity, the government will develop a foundation for investments and financing through raising awareness among financial institutions and investors and promoting dialogue between financial institutions and investors and businesses, among other measures. In addition, the government will promote green bond and other measures that fund projects contributing to conservation and restoration of biodiversity.

Specific Measures

3-1-1 Participation in international rule-making and involvement of domestic businesses (Priority)

The government will proactively contribute to discussions on private initiatives such as the TNFD, the SBTs for Nature, and the ISO/TC 331 (technical committee on biodiversity established by the International Organization for Standardization) to ensure that such frameworks will become the ones which reflect actual circumstances of business sector in Japan. Together with this, in collaboration

with national initiatives (e.g., the JBIB, the Keidanren Committee on Nature Conservation), the government will develop and disseminate guidelines that encourage businesses to incorporate biodiversity considerations into their management, set targets, and disclose information. (MOE)

Current status and target

Indicators	Current status	Target value
Number or percentage of businesses participating in the international initiatives (e.g., the SBTs for Nature, the TNFD) and domestic initiatives (e.g., the JBIB, the Keidanren Committee on Nature Conservation), which are supported by or are recognized by such initiatives	Number of businesses: 218 (2022)	Number of businesses: 300 (FY2025)
Number or percentage of businesses which integrate biodiversity consideration into their management	75%※ (FY2019)	80% (FY2025)
Number or percentage of businesses which set targets and disclose information on biodiversity consideration	Setting target: 55% Information disclosure: 74%	Setting target: 60% Information disclosure :80% (FY2025)

*Source: Questionnaire on Biodiversity - Survey on the Relationship between Nature's Benefits and Business Activities - < Survey Results in Fiscal 2019>
(Keidanren, Keidanren Committee on Nature Conservation, Japan Business and Biodiversity Partnership)

3-1-2 Study Group on Nature Positive Economies (Priority)

Through the Study Group on Nature Positive Economies, launched in March 2022, the government will analyze international and national trends of nature-positive and business and develop visions and strategies building on such analysis, and thereby promoting efforts by the private sector for conservation and sustainable use of biodiversity and natural capital. (MOE)

Target

By the end of FY2023, develop Transition Strategies toward Nature Positive Economies (tentative name) that lay out visions and paths toward realizing nature positive economies.

3-1-3 Addressing issues related with supply chains, indicators and visualization, and database development (Priority)

Taking into account trends in rulemaking by international private initiatives, the government will provide support for domestic businesses to pursue sustainable management that takes biodiversity and natural capital into account, by addressing issues related with supply chains, indicators, visualization, and database development. (MOE)

Current status and target

Indicator	Current status	Target value
Number or percentage of businesses which make efforts for addressing issues related with supply chains, indicators, visualization, and database development	―	―

3-1-4 Support for information disclosure, quantitative evaluation and quantitative target setting (Priority)

Taking into account trends in rulemaking by international private initiatives, the government will provide support for Japanese businesses and raise their awareness by developing guidelines on the TNFD and the SBTs for Nature so that Japanese businesses will promote sustainable management that takes biodiversity and natural capital into account. (MOE)

Current status and target

Indicator	Current status	Target value
Number or percentage of businesses which incorporate biodiversity consideration into their activities	75% (FY2019)	80% (FY2025)
Number of organized seminars on raising awareness	16 per year (2021)	80 (FY2025, cumulative value)

3-1-5 Promotion of information disclosure on biodiversity and natural capital, and green finance (Priority)

The government will promote information disclosure on biodiversity and natural capital by businesses as well as green finance in these areas. Moreover, to implement green infrastructure in the society, the government will promote green finance and ESG investment through using methods of private financing such as green bonds. (MOE, MLIT)

Current status and target

Indicator	Current status	Target value
Number of domestic organizations participating in the TNFD	45	90 (FY2025)

3-1-6 Promotion of ESG investment in real estate which considers environmental impact

The government will promote improving conditions towards forming a real estate investment market which promotes ESG investment in superior real estate that considers environmental impact, such as the one on biodiversity. (MLIT)

Action-oriented target 3-2: Support technologies and services contributing to biodiversity conservation

When business uses, processes, and distributes blessings from nature as raw materials to supply

products and services through their business activities, they also pose pressures on biodiversity by changing land use and emitting pollutants, among others. Thus, the activities by businesses depend on and affect biodiversity and they are required to proactively make effort to reduce their impact on biodiversity and to contribute to biodiversity conservation. Supporting technologies and services contributing to biodiversity conservation by businesses will not only reduce the environmental impact of their business activities, but also increase the number of choices of product with biodiversity consideration, thereby leading to build a society where many people can be involved in the conservation and the sustainable use of biodiversity.

To support the efforts by businesses, the government will communicate and disseminate information on businesses that contribute to reduce environmental pressure through innovative technology development and services. Furthermore, the government will facilitate transformation of demand pattern across society by encouraging public organizations to lead procurement of eco-friendly goods, in accordance with the Act on Promoting Green Procurement. Additionally, the government will promote the social implementation of technologies which focus on environment conservation.

Specific Measures

3-2-1 Support initiatives related to nature-positive in business sector (Priority)

The government will further improve information-sharing infrastructure to scale up the number of businesses which offer technologies, products and services that contribute to biodiversity conservation, as well as size of such market. (MOE)

Current status and target

Indicator	Current status	Target value
Number or percentage of businesses which incorporate biodiversity consideration into their operations	75%	80% (2025)
Number of businesses which provide technologies, products and services contributing to conservation of biodiversity as well as the market size of providing such technologies, products and services	8.5 trillion Japanese yen (2019)	9.0 trillion Japanese yen (2025)

3-2-2 Dissemination of information on excellent cases

The government will summarize information on excellent cases of technologies, products, and services for biodiversity conservation which are possessed by Japanese businesses, and the government will disseminate them both nationally and internationally. (MOE)

Current status and target

Indicator	Current status	Target value
Number of cases registered in the Business for GBF Project	50 (2022)	200 (2025)

3-2-3 Promotion of green purchasing in government procurement

Public organizations such as the national government will take lead in purchasing eco-friendly goods and other goods and will engage in changing demand pattern and promote development of a sustainable society by promoting provision of appropriate information including eco-friendly goods. (MOE)

3-2-4 Promotion of practical application of smart agricultural technology

The government will promote efforts to establish and disseminate cultivation technologies with a view of biodiversity conservation by developing and demonstrating smart agricultural technology focusing on environmental conservation, such as technologies for early and highly accurate pest forecasting by using artificial intelligence and technologies for efficient utilization of pesticide and fertilizer. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of business farmers practicing data-driven agriculture	49% (2021) *Reference value	Most business farmers (80%) (2025)

Action-oriented target 3-3: Implement the ABS in utilizing genetic resources

While value of genetic resources increases along with the development of pharmaceuticals and the improvement of crop varieties, diverse genetic resources are at risk of being diminished or being lost due to worldwide deforestation and desertification. For this reason, it is important to collect and preserve valuable genetic resources, to pass them on to the next generation, and to proactively utilize them in a sustainable manner.

At the CBD-COP10 held in Japan in 2010, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity was adopted. The protocol aims at ensuring access to genetic resources, contribution of medicines and other products developed through their utilization for human well-being, appropriate distribution of benefits arising from utilization of genetic resources to the countries that provide them, thereby promoting conservation of ecosystems which support such genetic resources. Japan accepted the Nagoya Protocol in 2017, and as a domestic measure, developed the Guidelines on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization (hereinafter “ABS Guidelines”). ABS Guidelines aim at gaining trust by the provider countries, and facilitating smooth access to genetic resources through putting in place measures for the encouragement of the implementation of ABS, including the facilitation of the compliance with the legislations of provider countries and the allocation of the benefits for biodiversity conservation. In so doing that has contributed to the promotion of research and development related to genetic resources in Japan and facilitated appropriate utilization of genetic resources brought from provider countries.

The government has conducted follow-up to the ABS measure from FY2021 to FY2022 preparatory

to five-years of implementation of the ABS Guidelines. Although it is indicated that no revision of the measure was required, it is essential to continue to promote improving understanding and raising awareness of the ABS Guidelines, and to continue to facilitate further discussions on its technical issues.

In order to promote effective use of genetic resources in a sustainable manner and to contribute to biodiversity conservation based on the principles of the ABS, the government will promote compliance with domestic systems, raising awareness, collecting and sharing information on both national and international trends, and strengthening international coordination to ensure appropriate and active use of genetic resources.

Specific Measures

3-3-1 Promotion of domestic measures for the Nagoya Protocol (ABS Guidelines)

- **Implementation of the ABS associated with utilization of genetic resources**

  Based on the Nagoya Protocol, the government will promote compliance with and awareness-raising on ABS-related domestic measures implemented in provider countries and will enable fair and equitable sharing of benefits arising from utilization of genetic resources, thereby contributing to conservation and sustainable use of biodiversity.

  (METI, MOF, MEXT, MHLW, MAFF, MOE)

- **Domestic implementation of the Nagoya Protocol**

  The government will promote legal access and appropriate use of overseas genetic resources in Japan through implementation of national measures for the Nagoya Protocol. As part of this process, the government will also review how to address technical issues related to access to and utilization of genetic resources identified in the course of implementation of the ABS. Furthermore, in light of the international review of the Nagoya Protocol, the government will collect cases and share information across industries and academic fields, and sectors.

  (MOE, MOF, MEXT, MHLW, MAFF, METI)

Current status and target

Indicator	Current status	Target value
Level of recognition of the Nagoya Protocol and the ABS Guidelines by researchers that engage in related field	Level of recognition of the Nagoya Protocol: 72.3% know its content Level of recognition of the ABS Guidelines: 66.0% know its content (FY2019)	Level of recognition of the Nagoya Protocol: 80% know its content Level of recognition of the ABS Guidelines: 70% know its content (FY2030)

Source: FY 2019 Policy Research on Environment and Economy "Research on Evaluation of Benefits, Costs and others of measures by provider Countries for the Revision of the Guidelines on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization (the ABS

Guidelines)" (Questionnaire survey conducted among researchers, engineers and others in related fields).

3-3-2 Collection, conservation and utilization of genetic resources (ABS-related)

The government will carry out surveys on international trends in utilization of genetic resources, and smoothly implement introduction of plant genetic resources, which are important for development of Japanese varieties, by the "multilateral system" of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR). (MAFF)

3-3-3 Initiatives for bilateral collaboration by the National Institute of Technology and Evaluation (NITE)

As a bilateral initiative of NITE, the documents on the conservation and utilization of microbial resources will be prepared between the government agencies and research institutes of some Asian countries/regions and NITE, and activities for conservation and sustainable use of overseas microbial resources will be implemented, and technologies related to conservation, collection and utilization of genetic resources will be transferred to resource providing countries. Also, NITE will continue to provide Japanese companies with opportunities to utilize genetic resources by securing access routes to overseas resources and enabling the transfer and utilization of resources based on agreements with the resource providing countries. (METI)

Action-oriented target 3-4: Enhance sustainable, environmentally friendly agriculture, forestry, and fisheries, including reduction in risk-weighted use of chemical pesticides and chemical fertilizer use, and promotion of organic farming, as stated in MIDORI Strategy for Sustainable Food Systems

Agriculture, forestry, and fisheries are originally production activities that interact with nature, utilize it appropriately, obtain its blessings, and depend on appropriately maintained material cycles of biodiversity and nature. In Japan, agriculture, forestry, and fisheries have long played significant roles for biodiversity through creating unique local landscapes and natural environments, providing valuable habitat for a variety of species, and forming and maintaining ecosystems. At the same time, activities such as development of farmlands and waterways without consideration to environment, excessive use of pesticides and fertilizers, and overfishing, have degraded habitat of wildlife species and had a significant impact on biodiversity. In addition, in recent years, level of agriculture, forestry, and fisheries activities have been lowered due to depopulation of rural areas and decrease in population engaging in those activities, which has led to a decline in use of *satoyama* forests and the increase in abandoned farmland and subsequently to the decrease in number of living organisms which had been frequently found in the s*atochi-satoyama*, while damage by wildlife has become more intensified as human activities had been abated. As agriculture, forestry, and fisheries are closely related to biodiversity in such a way, for maintaining and further developing agriculture, forestry, and fisheries as sustainable activities, not only producers but also the entire supply chain are required to recognize

that biodiversity must be conserved.

Based on those understanding, the government will promote sustainable agriculture, forestry, and fisheries, including reducing risk-weighted use of chemical pesticides and use of chemical fertilizers, and promote organic farming, in accordance with the MIDORI Strategy and the Biodiversity Strategy of the Ministry of Agriculture, Forestry and Fisheries.

People on the ground who are engaged in agriculture, forestry, and fisheries currently face challenges, such as decreasing number and aging of those engaged in those works, degradation of local communities, and decline in productivity. In order to achieve sustainable food production and reducing environmental impact while overcoming those challenges, the government will make effort to change behavior of relevant entities and enable innovations that will support them to do so. To promote efforts to reduce burden on biodiversity at all stages ranging from production to consumption in agriculture, forestry, livestock industry, and fisheries, the government will encourage relevant entities to actively carry out efforts, develop innovative technologies and production systems, and facilitate social implementation across society, and to disseminate know-how and develop human resources.

Specific Measures

3-4-1 MIDORI Strategy for Sustainable Food Systems (Priority)

To realize the MIDORI Strategy, the government will develop new technologies, promote organic farming, and visualization of reduction in environmental burdens, building on the 2030 target and the Act to Promote Low Environmental Impact Activities for the Establishment of Environmentally Harmonized Food Systems (Act No. 37, 2022). (MAFF)

Current status and target

Indicator	Current status (Reference value)	Target value
Risk-weighted use of chemical pesticides	23,330 (Risk-weighted value) (2019 agricultural chemical year) *	10% reduction (2030)
Chemical fertilizer use	900,000 tons (2016)	720,000 tons (20% reduction) (2030)
Area of organic farming	25,200 ha (2020)	63,000 ha (2030)

* The 2019 agricultural chemical year is defined as a period from October 2018 to September, 2019.

3-4-2 Promotion of organic farming

The government will:

- Support development of human resource by technical training for farmers starting organic farming, and other measures, in order to promote on-the-ground effort towards scaling up organic farming.
- In order to promote efforts in municipalities and other areas where communities as a whole engages in organic farming, in coordination with efforts for increasing efficiency in logistics and expanding sale channels, provide holistic support with regard to pilot testing and institutional

arrangements of activities which are promoted with involvement of not only farmers but also business entities and residents inside and outside, consistently from production stage to consumption stage of organic farming.

- Systematize and disseminate practical on-the-ground technologies, and establish next generation organic farming technologies for major crops by 2040. (MAFF)

Current status and target

Indicator	Current status	Target value
Area of organic farming	25,200 ha (2020)	63,000 ha (2030)

3-4-3 Promotion of environmentally friendly farming methods

The government will:

- Support farming activities (organic farming, winter-flooded control, etc.) that are highly effective in preventing global warming or conserving biodiversity and are implemented along with efforts by farmer organizations and other organizations in which chemical fertilizers and synthetic pesticides are in principle reduced by no less than 50%.
- For soil improvement, promote the use of livestock and food-residual manure by strengthening arable-livestock cooperation, and the use of green manure, etc. (MAFF)

Current status and target

Indicator	Current status	Target value
Area of organic farming	25,200 ha (2020)	63,000 ha (2030)

3-4-4 Promotion of improvement of conditions in rural area and *satochi-satoyama* through sustainable farming

The government will support activities aimed at maintaining agricultural production activities in hilly and mountainous areas and other areas to prevent reduction in area of agricultural land and to ensure multifunctionality of agriculture. (MAFF)

Current status and target

Indicator	Current status	Target value
Preventing a decrease in the area of agricultural land in hilly and mountainous areas, etc	72,000 ha (FY2020)	75,000 ha (FY2024)

3-4-5 Improvement of system for increase in production and utilization of domestically produced feed

The government will establish a framework to further increase production and utilization of domestic feeds through improving production efficiency of feed production organizations and

reinforcing their operations, using superior feed crop varieties and stably producing them, using public pastures, promoting production of domestic concentrated feed, and developing new way of utilizing unused resources and significantly improving its quality. (MAFF)

3-4-6 Enhancing efficiency of fertilization and making fertilization smart

The government will improve efficiency of fertilizer use through adapting its use to soil and to crop growth, restricting its use only in a specific area and other means, and will introduce "smart fertilization" by accumulating and utilizing data. (MAFF)

3-4-7 Promotion of integrated pest management

The government will promote effort of integrated pest management that does not rely solely on chemical pesticides, but intensively promotes improvement of production conditions (prevention) which prevent outbreak of pests and weeds and also promote prediction of pests and weeds outbreaks (prediction). (MAFF)

Target

Promote integrated pest management by having prefectural authorities develop plans on implementing integrated pest management in line with the basic guidelines formulated by the government based on the amendment of the Plant Protection Act (Act No. 151 of 1950).

3-4-8 Promotion of utilization of livestock manure

The government will promote utilization of livestock manure suitable to local conditions, such as production of high-quality composts meeting needs of crop raising farmer and its distribution in wider area through pelletizing these composts. The government will promote use of energy from methane fermentation of livestock manure and also promote use of liquid fertilizer from fermentation residues. (MAFF)

3-4-9 Promotion and dissemination of GAP

The government promotes international-level GAP and its expansion through the actions as follows: the dissemination of the MAFF Guidelines on international-level GAP which has been developed as a common standard of international-level GAP in Japan, in cooperation with prefectural governments; clarifying the benefits of international-level GAP for farmers; area-basis expansion of the activities of international-level GAP by farmers and strengthening advisory services at local; and raising awareness of international-level GAP by buyers and consumers. (MAFF)

Current status and target

Indicator	Current status	Target value
Number of farmers implementing international-level GAP	24,653 (FY2021)	240,000 (FY2030)

3-4-10 Promotion of acquisition of livestock farming GAP

The government will support scaling up efforts such as supporting acquisition of livestock farming GAP certification to encourage reducing environmental impact through appropriate storage and disposal and other treatments of waste and other. (MAFF)

3-4-11 Efforts to increase demands for wood through appropriate production activities

The government will:

- Promote structural reforms mainly focusing on reducing cost of material production, its transporting and processing, as well as on coordinating a system to ensure a stable supply of products with reliable quality and performance.
- Promote development and promotion of CLT and fire-resistant wooden materials, and promote use of wood such as domestic timber in buildings including public and private non-residential buildings.
- Encourage use of woody biomass as energy in a manner which ensures sustainability of forests.
- Facilitate research and development (R&D) and promotion of new materials, alternatives to fossil resource-derived products, such as cellulose nanofibers and glycol lignin derived from woody biomass. (MAFF)

Current status and target

Indicator	Current status	Target value
Amount of supply and use of domestically produced timber	34,000,000 m^2 (FY2021)	42,000,000 m^2 (2030)
Number of cases of development and demonstration of new material	3 (FY2021)	3 per year

3-4-12 Introduction of new technologies and development of human resource for appropriate forest management

The government will:

- Train Forest Practice Planners who play a central role in preparing Forest Management Plans and train Forest Management Planners who carry out sustainable management of forests, in order to appropriately manage forest.
- Introduce new silvicultural techniques that use seedlings with superior growth potential and machinery, in order to properly implement forest operations. (MAFF)

Current status and target

Indicator	Current status	Target value
Number of active Forest Practice Planners	2,206 (FY2021)	3,500 (FY2030)
Number of active Forest Management Planners	67 (FY2021)	500 (FY2025)

3-4-13 Promotion of distribution and utilization of legally harvested wood and wood products

Based on the Act on Promotion of Use and Distribution of Legally-Harvested Wood and Wood Products (the Clean Wood Act) (Act No. 48 of 2016), all business operators are required to use legally harvested wood and wood products. To promote use of legally harvested wood and wood products as the Act aims to do so, the government will provide information on the Clean Wood Navi website and support awareness-raising activities through councils participated by a broad range of relevant entities. (MAFF, METI, MLIT)

Current status and target

Indicator	Current status	Target value
Volume of wood which Class 1 registered timber-related business operators confirm as legally harvested ones	30,350,000 m^3 (FY2019)	43,500,000 m^3 (FY2025)

3-4-14 Coexistence of sustainable fisheries with protection of vulnerable ecosystems (Priority)

Based on assessments on impact of high seas bottom fishing on vulnerable ecosystems on seamounts conducted by the Scientific Committee of the regional fisheries management organizations (RFMOs), in which Japan is registered as a member, the government will, in cooperation with members, take appropriate management measures that allow coexistence of sustainable fisheries with protection of vulnerable ecosystems. (MAFF)

3-4-15 Enhancement of fisheries resource surveys and assessments and improvement of their accuracy

The government will gradually increase number of species for fish stock assessment and begin surveys on the species concerned. The government will conduct surveys, assessments and other actions on major fish species (e.g., Japanese sardine, chub mackerel) in water areas surrounding Japan and on international fishery resources (e.g., salmon, bonito, tuna) caught in high seas and other areas. The government will support efforts to enhance understanding of mechanisms of resource fluctuations and medium- to long-term resource dynamics through surveying impact of changes in marine environment on marine resources, and support efforts to establishing real-time observation of forming of fishing grounds and status of fish catches. (MAFF)

3-4-16 Promotion of total allowable catch (TAC) management based on MSY-based fishery resource assessment

The revised act of the Fisheries Act (Act No. 267 of 1949) sets out that management should be, in principle, based on the TAC. TAC management based on the revised act of the Fisheries Act has started in eight fish species since the 2021 fishing season. In accordance with the roadmap and timeline for expanding scope of TAC fish species, the government will enable TAC management for 80% of catch by FY2023. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of TAC fish species catch out of fish catch[*1]	60.5%	80% (FY2023)

[*1] Excludes fish caught in pelagic fisheries, fish managed under international frameworks (bonito, tuna, marlin), salmon, trout, shellfish, algae, sea urchins, and marine mammals.

3-4-17 Introduction of IQ management in fisheries resource management

In accordance with the roadmap, by FY2023, the government will, in principle, introduce individual quota (IQ)-based management into offshore fisheries (ministerially licensed fisheries) that mainly catch TAC species. (MAFF)

3-4-18 Transition toward resource management agreement in fisheries resource management

The framework for promoting resource management based on a combination of official regulations by the national and prefectural governments with voluntary efforts by people engaging in fisheries will continue to exist. On the other hand, the resource management plan that prescribes the voluntary efforts is expected to be transited to the resource management agreement based on the revised Fisheries Act. By FY2023, the government will complete the transition of the resource management plans toward the resource management agreements based on the revised Fisheries Act. (MAFF)

3-4-19 Compliance with fishery resource management rules

The government will enhance enforcement against poaching of abalone, sea cucumbers and other in coastal areas and illegal operation of foreign fishing boats in the waters surrounding Japan. Also, the government will make effort to ensure appropriate domestic distribution and import/export of specific aquatic animals and plants in accordance with the Act on Ensuring the Proper Domestic Distribution and Importation of Specified Aquatic Animals and Plants (Act No. 79, 2020).
(MAFF)

3-4-20 Sustainable use of international fishery resources

To achieve sustainable fisheries, the government will provide financial support required for efforts by the FAO, such as supporting developing countries to combat illegal, unreported, and unregulated (IUU) fishing, and provision of scientific advice to the CITES. Moreover, to ensure proper development and implementation of fisheries subsidy rules, the government will provide support to

developing country members through the WTO for participation of their fisheries authorities in relevant meetings and for improvement of notifications of subsidies and others. Regarding the sustainable use and management of highly migratory fish, such as tuna, for which deteriorating resource conditions are concerned, the government will make efforts to develop conservation and management measures based on scientific evidence and to eliminate IUU fishing through the RFMOs, while fully considering Japan's position in terms of fishery production and fish consumption. (MAFF)

Current status and target

Indicator	Current status	Target value
Number of countries ratifying the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSM agreement)	74 (FY2022)	75 (By FY2026)
Contribution to harmonization of maintaining biodiversity with sustainable use of aquatic resources building on expert knowledge in Japan and FAO	―	―
All 20 developing countries out of 33 high-ranked countries or regions, whose fish catches occupy 90% of total fish catch in the world, notify the WTO of fisheries subsidies	10 (FY2018)	20 (By FY2026)
Appropriate measures on conservation and management of stocks including bonito and tuna are adopted in the RFMO	WCPFC: 5 ICCAT: 20 (FY2021)	WCPFC: 6 per year ICCAT: 8 per year

3-4-21 Whaling measures

The government will collect scientific data needed for resource management of whales, and promote resource management in collaboration with international organizations. (MAFF)

Current status and target

Indicator	Current status	Target value
Catch quota	379 per year	

3-4-22 Development and dissemination of artificial juvenile production technology

The government will promote development and dissemination of artificial juvenile production technologies in aquaculture of Japanese eel, bluefin tuna, yellowtail, and great amberjack, with the view to establishing a sustainable aquaculture system that does not burden natural resources.

(MAFF)

Current status and target

Indicator	Current status	Target value
Artificial juvenile ratio in aquaculture of Japanese eel, bluefin tuna, yellowtail, and great amberjack	1.9% (2019)	100% (2050)

3-4-23 Promotion of salmon/trout breeding efforts

Based on results and other information of monitoring and technological development of hatching and release carried out by the Japan Fisheries Research and Education Agency, the government will conduct studies on hatching and release techniques utilizing wild fish, improve techniques for marine stock enhancement, and implement salmon and trout breeding efforts with taking into consideration the ecosystem and biodiversity of rivers and their surroundings. (MAFF)

3-4-24 Promotion of stock enhancement in harmony with environment and ecosystem

Based on the "technical guidelines for reducing the risk of impacts on genetic diversity associated with marine stock enhancement", the government will promote stock enhancement that consider sustainability of ecosystems and resources. (MAFF)

3-4-25 Reduction of environmental burden in aquaculture

The government will:

- Manage environment of fish grounds by establishing an Aquaculture Area Improvement Plan for each aquaculture area, and promote aquaculture that can reduce burden on marine environment.
- Support providing instructions for preventing outbreaks of infectious diseases and for actions taken in the event of outbreaks, as measures on preventing spread of specific diseases.
- Provide support for development of vaccines and establishment of quarantine systems by promoting systematic vaccination and other measures, thereby reducing damages on farmed fish caused by diseases.
- Based on results of surveys on monitoring and trends of drug-resistant bacteria, conduct training workshops on drug resistance to raise awareness on and disseminate knowledge and technical skills to reduce occurrence of drug-resistant bacteria in farmed fish. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of the estimated monetary value of fish disease damage to the value of aquaculture production	3.0%	3.0%

3-4-26 Reduction of bycatch in fisheries

The government will reduce bycatch through development of techniques on preventing bycatch of sharks, seabirds, and sea turtles, as well as raising awareness among fishers. (MAFF)

3-4-27 Development and dissemination of alternatives raw materials for fish meal

The government will promote converting from fresh feed to formula feed with low environmental burden and high feeding efficiency, and will develop and disseminate alternatives of raw materials

for fish meal. (MAFF)

Current status and target

Indicator	Current status	Target value
Rate of formula feed used in aquaculture	44% (2019)	100% (2050)

3-4-28 Measure for red tide, dysoxic water masses, and nutrient salt shortage

The government will develop, demonstrate, and enhance technologies to reduce the damage in fisheries caused by red tides, dysoxic water masses, and nutrient salt shortage in each sea area. (MAFF)

Current status and target

Indicator	Current status	Target value
Aquaculture production in Japan	970,000 tons (FY2020)	970,000 tons (Each FY)

3-4-29 Securing new workers in fishing village areas

The government will support promoting employment and continuous engagement in fisheries through providing financial support to those who have not engaged in fishery industry and through long-term on-site training at fishery sites. Also, the government will support acquisition of licenses such as maritime officers, improving management skills of people engaging in fisheries and other efforts. (MAFF)

Current status and target

Indicator	Current status	Target value
Number of new fisheries workers	1,744 (FY2021)	2,000 (Each FY)

Chapter 4: Recognition of the Value of and Actions for Biodiversity in Daily Life and Consumption Activities (Changing Individual Behavior)

Action-oriented target 4-1: Promote environmental education on biodiversity in schools

In order to halt biodiversity loss and achieve transformative change, it is essential to build people's knowledge and raise their awareness of the importance of biodiversity, and for their behavioral change. The basis of this change is the promotion of environmental education, including biodiversity issues, in schools and other institutions, and the development of human resources to support such education.

To this end, the government enacted the Implementation Plan for Education for Sustainable Development in Japan (the Second ESD Implementation Plan) in May 2021 in collaboration with relevant ministries and agencies, in accordance with the principles of the international framework of Education for Sustainable Development: Towards achieving the SDGs (ESD for 2030). The National Curriculum Standard explicitly states that students are encouraged to become "creators of a sustainable society" at the elementary, junior high, and senior high school levels, and ESD will be promoted.

Outside of schools, various entities such as NPOs and local residents are providing various opportunities for people of all ages to learn about the environment, by offering diverse environmental learning and nature experience opportunities that make use of familiar nature, such as *satochi-satoyama*, rivers, and wetlands.

To further facilitate environmental education, including biodiversity issues, the government will organize training and seminars for teachers and employees of businesses and organizations to cultivate leaders and personnel with expertise, and register programs such as those for certifying personnel for environmental education, as well as disseminate information useful for environmental education, and raise awareness through seminars, events, and other activities. In addition, the ESD Promotion Network, with the ESD Resource Center of Japan that is the central base of the network, will be used to foster the efforts of private organizations that provide education outside of schools, such as at home and in communities.

Additionally, the utilization of rivers and sewage systems and the upgrading and development of urban parks and school facilities will be promoted to provide opportunities and places for environmental learning.

Specific Measures

4-1-1 Promotion of environmental education

The endeavor includes fostering leaders who practice and promote environmental education in schools and communities; certifying Places for Nature-Based Experiences that provide nature experience activities; registering and notifying the public of projects such as human resource certification undertaken by private businesses; registering environmental counselors with expert knowledge on environmental conservation; and preparing and disseminating information on advancing environmental education, in order to expand environmental education in communities, schools and homes and build a foundation for creating sustainable societies. (MOE)

Current status and target

Indicator	Current status	Target value
Number of participants in training for leaders in the promotion of environmental education and learning for teachers and other staff	458 (FY2021)	600 (FY2030)
Number of users of Places for Nature-Based Experiences	16,557 (FY2021)	30,000 (FY2030)
Number of projects registered under the registration system for human resources certification and others	51 (FY2021)	70(FY2030)
Number of environmental education-related measures implemented by local governments	970 (FY2021)	1,400 (FY2030)

4-1-2 Promotion of Education for Sustainable Development (ESD)

The government will:

- Disseminate and share information on case studies of ESD being conducted in each region, and support the development of human resources to promote ESD rooted in local communities throughout the country, by establishing networks and collaboration among ESD Resource Centers of Japan (national and regional) and regional ESD promotion centers.
- Promote ESD in Japan, utilize Biosphere Reserves (BR) and UNESCO Global Geoparks and collaborate with various stakeholders based on the Second ESD Implementation Plan through promoting the efforts of UNESCO Associated Schools Network in the Platform for UNESCO Future Co-creation Platform Program activities and, developing and implementing curriculums and promoting teacher education by grant program to foster “builders of a sustainable society.”

(MEXT, MOE)

Current status and target

Indicator	Current status	Target value
Number of participants in the National ESD Forum	478 (FY2021)	525 (FY2025)
Number of participants in local ESD-related forums	4,711 (FY2021)	5,182 (FY2025)

4-1-3 Promotion of functional enhancement of museums and other facilities

Zoos, botanical gardens, aquariums, museums such as nature-related museums will provide opportunities to learn about nature and the biological environment around us in an enjoyable way, and enhance their activities so that they can function as places of educational practice for the conservation of biodiversity and thinking about sustainable relationships between people and nature.

(MEXT)

4-1-4 Promotion of environmental learning through understanding sewage systems

In order to widely disseminate information on the important functions of sewage systems, such as the water cycle in urban areas and the management of pollution loads discharged into public water

bodies, the government will promote information sharing between sewage system administrators and local residents, clarify the role of sewage systems in conserving diverse ecosystems in environmental education, and help children correctly understand the mechanisms of sewage systems and roles in the watershed. In addition, sewerage facilities will be actively utilized as places for learning, such as by holding tours of treatment plants. Furthermore, efforts will be made to work with local residents, educators, NPOs, and others to actively disseminate information and help the public understand the role of sewer facilities as a place for creating habitats for diverse ecosystems. (MLIT)

Target

The government will:

- Hold exhibitions on environmental education for elementary, junior high, and high school students, and events related to Sewerage Day on September 10 organized by the national government, local governments, and other entities to improve public understanding of and interest in sewerage systems.
- Give the Minister of Land, Infrastructure, Transport and Tourism's Passage of Circulation, Sewerage Award to local governments and NPOs implementing exceptional PR activities to improve public understanding of and interest in sewerage systems.

4-1-5 Promotion of environmental education in rivers

Aiming to build a society that learns from rivers, the government will increase opportunities for children to experience and learn about the environment through activities utilizing rivers; promote the Children's Waterfront Rediscovery Project to enrich activities for children in the community; and train leaders teaching about the natural environment and the dangers of rivers. In addition, the government will work with local communities to provide learning and nature experience activities that make the most of rivers, and provide teaching materials for school education in cooperation with school educators. (MLIT, MEXT, MOE)

Target

The government will:

- Hold lectures for training instructors and for prevention of water-related accidents, in collaboration with NPOs and other organizations.
- Improve the preparation of educational materials and dissemination of information for education on the river environment and prevention of water-related accidents.

4-1-6 Promotion of organizing seminars including seaside experience for fostering instructors

The government will provide support for holding seminars aimed at fostering instructors for seaside experience and other activities in key areas throughout Japan in collaboration with local

governments, educational institutions, and so on. (MLIT)

4-1-7 Development of urban parks as spaces for environmental education

The government will provide places and opportunities to train instructors and practitioners of environmental education and environmental learning together with users, communities, schools and develop urban parks to implement such programs. (MLIT)

Current status and target

Indicator	Current status	Target value
Amount of public space secured for water and greenery in urban areas	13.9 m^2 per person (FY2020)	15.2 m^2 per person (FY2025)

4-1-8 Development of environmentally friendly school facilities (eco-schools)

The government will develop school facilities that reduce environmental impact and coexist in harmony with nature, and make use of the developed facilities for environmental education.

(MEXT)

Action-oriented target 4-2: Through providing opportunities for people to interact with nature in their daily life, ensure acquirement of various knowledge and awareness-raising on matters, including nature's blessings and how people interact with nature, and development into a mature person, and raise awareness on ideas on appropriate relationships between people and animals

For raising awareness and interest in biodiversity, what is critical is fostering understanding based on experience through interaction with nature, along with environmental education.

Direct interaction with nature arises an interest in nature and enhances the ability to think about nature. At the same time, the interaction fosters awareness of the benefits of nature for our physical and mental health, and appreciation towards the cultural and spiritual richness that can be gained by living in nature. People used to interact with nature in their daily lives and had ample opportunities to experience that humans are a part of nature. However, progress in urbanization and industrialization has made this relationship between people and nature superficial, and opportunities for interactions with nature are becoming increasingly scarce, especially among the younger generation, who no longer know how to relate to nature. Against this backdrop, increasing opportunities for interactions with nature will help people to realize that humans constitute one of the components of the natural ecosystem and deepen their understanding of how to live in harmony with nature.

Interactions with nature can be said as a variety of activities for enjoying the blessings of nature, such as visiting national parks, being inspired by scenic wilderness, feeling at peace in the presence of familiar nature, learning about the mechanism of nature, and trying to be active amidst nature. There is a wide range of examples include outdoor recreation and tourism, health and recreational activities, volunteer activities, and contact with and keeping of familiar animals and plants, such as insects and companion animals.

In promoting measures related to interactions with nature, it is essential to work comprehensively on the following: providing attractive nature experience programs that meet diverse needs; developing and conserving places to interact with nature, disseminating information, and creating networks between people who seek interactions with nature and facilities, organizations, and human resources providing opportunities for such interactions. In particular, these efforts will be made in urban areas with large population, so that people living in these areas can have greater access to green spaces and blue spaces where biodiversity is maintained in abundance, and more opportunities for people to experience nature. In addition, efforts will be made to realize a society in harmony with humans and animals, and the concept of appropriate relationships between humans and animals will be disseminated.

Specific Measures

4-2-1 Provision of opportunities for interaction with nature

The government will promote nature experience activities in national parks and other places as well as various events related to interaction with nature in various parts of the country, such as during Greenery Month, in order to provide opportunities for interaction with nature, to acquire various knowledge about the benefits of nature and the relationships between nature and people, and to enrich personal development. (MOE)

Current status and target

Indicator	Current status	Target value
Number of people participating in Greenery Month events, as collated by Regional Environmental Offices	904 (FY2021)	4,500 (FY2023)
Number of sites where nature experience education activity promotion projects are implemented	12 (FY2021)	More than the previous year

4-2-2 Provision of opportunities for experience and interaction in forests

National forests with excellent natural scenery and suited for forest bathing, nature observation, forest sports, and others are designated as “Recreation Forests”. The government will promote forestation (*mori*) with public participation based on the agreement with private organizations wishing to participate in forest creation for the purpose of providing forest fields for those activities. The government will also promote the designation of “Forests for Corporations”, in which companies sign a contract with the government for Shared Forests, allowing them to create forests as a place for social contribution, employee education, and for interacting with their customers. (MAFF)

4-2-3 Raising awareness on biodiversity and renewable energy using the greenery and facilities of Shinjuku Gyoen National Garden

The government will enhance maintenance and management of environmental education areas and

dissemination of information, hold environmental education events and guided tours of the park, provide environmental learning opportunities based on the Environmental Grove Plan, and host training courses for instructors held by outside groups, and so on. (MOE)

4-2-4 Development of facilities for protection and use in national parks and others

Maintenance work will be carried out in national parks, quasi-national parks, national gardens, and others to conserve the natural environment for users to experience nature safely and comfortably. Maintenance work will also be carried out on facilities necessary for park use as well as their appropriate management, thereby creating a virtuous cycle between the protection and use of the natural environment. In addition, efforts will also be made to construct a society in harmony with nature and people and to promote national resilience, so that local areas can enhance their unique natural resources to create vibrant regions. (MOE)

Current status and target

Indicator	Current status	Target value
Annual number of visitors to national parks and quasi-national parks	656,728,000 (FY2019)	101% compared to the previous year

4-2-5 Dissemination of information on national parks and others in Japan and abroad

Given that the revised Natural Parks Act, enforced in April 2022, includes dissemination of information on national parks and others as a duty of effort, the government has been disseminating information on the attractions of national parks and others using websites and pamphlets in Japan and overseas to promote visits to there, rouse interest in nature and foster environmental stewardship. In addition, the government will work with official national park partners to promote the attractions of the beautiful landscapes of national parks to the world. (MOE)

Current status and target

Indicator	Current status	Target value
Number of foreign visitors who visited national parks	930,000 (FY2020)	6.67 million (By FY2025)
Number of bookings for nature experience content in national parks on websites (including number of transitions from sites to pages where bookings can be made)	1,230 (FY2021)	3,000 (By FY2025)

4-2-6 Nikko National Park Nasu Heisei-no-Mori management and operation project

In addition to monitoring the natural environment and conducting adaptive ecosystem management, nature experience activities such as guided tours are offered mainly at the Nasu Heisei no Mori Field Center and the Nasu Highlands Visitor Center. (MOE)

Current status and target

Indicator	Current status	Target value
Satisfaction rate with the Nasu Heisei-no-Mori guided walk participant questionnaire (sum of the top two ratings on a seven-point scale)	96% (FY2021)	More than 100% (Every fiscal year)

4-2-7 Exchange project for children experiencing farming and rural lives

The government will promote understanding of biodiversity through agricultural, rural and nature experiences for children, where they can learn about nature, culture, and other attractions. Since such promotion contributes to community development for the host regions, the government will commission prefectures and municipalities to implement this program as model organizations, inform prefectures and municipalities across Japan of the results, and promote the efforts by supporting program development in the host regions, such as national parks.

(MIC, CAS, CAO, MEXT, MAFF, MOE)

Current status and target

Indicator	Current status	Target value
Number of children who have experienced farming and rural lives	Elementary school students: 320,000 Junior high school students: 370,000 High school students: 150,000 (FY2016)	Elementary school students: 650,000 Junior high school students: 750,000 High school students: 300,000 (FY2024)

4-2-8 Interchanges between urban areas and rural areas and promotion of permanent residence through promotion of urban agriculture, support for countryside stay, and information dissemination

The government will:

- Provide support to efforts to promote the establishment of allotment gardens and farming experience farms, and to foster understanding of urban agriculture among urban residents, thereby promoting the fulfillment of the diverse functions of urban agriculture.
- Provide integrated support for the establishment of an implementation system, development of tourism content, and construction of accommodation facilities in regions where countryside stay is offered.
- Extend the length of stay in national parks and contribute to the local economy by creating nature experience content through collaborations between regions where countryside stay is offered and national parks.
- Support efforts to promote the awareness of the Globally Important Agricultural Heritage Systems and the Japanese Nationally Important Agricultural Heritage Systems by disseminating information.
- Promote efforts to create exchange and related population between urban and fishing villages

through Seaside Stay and *workation*. (MAFF)

Current status and target

Indicator	Current status	Target value
Annual total number of guests at green tourism facilities and the number of foreign visitors who experienced farming and rural lives	―	15.4 million (FY2025)

4-2-9 Promotion of seaside environmental education

The government will promote efforts for experiencing nature and environmental education utilizing the natural environment of seaside areas throughout Japan in cooperation with local governments, NPOs, and others. (MLIT)

Current status and target

Indicator	Current status	Target value
Number of seaside nature schools held	13 (FY2020)	More than 21 (Every fiscal year)

4-2-10 Development of places for conducting nature and social education activities in ports and harbors

In order to promote the use of excellent natural environment of ports and harbors by the public and to enhance opportunities to learn about the importance of natural environments, the government will maintain tidal flats and other environments that can serve as sites for nature and social education activities conducted by local governments, NPOs, and so on. (MLIT)

4-2-11 Promotion of green space developments in ports and harbors

The government will promote the development of green spaces in ports and harbors that serve as habitats for a variety of living organisms, and that enable local residents to enjoy nature. (MLIT)

4-2-12 Promotion of nature experiential activities by the National Institution for Youth Education

The National Institution for Youth Education will provide opportunities and venues for youth to nature experiential activities at national youth education facilities, in order to train and improve the quality of leaders, and to provide support for nature experiential activities conducted by private organizations. (MEXT)

4-2-13 Project to support youth to become self-reliant through experiential activities and other activities

The government will implement projects to enrich opportunities and venues for experiential activities, as well as to raise awareness of such activities, conduct surveys and research, and award

prizes to outstanding efforts by the private sector. (MEXT)

4-2-14 Holding of national protection and nurture of greenery event

The national protection and nurture of greenery event will be held in urban parks across Japan to further raise public awareness of the importance of greenery. (MLIT)

4-2-15 Achievement of society in which people live in harmony with animals

Experiences in rearing and interacting with domestic animals serve as a catalyst for fostering a sense of animal welfare and an understanding of harmony of humans and animals, as stipulated in the basic guidelines for comprehensively promoting measures for the welfare and management of animals. These events will promote changes in mindsets and attitudes regarding appropriate relationships between people and animals including wild animals, and contribute to biodiversity conservation. (MOE)

Action-oriented target 4-3: Encourage people to actively change their behavior on a voluntary basis

In order to realize and establish nature-positive society as a whole society, the key lies in building a society in which every citizen has the freedom to choose products and services that give due consideration to biodiversity. To achieve this, diverse approaches are needed; such as using traditional policy approaches, including regulatory (e.g., laws), financial (e.g., subsidies), and informational (e.g., awareness-raising and information provision) methods, as well as knowledge from such fields as behavioral science.

Japan has a practice called “Cool Biz”, which is already internationally recognized as a well-established behavior change and is often cited. Nevertheless, when it comes to efforts related to people's awareness and behavior, approaches that are effective under certain conditions may not necessarily be equally effective under other conditions. Therefore, it is important to clarify the effectiveness of a method by repeatedly trying it out under different conditions, and if it is not effective, to examine the reasons for the ineffectiveness or find ways to improve it.

It is necessary to provide people with information, experiences, and opportunities where they can take actual actions, through which people will eventually reflect on their perceptions and actions and voluntarily make choices that contribute to biodiversity conservation. Towards the changes in people’s behavior, platforms will be built, events will be organized to encourage tie-ups among various entities, behavioral science knowledge will be collected and utilized, and government-private sector cooperation will be promoted.

Specific Measures

4-3-1 Activities of the Japan Conference for 2030 Global Biodiversity Framework (J-GBF) (Priority)

In order to achieve transformative change in Japan, the following projects will be implemented, such as the establishment of a multi-stakeholder platform to facilitate partnerships and collaboration among the public, business community, NGOs/NPOs, local governments, and so on.

The government will:

- Establish and operate general meetings, forums, working groups, and others, where diverse stakeholders can exchange information, and share information and awareness.
- Create and utilize tools for raising awareness of the importance of biodiversity.
- Hold forums and other events to promote efforts spanning different sectors.
- Discuss and implement behavioral changes using nudges and other measures. (MOE)

Current status and target

Indicator	Current status	Target value
Number of platform-related meetings held	At least five times a year	At least five times a year
Percentage of people expressing willingness to engage in activities that lead to biodiversity conservation	90% (FY2022)	90% (FY2030)

4-3-2 Promotion of behavioral changes by utilizing knowledge from behavioral science and other areas of science (Priority)

The government will conduct discussions and reviews for mainstreaming biodiversity (raising awareness) and for changing behavior among citizens, businesses, and others (e.g., appeal to consumers in their daily lives). The government will examine schemes and frameworks to encourage individuals and businesses to take actions toward biodiversity conservation in their consumption, production, and donation activities. (MOE)

Current status and target

Indicator	Current status	Target value
Percentage of people expressing willingness to engage in activities that lead to biodiversity conservation	90% (FY2022)	90% (FY2030)
Percentage of people already implementing activities that lead to biodiversity conservation	56.3% (FY2022)	60% (FY2030)

The government will:

- Identify the effects of awareness-raising and behavior change through the use of behavioral science and other knowledge.
- Promote effective PR and public awareness-raising activities that improve the awareness-raising and behavior change rates through the utilization of behavioral science and other knowledge.

4-3-3 Behavioral change through the Project on Connecting and Supporting Forests, Countrysides, Rivers and Seas and other projects

The government will encourage behavioral change toward the mainstreaming of biodiversity in all sectors by deploying the Project on Connecting and Supporting Forests, Countrysides, Rivers and Seas, a national campaign to implement the regional version of SDGs - Circular and Ecological Economy - from a daily life perspective, and PR activities based on this project through the collaboration with the public and private sectors. (MOE)

Current status and target

Indicator	Current status	Target value
Number of PR and other approaches to the public (number of website accesses)	25,324 pv (FY2022)	30,000 pv (FY2030)

4-3-4 Sustainability Consortium 2030 - for Agriculture, Forestry, Fisheries and Food

Using the Sustainability Consortium for Agriculture, Forestry, Fisheries and Food as a platform, the government promotes dialogue with diverse stakeholders and drives behavioral change from price-oriented consumption to sustainability-oriented consumption and accelerates sustainable production and consumption. (MAFF, CAA, MOE)

Current status and target

Indicator	Current status	Target value
Percentage of consumers who are aware of choosing foods and products with environmentally friendly labels	32.2% (FY2020)	50% (FY2025)

4-3-5 Raising awareness on the roles played by forests and forestry

The government will drive awareness-raising activities through networking among companies, NPOs, and others, holding greening events, implementing *Mokuiku* (wood use education), and providing forestry learning experiences. (MAFF)

Current status and target

Indicator	Current status	Target value
Supply and use of domestic timber	340,00,000 m^3 (FY2021)	420,00,000 m^3 (by FY2030)
Number of forest volunteer groups	4,474 (FY2021)	4,582 (FY2025)

Action-oriented target 4-4: Raise awareness on options considering biodiversity, increase opportunities for selecting, and offer incentives, in order to promote consumption behavior considering biodiversity, including halving food loss and waste, and reducing disposal of other

materials

Lifestyles based on mass production, mass consumption, and mass waste are contributing to the degradation of ecosystems at every stage of the process from production to consumption. Food loss and waste, which are the amount of food that is discarded even though it can be eaten, amounted to 5.22 million tons in FY2020. Moreover, about 96% of new clothing supplied into Japan in a year is given away after use, and about 62% is disposed of without being reused or recycled. Only about 5% of clothing disposed of as garbage is recycled, and most of the rest is incinerated or landfilled, which amounts to about 480,000 tons per year.

In order to reform such lifestyle and industrial structure, the government will reduce food loss and waste, as well as promote collaboration among various sectors and reform the values of consumption in areas related to consumption, disposal, and resource recycling, all of which have not necessarily been associated with biodiversity until now. Not only should losses be reduced at the production, distribution, and consumption stages, but it is also crucial to increase options for biodiversity-conscious products and services, and to provide incentives for people to actively choose such products and services. Specifically, the government will work with various stakeholders to promote education and awareness-raising, develop recycling technologies, spread certified products such as eco-labels, and build social infrastructures such as food banks in an integrated manner. At the same time, information on biodiversity-conscious products and services will be disseminated in a straightforward manner, such as how choosing these products and services contributes to the conservation of ecosystems.

Specific Measures

4-4-1 Food Loss and Waste Reduction

The government will:

- Aim to reduce food loss and waste by carrying out reviews and surveys of business practices at food businesses and by supporting food bank activities.
- Promote behavioral change among consumers through measures to reduce food loss and waste, such as setting up precedent areas aiming for zero food waste, taking home leftover food from restaurants (mottECO), food drives, and so on. (MAFF, MOE, CAA, METI)

Current status and target

Indicator	Current status	Target value
Amount of business food loss and waste	2.75 million tons (FY2020)	2.73 million tons (FY2030) *Half of the FY2000 level
Amount of household food loss and waste	2.47 million tons (FY2020)	2.16 million tons (FY2030) *Half of the FY2000 level

4-4-2 Promoting plastic resource circulation

➢ **Initiatives based on Resource Circulation Strategy for Plastics**

The government will:

- Promote resource circulation efforts made by all entities involved in the entire lifecycle of plastic-contain products, ranging from design to waste disposal, based on the Act on Promotion of Resource Circulation for Plastics that was enforced on April 1, 2022.
- Support all efforts to promote plastic resource circulation (collaboration among manufacturers, retailers, users, and recyclers). (MOE, METI)

Current status and target

Indicator	Current status	Target value
Reduce single-use plastic waste generation	―	25% (cumulative) (FY2030)
Reuse and recycling rate of plastic containers and packaging	―	60% (FY2030)
The volume of recycled plastics	―	Double the volume (FY2030)
Effective use of end-of-life plastics	―	100% (FY2035)
Amount of biomass plastics introduced	―	2 million tons (FY2030)
Make all containers and packaging reusable and recyclable (by 2025)	―	―

➢ **Promotion of plastic resource circulation in food industry and agriculture and livestock industry**

The government will:

- Support plastic resource circulation efforts implemented by the food industry, such as efforts to promote the effective use of PET bottles for beverages.
- Promote plastic resource circulation by controlling the discharge of used agricultural plastics and ensuring their proper disposal, accelerating the use of biodegradable mulch, and preventing the runoff of coated fertilizer film shells, and so on. (MAFF, MOE, METI)

Current status and target

Indicator	Current status	Target value
Effective use of PET bottles for beverages (collection rate)	96.7% (2020)	100% (FY2030)
Percentage of plastics emissions in the agricultural sector that are recycled and processed (including energy recovery)	―	100% (FY2035)

4-4-3 Promotion of sustainable fashion

- The government will transform society as a whole away from the conventional mass ordering, mass production, mass consumption, and mass disposal and toward appropriate quantity ordering, appropriate quantity production, appropriate quantity purchasing, and appropriate

circulation and use.

- The government will promote labeling and information dissemination to encourage the efforts of businesses (e.g., environmentally friendly design, supply chain transparency, understanding of environmental impacts) and to achieve consumer understanding and behavioral change, thereby realizing sustainable fashion.
- The government will promote new business models to achieve a circular economy through efforts such as reuse, repair, maintenance, sharing, and subscription, while effectively utilizing end-of-life products.
- Many clothing products are difficult to recycle due to the use of blended fabrics, dyeing, and surface treatment to add high functionality, as well as use of accessories such as zips. In addition to developing techniques for separating/sorting individual materials and advancing recycling technologies, understanding the actual situation for building clothing collection systems will be promoted for implementation in society.
- Relevant ministries and agencies will work together to realize sustainable fashion.

(MOE, METI, CAA)

4-4-4 Securing consumers' understanding, interest, and trust in environmentally friendly agriculture, such as organic farming

The government will:

- Work with retailers and food and beverage businesses that sell domestically produced organic foods, promote efforts to boost demands for domestically produced organic foods by extensively disseminating to consumers the advantages and characteristics of organic initiatives that contribute to achieving SDGs, such as biodiversity conservation and prevention of global warming.
- Work with businesses such as distributors, processing companies, retailers, and others that handle such products, rouse consumer demands for domestically produced organic agriculture products and processing demands, and support efforts to promote matching among businesses, in order to create new markets for domestically produced organic agriculture products.
- Build networks to foster mutual exchange and cooperation among local governments that utilize organic farming to promote community development, and support the sharing of case studies of efforts that support organic farming in the region, such as the use of organic foods in school lunches, and disseminate information on such efforts to all parties concerned, including consumers. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of consumers who use organic food at least once a week	17.5% (FY2017)	25% (FY2030)
Area of organic farming efforts	25,200 ha	63,000 ha

	(2020)	(2030)

4-4-5 Promoting of environmentally friendly food production and consumption

In order to achieve the goals set forth in the Fourth Basic Plan for the Promotion of Shokuiku, the government promotes shokuiku nationwide by intensively and efficiently promoting shokuiku activities on which local stakeholders collaborate to work, holding a National Convention on Shokuiku Promotion, and awareness-raising of food guide with consideration of harmony with the environment. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of citizens who choose environmentally friendly agricultural, forestry and fishery products and foods	69.3% (FY2021)	More than 75% (FY2025)

4-4-6 Disseminating information on and promoting awareness-raising on decarbonization and behavioral change

The government will consolidate the benefits of decarbonization actions and lifestyles as Zero Carbon Action 30 and actively disseminate information to drive more people to take specific actions. In addition, efforts will be made to create educational materials and contents that meet the needs of a wide range of people, and provide them effectively with the efforts. (MOE)

Current status and target

Indicator	Current status	Target value
Estimated benefits of CO2 emission reductions	2,288, 000 t-CO2 (FY2020)	5,370,000 t-CO2 (FY2030) *46% reduction by 2030

4-4-7 Utilizing certification systems to support preferential procurement from producers engaged in biodiversity conservation

The government will:

- Increase domestic and international recognition of the fishery eco-label and promote acquisition of certification.
- build consensus for forest certification and promote the use of certified wood. (MAFF)

Current status and target

Indicator	Current status	Target value
Number of production stage certifications of internationally recognized fishery eco-labels in Japan	93 (FY2021)	225 (FY2025)

Action-oriented target 4-5: Promote local activities to conserve and restore natural environment, utilizing traditional culture and local and traditional knowledges

Local culture, such as traditional events, food culture, and local industries rooted in local nature, has helped foster wisdom regarding the sustainable use of natural resources and the values of living in harmony with nature. Moreover, appropriate and continuous local activities, including agriculture, forestry, and fisheries, have helped create environments rich in biodiversity, such as *satochi-satoyama*.

For those reasons, the government will enhance understanding and considerations toward nature in the local community, such as the passing on of traditional and local knowledge, and promote sustainable use of nature. At the same time, activities for conservation and restoration of the natural environment will be promoted through efforts that urge collaboration among various entities in the local community.

Specific Measures

4-5-1 Promoting OECMs in local areas giving due consideration to traditional and local knowledge (Priority)

For areas that have values as places of natural resources utilized for local traditional culture such as traditional crafts and events, the government will certify as Nationally Certified Sustainably Managed Natural Sites. (MOE)

Current status and target

Indicator	Current status	Target value
Number of Nationally Certified Sustainably Managed Natural Sites which selected "(5) Value as a place where natural resources are used for local traditional culture, such as traditional crafts and traditional events", with regard to the criterion "3. a. Biodiversity value"	—	—

4-5-2 Promoting regional activities related to conservation of biodiversity

The government will promote the conservation and restoration of biodiversity throughout the country by supporting proactive and efficient activities in the regions contributing to the conservation and restoration of biodiversity. (MOE)

Current status and target

Indicator	Current status	Target value
Number of projects supported under financial support program for biodiversity conservation activities (cumulative)	479 (FY2021)	800 (FY2025)

4-5-3 Promoting efforts based on Act on the Promotion of Activities for Biodiversity Conservation through the Cooperation among Regional Diversified Actors (Act on the Promotion of Regional Cooperation for Biodiversity)

The government will support the development of the action plans based on the Act on the Promotion of Regional Cooperation for Biodiversity, and the establishment of Support Center for Regional Cooperation Activities on Biodiversity Conservation and utilization of the center, and will promote Activities through the regional cooperation. (MOE)

Current status and target

Indicator	Current status	Target value
Number of action plans developed for regional cooperation activities on biodiversity conservation	16 regions (Sep. 2022)	32 regions (FY2030)
Number of Support Center for Regional Cooperation Activities on Biodiversity Conservation	19 (Sep. 2022)	27 (FY2030)

4-5-4 Supporting efforts in biodiversity conservation through partnerships

To support partnership-based initiatives by various entities, the Global Environment Outreach Centre and Environment Partnership Offices will be used as hubs for collecting and providing information and planning opportunities for various entities to interact with each other. (MOE)

4-5-5 Understanding and utilizing relationships between lifestyles and nature and culture through interviews in national parks and other areas

The government will compile local people's thoughts, episodes, and stories about relationships between people's lives and nature and culture obtained through interviews with people who live in national park areas. These will be used for internal branding that contributes to the promotion of the region and creating contents of nature experience activities, and so on. In addition, by re-recognizing the value of the national parks and nature in the region, efforts will be made to improve pride in the national parks and awareness of conservation. (MOE)

Current status and target

Indicator	Current status	Target value
Number of national parks engaged in local internal branding through interviews	1 (FY2022)	20 (FY2030)

4-5-6 Revitalizing rural areas by protecting and passing down food culture

The government will engage in the protection and succession of food culture, such as traditional foods unique to each region, which leads to the revitalization of rural areas. (MAFF)

Current status and target

Indicator	Current status	Target value
Percentage of the citizens who eat local and traditional cuisine at least once a month	61.7% (2021)	More than 50% (2025)

4-5-7 Building links between local lifestyles and coral reef ecosystems

As one of the most urgent priority issues to be solved in the Action Plan to Conserve Coral Reef Ecosystems in Japan 2022-2030, efforts will be made to promote community-based coral reef ecosystem conservation activities in collaboration with various stakeholders, in order to raise awareness of conservation activities, and to promote sustainable use of coral reefs. (MOE)

Chapter 5: Development of a Base that Underpins Activities for Biodiversity Conservation and Promotion of International Coordination

Action-oriented target 5-1: Promote academic research in biodiversity-related fields including integration of biodiversity and social economy and integration of natural capital into national economic statistics, and implement long-term survey and monitoring building on a sound system

To effectively implement activities for conservation and sustainable use of biodiversity, plans and policies are required to be developed based on scientific knowledge. Biodiversity and ecosystem services need a certain amount of time to change, and therefore it is likely that there would be time lags in impacts of various factors and effects of policies and measures becoming apparent. For this reason, it is crucial to continuously accumulate and organize the basic information over long time.

In Japan, the government conducts the national surveys to investigate status and changes of the natural environment, including distribution of vegetation and wild fauna and flora, and monitoring surveys at fixed monitoring points over a long time to investigate quantitative and qualitative changes in the natural environment for various ecosystem types. The government will steadily continue and enhance the national surveys, since those results provide important fundamental information on the status of biodiversity.

Furthermore, to ensure that these surveys will continuously and steadily be conducted with limited human resources and budgets, the government will explore more efficient and effective survey methods, and promote the development of new research and technologies to respond to the latest trends in biodiversity and socioeconomics.

Based on the results obtained from those surveys, the government will promote a comprehensive assessment of biodiversity and ecosystem services, including an integrated assessment of biodiversity loss and socioeconomic activities.

Specific Measures

5-1-1 National Survey on the Natural Environment (Priority)

- **Development of the master plan**

  The government will develop a master plan which describes future implementation guidance and survey plans of the National Survey on the Natural Environment, along with efforts including discussing efficient survey methods by using new technologies, implementation systems, improved convenience of data usage and other matters. Based on the plan, the government will enhance a mechanism which will be continued and effectively support biodiversity conservation efforts over the long term and facilitate collection and development of basic scientific information and data on natural environment. (MOE)

- **Comprehensive analysis**

  The government will conduct comprehensive analysis that contributes to effective reflection in policies. Such analysis will be conducted building on the results of the surveys on the natural

environment concerning biodiversity (long-term big data covering 50 years), such as the National Survey on the Natural Environment, along with collecting and using relevant data on natural environment, including socio-geographical and climate change-related information, held by various entities. Using this analysis, the government will present current status of the natural environment in Japan and its changes, and further encourage use of the data from the National Survey on the Natural Environment in biodiversity conservation policies. (MOE)

- **Implementation of the National Surveys on the Natural Environment**

  Based on the provisions of the Nature Conservation Act (Act No. 85 of 1972), the government will plan and conduct activities including surveys to investigate natural environment throughout Japan, and will improve understanding of current status and changes in biodiversity in Japan. Based on the master plan and the comprehensive analysis referred above, the government will compile and provide information on distribution of ecosystems and data on occurrence of organisms, thereby supporting promotion of relevant policies. (MOE)

Current status and target

Indicator	Current status	Target value
Number and scope (number of ecosystem type and taxonomies) of implemented census or survey on natural environment across Japan	Number of implemented surveys: 5 Scope - Ecosystems: 2 - Biological taxonomies: 2 (FY2022)	Number of implemented surveys: no less than 8 – 10 per FY Scope - Ecosystems: no less than 2 – 4 per FY - Biological taxonomies: no less than 2 – 3 per FY
Number of accesses to data on distributions of organisms	22,762,286 (FY 2020)	No less than 23,000,000 (FY2023) * Continuously increase over implementation period
Number of cases in which occurrence of targeted species is reported separately via the *Ikimono* Log, Biological Information Collection and Provision System	17,044 (FY2021)	No less than 22,000 (FY2023) * Continuously increase over implementation period

5-1-2 Monitoring Sites 1000 (Priority)

With the aim to improve understanding of current status and changes of different ecosystems in Japan and to make use of the results in conservation policies and other policies, the government will establish approximately 1,000 monitoring sites throughout the country, and quantitatively and continuously obtain basic information on each ecosystem over the long term. (MOE)

Current status and target

Indicator	Current status	Target value
Number of sites where long-term and quantitative surveys are implemented	1,089 (FY2021)	Maintaining no less than 1,000

5-1-3 Bird Banding Survey

The government will continuously conduct bird banding surveys at bird observation stations in order to promote protection and management of wild birds through collecting and accumulating basic data for improving understanding of their ecology, migration routes, habitat conditions and other aspects. (MOE)

Current status and target

Indicator	Current status	Target value
Annual count of implemented bird banding surveys at 9 stations in Japan	283 (FY2021)	Maintaining no less than 280

5-1-4 Annual simultaneous Census on Waterfowl (Anatidae) Population

A nationwide annual simultaneous census on Anatidae population was launched in 1970 in cooperation with all prefectures in Japan, and has been conducted every year since then. The government will compile the results from the census on Anatidae population which is simultaneously conducted nationwide, and will prepare a report, thereby improving understanding of winter waterfowls and making use of it as fundamental data in wildlife protection and management policies in Japan. (MOE)

Current status and target

Indicator	Current status	Target value
Brief survey on population and other elements of waterfowl (Anatidae) in Japan	Implementing survey once per year in each of 47 prefectures in Japan	
Count of recorded access to website on the census on waterfowl (Anatidae) population	8,351 (FY2021)	Continuously increase over implementation period

5-1-5 Promotion of monitoring of forest resource

The government will promote monitoring of forest resources which collects data on internationally agreed standards and indicators, including not only on timber production but also on biodiversity, prevention of global warming, and conservation of water resources in watersheds, and analyze the data by using a standardized method. (MAFF)

5-1-6 National Census on River Environments

The government will, in principle, conduct the National Census on River Environments so that established monitoring locations are routinely surveyed with 5-year cycle for fish and benthic animals and with 10-year cycle for the other animals. Through this effort, the government will

collect information on river environment across Japan and obtain insights on trends at national level and local-level characteristics of occurrence of organisms. Moreover, the government will continuously make effort to promote further utilization of survey data. (MLIT)

Current status and target

Indicator	Current status	Target value
Number of rivers and dams where the National Census on River Environments are conducted	River: 138 Dam lake:144 (FY2020)	River: 138 Dam lake: 144 (FY2025)

5-1-7 Lake chart survey

The government will progressively update and upgrade topographic data of lakes and marshes as basic information for understanding the natural environment by using the latest technology for survey, while taking into account conservation needs. In addition, the government will provide obtained information widely through the Digital Japan Basic Map. (MLIT)

Target

Improve and update topographic data on lakes and marshes, and provide them through the Digital Japan Basic Map.

5-1-8 Environmental conservation and restoration of the Ariake Sea and Yatsushiro Sea, and recovery of fishery resources

The government will take action on restoration measures to achieve the restoration targets set out in the March 2017 report by the Commission for the Assessment of Comprehensive Research on Ariake Sea and Yatsushiro Sea (FY 2016 Commission Report), as well as review and work toward solving issues outlined in the March 2022 Interim Summary.

(MOE, MIC, MEXT, MAFF, METI, MLIT)

5-1-9 Accumulating data on trends in fisheries resource and other matters.

The government will:

- Progressively increase number of species for fish stock assessment and begin surveys on those fish species.
- Conduct surveys, assessments and other actions on major fish species (e.g., Japanese sardine, chub mackerel) in the waters surrounding Japan and international fishery resources (e.g., salmon, bonito, tuna) caught in high seas and other areas.
- Support efforts to improve understanding of mechanisms of resource fluctuations and medium- to long-term resource dynamics through investigating impact of changes in marine environment on marine resources, and support efforts to establishing real-time observation of forming of fishing grounds and status of fish catches. (MAFF)

5-1-10 Research on distribution of plastics in the ocean and process of their spread

The government will make effort to understand distribution of plastics in the offshore surface layer and deep sea floor of Japan and identify hot spots where plastic debris accumulates and its amount, and the government will further improve understanding of its process of accumulation. The government will provide the international network of the Integrated Marine Debris Observing System (IMDOS) and other actors with the information obtained and also share such information with the Ministry of the Environment. (MEXT)

Current status and target

Indicator	Current status / Target value
Number of scientific peer-reviewed articles published	No less than 2 articles per year
Number of cases in which information is provided for the MOE and other (e.g., Number of participations in relevant meetings including committee meeting)	At least once per year
Number of cases in which information is provided in international conference and symposium	At least once per year

5-1-11 Research on impact of plastics on marine organisms and ecosystems

The government will develop scientific information on impact of plastics on marine organisms as well as plastic-induced changes in ecosystem in deep-sea where the plastics accumulate in the end. The government will provide obtained information for the international network IMDOS and other actors as well as share this information with the Ministry of the Environment. (MEXT)

Current status and target

Indicator	Current status / Target value
Number of scientific peer-reviewed articles published	No less than 2 articles per year
Number of cases in which information is provided for the MOE and other (e.g., Count of participation in relevant meetings including committee meeting)	At least once per year
Number of cases in which information is provided in international conference and symposium	At least once per year

5-1-12 Conservation and restoration of coral reefs

The government will develop technologies for conservation and restoration of coral reefs that serve as spawning and feeding grounds of fisheries resources, and nursery grounds for juvenile fish. (MAFF)

Current status and target

Indicator	Current status	Target value
Settlement rate of coral larval in sea research area	9.5% (FY2021)	No less than 10% (FY2025)

5-1-13 Upgrading of scientific knowledge on coral communities and reinforcing continuous

monitoring and management.

As one of the most urgent priority issues specified in the Action Plan to Conserve Coral Reef Ecosystems in Japan 2022-2030, the government will promote monitoring of status of coral reefs and their conservation activities, and also make effort to collect, compile, and disseminate information on the status and the conservation activities. (MOE)

5-1-14 Accumulating data in the Marine Environment Database and further development of the Database

The government will obtain environmental information on closed water areas and coastal waters such as the Tokyo Bay, and accumulate data in the Marine Environment Database and further develop the database. (MLIT)

5-1-15 Promoting research in ports and harbors

Using the world's largest mesocosm tank and building on findings from biological surveys conducted in existing natural tidal flats, human-made tidal flats and seaweed beds, as well as findings from surveys and research on material circulation, the government will promote researches which are implemented to support rich biodiversity in coastal areas, along with developing ecosystem models for coastal areas. (MLIT)

5-1-16 Conducting on-site tests of recycled materials

The government will conduct on-site tests toward utilization of recycled materials, such as CaO-improved material and steel slag, in development of tidal flat. (MLIT)

5-1-17 Reviewing methods for adjusting quality of and supply-demand for dredged soil in wider area

The government will review methods for adjusting quality of and supply-demand for dredged soil in wider area in order to effectively use them as materials in construction of ports and harbors. (MLIT)

5-1-18 Comparing and evaluating effect of reducing nutrient load and development of tidal flats/shallow areas and other areas.

The government will compare and evaluate effectiveness of administrative measures (e.g., reduction in nutrient load and development of tidal flats/shallow areas), which are necessary for restoring rich ecosystems. (MLIT)

5-1-19 Analysis of state of biodiversity and its dynamics in the ocean

The government will make effort to understand state of biodiversity in the ocean, including the deep sea, using eDNA and image data, and analyze dynamics in response to environmental changes. The

government will register the obtained data in the Ocean Biodiversity Database (OBIS) under the UNESCO through the Biological Information System for Marine Life (BISMaL), thereby contributing to further development of marine biodiversity research. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of scientific peer-reviewed articles published	No less than 2 articles	
Number of data included in the OBIS	Registering and updating at least one dataset	

5-1-20 Disseminating and providing information on marine biodiversity

Regarding biosphere mainly including ocean, the government will conduct biological surveys and research on ecology and functions and other matters. The government will also identify potential usefulness of diverse organisms as resources, and disseminate at national and international levels findings and information that contribute to development of society and economy. In addition, the government will contribute to assessment of impact of global environmental changes that may occur in the future by improving understanding of interactions of these biospheres with atmosphere and oceans and solid earth as well as providing through the Biological Information System for Marine Life (BISMaL) information for comprehensively understanding marine biodiversity and ecosystems. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of records of occurrence of organisms identified in surveys and researches in sea area surrounding Japan which are synthesized and disclosed by the BISMaL	2,365,263 (2009-2022)	3,000,000 (By 2030)

5-1-21 Understanding effects of radiation on natural ecosystems

To understand long-term effects of radioactive materials on ecosystems in areas around the Fukushima Daiichi Nuclear Power Plant, the government will collect and analyze samples of wild fauna and flora in cooperation with relevant research institutions and academic experts. (MOE)

Current status and target

Indicator	Current status	Target value
Number of taxa whose impacts of radioactive materials are investigated and understood	3 or 6 (varied with fiscal year)	

5-1-22 Antarctic Research Program

Focusing on marine and terrestrial ecosystems and biota in Antarctica, the Antarctic Research Program of Japan, launched in 1956, will conduct oceanographic surveys by using Antarctic research vessel, diving surveys in lakes and marshes, and surveys in glacier terminus areas. The

program will elucidate extreme environments and genetic characteristics by using various methods, mainly genetic analysis. The government will disseminate the results through the National Institute of Polar Research's scientific database. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of disclosed data in the National Institute of Polar Research's scientific database	74,398	More than the number in the previous fiscal year

5-1-23 Science and Technology Research Partnership for Sustainable Development (SATREPS)

Focusing on global issues in environment, energy and biological resources, including research related to biodiversity, building on needs from developing countries and other countries, the SATREPS will, in combination with the ODA, implement joint international research having vision of implementation across society, with a view to acquiring new knowledge contributing to resolving these issues and improving the level of science and technology, and developing human resources in developing countries and improving their ability to address these issues. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of biodiversity-related projects implemented	48	64 (FY2030)

5-1-24 Acid Deposition Monitoring Network in East Asia (EANET)

As of 2022, the EANET, participated by 13 countries in the East Asia region, monitors 31 forest sites in 10 countries and 19 lake/river sites in 11 countries to identify effects of acid deposition and other atmospheric pollution on ecosystems at an early stage and to understand to clarify the current situation. The Network will continue these activities to prevent impacts of acid deposition and other atmospheric pollution in east Asia. (MOE)

Current status and target

Indicator	Current status	Target value
Number of sites where precipitation and acid materials and other are monitored and obtained data are provided to the EANET	62	62
Percentage of data which meets quality standard established by the EANET	91%	100% (FY2023)

5-1-25 Comprehensive promotion of environment research (Priority)

Through the Environment Research and Technology Development Fund, the government will conduct research and development in almost all of environment research areas in order to

accumulate scientific knowledge and promote technological development which are essential for promoting environment policies (e.g., addressing climate change, realizing a sound material-cycle society, living in harmony with natural environment, and ensuring safety through environment risk management and other measures) to build a sustainable society. (MOE)

5-1-26 Standardization and generalization of survey methods by using environmental DNA (eDNA) analytic technology (Priority)

With eDNA analytic technology which has been developed recently, the government will promote standardization and generalization of eDNA-based survey methods to enhance efficiency and effectiveness in collecting information on distribution of freshwater fish, amphibians, and marine organisms inhabiting water bodies, to contribute to measures for endangered species and measures against alien species, and to enhance efficiency of biological surveys. (MOE, MEXT)

Current status and target

Indicator	Current status	Target value
Annual number of accesses to website on eDNA	9,387 (FY2021)	No less than 12,000 (FY2025)
Cumulative number of downloads of "Guideline on survey method"	1,682 (FY2021)	No less than 3,000 (FY2024)

5-1-27 Evaluation of value of biodiversity and natural capital

Through implementing economic value assessment of biodiversity and natural capital, the government will make effort to facilitate decision-making and achieving consensus on policies and projects considering biodiversity conservation, and mobilizing financial resource and human resource, across sectors (e.g., national government, local governments, businesses, citizens). (MOE)

5-1-28 Comprehensive assessment and modeling of biodiversity and ecosystem services (Priority)

The government will compile the Japan Biodiversity Outlook (JBO) to comprehensively assess current status of biodiversity and ecosystem services in Japan and analyze effectiveness of measures specified in this NBSAP. In addition, the government will promote surveys and research which conduct assessment and modeling of biodiversity and ecosystem services, including impact of socio-economic activities (indirect driver of biodiversity loss) and implementation of integrated solutions with measures against climate change. (MOE)

5-1-29 Developing technologies for evaluation of economic benefit from ecosystem services to lead ESG investment (Priority)

The government will develop technologies for appropriately detecting, analyzing, and monitoring

ecosystem services such as pollination services utilizing wild insects for fruit and vegetable trees, and ecosystem services including biological control of pests and diseases using native natural enemies, and establish indicators for quantification of ecosystem services. (MAFF)

Action-oriented target 5-2: Develop human resources and provide tools for dissemination and utilization of the data, to promote effective and efficient biodiversity conservation, facilitate appropriate policy-making and decision-making, and encourage public participation in biodiversity conservation activities

In promoting biodiversity conservation, it is necessary to reinforce coordination between science and policy and develop policies building on the latest scientific knowledge available at the commencement of programs. It is also necessary to adaptively feed findings obtained in implementation process back into policies. To this end, data accumulated through academic research, surveys, monitoring, and other various efforts being implemented across Japan, should be appropriately and swiftly accessible by various entities depending on their purposes, and be utilized in a way that leads to effective actions.

However, under present condition, tools and systems for sharing data, human resources who can disseminate and utilize data, and a system for promoting collaboration among relevant stakeholders are not adequately established.

In order to effectively utilize such valuable data and incorporate them into policies and efforts, the government will enhance and improve infrastructures and systems for providing public and private sector data, and mutual sharing of such data by publishing the data as open data, integrating them via API. At the same time, the government will make effort to ensure data quality satisfying the purpose of its use and make digital technologies more sophisticated, while develop expert personnels who can deal with such data and facilitate on-ground activities by interpreting information. Furthermore, the government will improve information literacy of the public through making data available to public, thereby leading to public participation in activities for biodiversity conservation.

Specific Measures

5-2-1 Compiling and visualizing local activities that contribute to this NBSAP (Priority)

The government will establish a mechanism to compile and share community-based activities by local governments, businesses, and organizations that contribute to achievement of the targets set out in this NBSAP, thereby promoting quantitative evaluation and visualization of contribution of such activities. (MOE)

Target

Establish a mechanism for consolidating and sharing community-based activities by various entities.

5-2-2 Japan Integrated Biodiversity Information System (J-IBIS)

Regarding information on natural environment collected through various surveys, the government

will promote digitization and conversion of such information into open data, with carefully handling information on endangered species and other information. Furthermore, the government will develop and enhance infrastructure and system for providing data from public and private sector at national and international level by integrating them via API and other measures within the J-IBIS on the Internet, thereby promoting utilization and mutual use of nature-related data in response to various policies and needs. (MOE)

Current status and target

Indicator	Current status	Target value
Monthly average number of accesses to biodiversity information system	8,010,000 (FY2021)	No less than 8,000,000

5-2-3 *Ikimono* Log, the Biological Information Collection and Provision System (Priority)

Utilizing the *Ikimono* Log, a platform for collecting, managing, and providing information on biodiversity and other, the government will promote stable and continuous collection of data on distribution of organisms in Japan and improve understanding of the distribution, through collection of occurrence data on various organism provided by various entities and information-sharing with and its provisions to various entities such as the Global Biodiversity Information Facility (GBIF). (MOE)

Current status and target

Indicator	Current status	Target value
Cumulative count of data registered in the GBIF	401,982 (FY2022)	No less than 500,000 (By the end of FY2030)
Cumulative number of relevant entities which implement citizen-based biological surveys (Group survey)	113 (As of 31 Dec. 2022)	181 (FY2027)

5-2-4 Developing information platform to ensure environment considerations in policies and projects

The government will provide information on natural and social environment to understand regional characteristics through a geographic information system on a website (Environmental Impact Assessment Database System (EADAS)) so that appropriate environment considerations in developing policies and implementing projects are ensured and such efforts contribute to conservation of biodiversity. (MOE)

Current status and target

Indicator	Current status	Target value
Annual cumulative number of accesses to the EADAS	270,000	Higher than the previous fiscal year

5-2-5 Developing intellectual infrastructure for research and development and industrial use

The government will develop efficient preservation methods for microbial resources that can be used in industry and other areas and promote academic analysis for their classification and identification. The government will also develop an intellectual infrastructure for research and development and industrial application by strengthening the collection, preservation, and characterization of genetic resources made available for research and industry, by distributing research materials, and by consolidating information. (METI)

5-2-6 Clearing-House Mechanism for biodiversity information

The government will stably operate the Clearing-House Mechanism for biodiversity information which enables exploring information source (metadata) of biodiversity information. Biodiversity information will be registered on information source (metadata) from national organizations, local governments, researchers and other entities, and information sharing will be promoted with a broader range of entities. (MOE)

Current status and target

Indicator	Current status	Target value
Number of registered information on information source (metadata) on biodiversity information	5,441 (FY2021)	No less than 6,000 (FY2030)

5-2-7 Promotion of sharing and utilizing of scientific information and other information

With an aim of contributing to promotion of nature conservation measures based on scientific information, the government will promote mutual information exchange and information-sharing among local governments and nature-related research institutes through organizing the Network of Organizations for Research on Nature Conservation and will strengthen the Network and improve information literacy of relevant entities. (MOE)

Current status and target

Indicator	Current status	Target value
Number of meetings for presenting research and practices, and liaison meetings held to enhance network among member organizations	Be held once a year respectively.	

5-2-8 "Data Integration and Analysis System" Platform Project

To contribute to measures for climate change and disaster prevention and other matters, and efforts for biodiversity, the government will operate and improve the Data Integration and Analysis System (DIAS), which archives, integrates and provides global environment big data (e.g., observation data, projection data), and will promote research and development that utilizes the platform. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of applications which contribute to efforts for biodiversity and are developed and provided in the DIAS	1 (2021)	2 (2030)

5-2-9 National BioResource Project (NBRP)

In the NBRP which was launched to improve various bioresources for development of life science research in FY2002, the government will promote collection, preservation and provision of resources that respond to contemporary needs, and will continue to improve databases and associated information for their utilization. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of articles published, utilizing laboratory animals, plants, and other that the core center had provided to universities, research institutes, and others	1,021 (FY2020)	Higher than value in the previous fiscal year

5-2-10 Environmental survey and monitoring of chemicals

On the basis of the agreement at the establishment of the Chemical Substances Control Law, the government has conducted surveys on existing chemical substances in general environment (e.g., surface water, sediment, wildlife, air) every fiscal year since 1974, and has made these results available. The results are used as basic information for assessing environmental risks of chemical substances. (MOE)

Current status and target

Indicator	Current status	Target value
Number of substances and media for which the survey results are fed back to requesting departments or sectors	37 substances and media (FY2021)	―

5-2-11 Evaluating biodiversity conservation efforts in the field of agriculture, forestry, and fisheries

The government will:

- Investigate and analyze progress in methods for visualization of biodiversity conservation efforts, and promote provision of information useful for producers, companies and other actors.
- When considering the *Ikimono* branding, environmentally friendly branding with using symbolic species, encourage activities that contribute to communities and conservation of biodiversity as a whole in Japan, noting local biodiversity strategies.
- Promote utilizing methods for evaluating, through utilizing birds in rice paddies and their prey

species and plants, effectiveness of agricultural methods that contribute to biodiversity conservation. (MAFF)

5-2-12 Technological development related to river environment (Priority)

In order to promote further development and enhance efficiency of river environment management, the government will promote developing new river environment information maps, conducting environment surveys using new technologies, and other actions. In addition, the government will, in cooperation with academic experts and various organizations, promote surveys and research on river environments such as academic research on river ecology and promote utilizing these results. (MLIT)

Target: Revise the manual on the National Census on River Environments.

5-2-13 Upgrading technologies for utilizing big data on marine life (Priority)

In order to promote conservation and use of marine organisms and ecosystems, the government will make effort to integrate research on marine organisms and ecosystems with information science, upgrade technologies for collecting and filtering data on marine organisms and technologies for generating and analyzing big data, thereby working toward generating useful result for society in collaboration with stakeholders. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of articles published and presentations in meetings of academic societies which utilize data and analytic techniques developed by this program (Cumulative values)	6	500 (FY2030)
Number of data in developed database	121	130 (FY2023)

5-2-14 Operating the Maritime Domain Awareness (MDA) Situational Indication Linkages (MSIL)

The government operates the MDA Situational Indication Linkages (MSIL) that collects, shares, and provides real-time marine information, covering broader spatial scales, on weather, marine phenomena, disaster-risk reduction, marine life and ecosystems etc. that are possessed by relevant ministries and agencies, to strengthen Japan's capacity of the MDA. (CAO, MLIT)

5-2-15 Operating the Japan Oceanographic Data Center (JODC)

The government will promote accumulation of basic data on the marine environment in the JODC and further strengthen cooperation with oceanographic research institutes. (MLIT)

5-2-16 Developing efficient and effective microplastics analytic technology

Since the measurement of material characteristics and quantity of microplastics is currently a bottleneck, the government will develop technologies which efficiently and effectively measure covering actions from collection to measurement of microplastics. The information obtained will be provided to the IMDOS, an international network, the MOE, and other entities. (MEXT)

Current status and target

Indicator	Current status	Target value
Number of cases in which developed technologies are used	None	No less than once per year
Number of cases in which information is provided for the MOE and other (e.g., participation in relevant meetings including committee meeting)	No less than once per year	
Number of cases in which information are presented in international meetings and symposium	No less than once per year	

5-2-17 Promoting sustainable use of microbial resources

NITE will transfer technologies to the resource providing countries through international efforts, provide Japanese companies with opportunities for using overseas microbial resources and take other actions, thereby promoting sustainable use of microbial resources. (METI)

5-2-18 Preservation and provision of useful microbial resources

NITE will continue to preserve useful microbial resources collected from Japan and overseas and provide them for research and development and industrial use. (METI)

5-2-19 Strengthening system for collection, maintenance, and management of biological specimens and document materials

The Biodiversity Center of Japan (BIODIC) owns about 65,000 biological specimens and 95,000 document materials. The BIODIC will make effort to strength system for collection and management of biological specimens and document materials at the center and other institutions. (MOE)

5-2-20 Cooperative efforts by multiple stakeholders (Priority)

Through introduction of new knowledge and objective evaluations by different sectors, by having citizens, businesses, NPOs, local governments, the national government, and other stakeholders collaborate and make efforts, the government will establish a more effective framework, facilitate efforts, and raise awareness of broader entities. (MOE)

Current status and target

Indicator	Current status	Target value
Activities of J-GBF (Number of meetings relevant to the platform)	No less than 5 times	No less than 5 times
Number of members in 30by30 alliance	337 (As of Dec. 2022)	500 (2025)
Activities by project of the Forests, Countrysides, Rivers and Seas (Number of actions toward citizens including communication (Number of accesses to the homepage))	25,324 pv (FY2022)	30,000 pv (FY2030)
Number of local governments registered on the Green Infrastructure Public-Private Partnership Platform that have turned green infrastructure efforts into official project	16 (2021)	70 (2025)

5-2-21 Nation-wide survey of aquatic animals

Survey on water quality by using aquatic organisms inhabiting rivers as indicators promotes people to interact with nature close to residential areas, providing a good opportunity to increase interest in environmental issues. Therefore, the government will continue to implement the nation-wide survey of aquatic animals involving citizens. (MOE, MLIT)

5-2-22 Promoting surveys on water quality of rivers and other areas through cooperation with relevant actors in watershed

The government will, in collaboration with local residents, conduct surveys on water quality by using simple indicators such as aquatic organisms and conduct water quality assessments based on human perception, thereby fostering interest in and understanding of river environment conservation in local community. (MLIT)

Action-oriented target 5-3: Strengthen support for planning, including local biodiversity strategy and action plans (LBSAPs), to promote integrated efforts with participation by various entities

To achieve a sustainable society living in harmony with nature, it is essential that local entities implement community-inclusive activities to address local issues related to biodiversity, cooperating each other. In doing so, it is necessary to aim at achieving desirable land use through integrated efforts which take into account synergies and trade-offs between biodiversity and other social issues at various scales.

With characteristics of local biodiversity, it is critical to promote effective efforts at local level in biodiversity management and conservation, accordingly, what essential is to develop plans with targets, indicators, specific measure that take into account local situation. While the LBSAPs, developed by local governments, have already been developed by 47 prefectures, only about 9% of municipalities have developed their own LBSAPs as of December 2022. Furthermore, those local governments which have already developed their LBSAPs are also expected to revise their LBSAPs

in light of the GBF and this NBSAP.

To this end, while making planning methods that effectively facilitate local efforts from a macro perspective disseminate to local governments, and the government will promote the development of LBSAPs and other relevant local plans such as the National Land Use Plan and the Master Plan For Parks and Open Spaces and facilitate coordination among plans. Also, it supports integrated effort through landscape approaches, human development and local activities. In addition, the government will promote participation by women and youth in discussion on planning process and decision-making process.

Specific Measures

5-3-1 Promoting integrated efforts using landscape approaches

In terms of landscape approach, specifying synergies and trade-offs between biodiversity and other social issues at various scales in each region, the government will aim at realizing desirable land use by considering natural and social conditions in an integrated manner and by coordinating various efforts through participation by various entities at local level. To realize this, the government will promote visualization through necessary spatial planning, mapping and other means, and support efforts including development of various plans and strategies which incorporate landscape approaches. (MOE)

5-3-2 Promoting development of the LBSAPs (Priority)

Regarding the LBSAPs that local governments are expected to develop in accordance with Article 13, Paragraph 1 of the Basic Act on Biodiversity, the government will take measures including provision of technical advice to allow as many local governments as possible to develop the LBSAPs that contribute to achievement of the targets in this NBSAPs taking into account local circumstances. (MOE)

Current status and target

Indicator	Current status	Target value
Percentage of local governments which develop their LBSAPs	At prefectural level: 100% At municipality level: 9.0% (156/1741 municipalities) (End of February 2023)	At prefectural level: 100% At municipality level: 30% (FY2030)
Percentage of local governments which revise their LBSAPs in light of development of this NBSAP	0%	80% (out of local governments which have developed their LBSAPs as of Feb. 2023) (FY2030)
Number of local governments which are provided with technical advice in developing or revising their LBSAPs in light of this NBSAP	0	30 (FY2025)

5-3-3 Promoting appropriate use and management of national land through the National Land Use Plans and the National Land Management Concepts (Priority)

In the National Land Use Plan (National Plan), the government will set forth a basic direction for appropriate use and management of national land, including conservation, restoration, and use of natural environment such as expansion of conserved areas through Other Effective area-based Conservation Measures (OECMs). To follow this direction, the government will, in an integrated manner, promote development and revision of prefectural and municipal plans basically based on the National Plan, and efforts in land management concepts at prefectural, municipal, and regional levels, which will serve as implementation plans. (MLIT)

5-3-4 Promoting development of the Master Plan For Parks and Open Spaces and other plans

When municipality authorities develop or revise their Master Plans For Parks and Open Spaces, the government will encourage municipality authorities to utilize the Guidelines for Formulating the Master Plan for Parks and Open Spaces Considering Biodiversity and other documents, thereby promoting development and maintenance and management of parks and open green spaces and other spaces with giving consideration to ensure biodiversity. (MLIT)

Current status and target

Indicator	Current status	Target value
Percentage of the Master Plans For Parks and Open Spaces developed with consideration of ensuring biodiversity	53% (FY2020)	60% (FY2027)

5-3-5 Promoting participation by women in decision-making processes (Priority)

The government will increase ratio of women participating in biodiversity-related meetings to integrate opinions by a broad range of stakeholders involved in biodiversity conservation and to ensure that efforts are more effective and efficient. Additionally, the government will consider modalities of holding meeting and method of participation so that various entities can easily participate in decision-making processes. (MOE)

Current status and target

Indicator	Current status	Target value
Percentage of women member in government's meetings related to biodiversity conservation	22% (FY2021)	40% (FY2025)
Percentage of women in management posts in the MOE related to biodiversity conservation	12.3% (As of Jan. 2023)	30% (FY2030)

Action-oriented target 5-4: Implement efforts to enhance resource mobilization, including identifying and reviewing incentives that are harmful to biodiversity

The Aichi Biodiversity Targets adopted at the CBD-COP10 has a target aiming to substantially

increase resource mobilization from the current levels by 2020 at the latest. An interim target for resource mobilization was agreed at the CBD-COP11 in October 2012. In light of those situations, the government has actively participated in discussions at international forums and has explored methods for grasping the status of resource mobilization by various entities in Japan, while referring to case studies in other countries. In addition, Japan has assisted 149 countries in developing or revising their NBSAPs and has implemented 87 capacity-building projects through the Japan Biodiversity Fund, which aims to build the capacity of developing countries to achieve the Aichi Biodiversity Targets. However, the Aichi Biodiversity Targets have not been met and global biodiversity loss continues.

In order to conserve biodiversity, it is necessary to mobilize resources effectively and selectively and to leverage overall efforts for biodiversity, while making use of the lessons learned from efforts taken under the Aichi Biodiversity Targets. To achieve this, the government will secure the necessary budget, and promote the mobilization of all resources including private financial resources and financially support conservation efforts led by the government, local governments and private sectors.

Furthermore, to facilitate the efforts of the private sector and local governments, the government will explore efforts to increase incentives promoting engagement in biodiversity conservation, including furthering discussion for market trading of biodiversity values tax measures. In addition, with regard to various kinds of incentive measures, including existing subsidies, the government will identify those that are harmful to biodiversity in Japan and review how they should be, thereby increasing positive incentives that contribute to biodiversity conservation as a whole.

In mobilizing resources, the government will consider to efficiency by prioritizing and focusing allocation on efforts that are expected to have synergistic effects, such as those that contribute both to biodiversity conservation and to measures against climate change.

Furthermore, since it has been strongly emphasized that the provision of financial resources, technology transfer, and capacity building to developing countries is required to promote efforts for biodiversity globally, the government will enhance contribution to international resource mobilization.

Specific Measures

5-4-1 Scaling up resource mobilization for biodiversity

In order to take full advantage of domestic and international biodiversity efforts, the government will take legislative, financial and tax measures necessary to implement policies which contribute to the conservation and sustainable use of biodiversity. The government will also scale up contributions to international resource mobilization. In taking these actions, the government will consider the efficiency of resource allocation such as synergy with other measures including measures to address climate change. (MOE, relevant ministries and agencies)

5-4-2 Promoting Payment for Ecosystem Services

The government will promote payment for ecosystem services in Japan through disseminating

information on cases of payment for ecosystem services in which beneficiaries of ecosystem services bear financial burden for the benefits of the services. (MOE)

5-4-3 Conserving arid lands and combating desertification

The government will discuss methods for comprehensively conserving and managing natural resources in arid areas and other areas, and will conduct research and surveys on this matter. In addition, the government will actively address the world's desertification problems while providing scientific findings obtained for the Conference of the Parties and meetings of subsidiary bodies of the UNCCD. (MOE)

5-4-4 Specialized measures contributing to biodiversity conservation and other matters

The government will put in place tax measures, such as specialized measure for donations made to specified public interest corporations engaging in conservation of natural environment including biodiversity conservation, and special exceptions for income tax, corporate tax, and local tax for land within areas which are designated as natural parks or protection forests. (MOE, MAFF)

5-4-5 Discussing incentives for sites certified as Nationally Certified Sustainably Managed Natural Sites (Priority)

The government will promote consideration of a framework in which biodiversity values are certified and traded as the Nationally Certified Sustainably Managed Natural Sites. The government will also discuss the feasibility and effectiveness of introducing other economic incentives such as taxation measure. (MOE)

5-4-6 Taking action on incentive measures that are harmful or positive to biodiversity (Priority)

Regarding various incentive measures, including domestic subsidies, the government will identify those that are harmful to biodiversity and will review future direction of such measures. The government will make efforts to identify harmful incentive measures after due consideration and consultation with relevant ministries and agencies, in order to precisely understand the impact on biodiversity. In reviewing the incentive measures, the government will give due consideration to users of the measures. At the same time, the government will make effort to scale up positive incentives, and to disseminate information on good practices to promote such practices widely.

(MOE)

Current status and target

Indicator	Current status	Target value
Total value of budget of subsidies and incentive measures harmful to biodiversity, which are abolished, reviewed, or are subject to other actions	—	—

Expenditure of incentive measures positive to biodiversity	—	—

Action-oriented target 5-5: Promote international cooperation utilizing Japan's knowledge and expertise

For biodiversity conservation, the international community must work together to address issues that cannot be addressed by a single country, such as conservation of species that migrate across national borders and of marine environment, countermeasures against global climate change and regulation on international trade in wild fauna and flora. Since Japan depends on overseas resources for much of food, energy and other resources, Japan has a responsibility to play a proactive role in conservation of the global ecosystem with a focus on developing countries supplying those resources.

Japan is proud not only of various knowledge and experience in areas such as accumulation of long-term scientific data, environmentally friendly infrastructure development, sustainable use of secondary nature such as *satoyama*, values of living in harmony with nature, and implementation of Eco-DRR, but also of human resources with expertise in those areas. Fully making use of those strengths, the government will contribute to promoting efforts for global biodiversity conservation by the following actions: (a) promoting and sharing, at international level, techniques and know-how that contribute to biodiversity; (b) facilitating strengthening collaboration among countries; (c) actively engaging in discussions at the international level and promoting initiatives based on conventions and agreements contributing to biodiversity conservation; (e) promoting capacity-building in developing countries, and provision of financial resources including through international frameworks.

Specific Measures

5-5-1 Satoyama Initiative

- **Promoting Satoyama Initiative**

  In light of the decisions by the CBD-COP10 to 14, the government will implement the Satoyama Initiative at a global scale, which aims at conservation and sustainable use of biodiversity in secondary nature. (MOE)

Current status and target

Indicator	Current status	Target value
Number of implemented projects relevant to the Satoyama Initiative	458	600 (2028)

- **Promoting the International Partnership for the Satoyama Initiative (IPSI)**

  The government will widely call for participation in the IPSI, which was established during the CBD-COP10, and will facilitate information-sharing and cooperative activities among participating organizations. (MOE)

Current status and target

Indicator	Current status	Target value
Number of countries where headquarter office of member organization of the International Partnership for the Satoyama Initiative is located	73	100 (2030)
Number of organizations participating in the International Partnership for the Satoyama Initiative	283	400 (2030)

- **International Support through the Global Environment Facility (GEF) and the Critical Ecosystem Partnership Fund (CEPF)**

  The government will facilitate opportunities for supporting activities related to the Satoyama Initiative through the GEF, the CEPF and other funds. (MOE)

5-5-2 Sustainable natural resource management in terrestrial and coastal areas in developing countries

The government will ensure maintenance of biodiversity and ecosystem services such as reduction in greenhouse gas emissions and mitigation of natural disasters by preventing decline in and degradation of natural environment, through building capacity in the development of policies and plans, developing scientific information infrastructure, conducting demonstration and creating a model in regions including through collaboration with local communities, and scaling up by securing resources and cooperation, in developing countries, utilizing technical cooperation, ODA loan and other cooperation measures, thereby aiming at building a society that continues to enjoy various benefits from natural environment. (MOFA)

Current status and target

Indicator	Current status	Target value
Number of reinforced systems and developed people in organizations in developing countries responsible for conservation of natural environment	―	Systems of no less than 48 organizations of central or local government responsible for conservation of natural environment are reinforced and capacity building of 12,000 officers are implemented. (2030)

5-5-3 Providing support for biodiversity area based on the Development Cooperation Charter and others

The government will more effectively and efficiently promote international cooperation in the field of environment including biodiversity, taking into account needs from developing countries, trends on biodiversity in the international community and global issues such as climate change.

(MOFA)

5-5-4 Critical Ecosystem Partnership Fund (CEPF)

The government will provide support for effective protection of biodiversity hotspots in developing countries through the CEPF, established in August 2000 jointly by the World Bank, the GEF, and the Conservation International. (MOF)

5-5-5 International cooperation through the Japan International Cooperation Agency (JICA)

- The government will implement cooperation through the JICA as bilateral cooperation and promote efforts for sustainable forest management and biodiversity conservation in developing countries.
- The JICA, as an aid agency, will make efforts to develop and implement projects with appropriate environmental and social considerations, based on the "JICA Guidelines for Environmental and Social Considerations" (released in January 2022). (MOFA, MOF)

5-5-6 Reducing deforestation and forest degradation in developing countries and promoting sustainable forest management

The government will support REDD+ (Reducing Emissions from Deforestation and forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries) and technology development and human resource development which contribute to promoting the forest-based disaster risk reduction. (MAFF)

5-5-7 International support for forest conservation and afforestation in developing countries

The government will implement technical and financial cooperation on forest conservation and afforestation in developing countries, bilateral international cooperation and multilateral assistance through international organizations for establishing legal and sustainable wood supply chains, and for strengthening mountain watersheds through forest development and conservation, and other related actions. (MAFF, MOFA)

5-5-8 Supporting projects by the International Tropical Timber Organization (ITTO)

To promote trade in legal and sustainable tropical timber and sustainable management of tropical forests within member countries of the ITTO, the government will support implementation of projects for combating illegal logging and forest management capacity development projects, including dissemination of forest certification systems, thereby contributing to conservation of forests, especially of tropical forests. (MOFA, MAFF)

Current status and target

Indicator	Current status	Target value
Promotion of sustainable forest management (Area of forest with certification of sustainable management in producer member countries of the ITTO (Total of FSC and PEFC)	36,400,000 ha (FY2021)	50,000,000 ha (2030)

Promotion of trade in legally harvested timber (Number of CoC certificates obtained in producer member countries of the ITTO)	5,484 (FY2021)	8,000 (2030)

5-5-9 Support for joint initiatives between the Secretariats of ITTO and CBD

Recognizing the role of tropical forests in biodiversity conservation, the government will support the efforts by the Secretariat of ITTO through the collaborative initiative for tropical forest biodiversity based on the ITTO-CBD Memorandum of Understanding (MoU). (MAFF, MOFA)

5-5-10 Implementation of the International Tropical Timber Agreement (ITTA)

The government will support activities by the Secretariat of the ITTO, which aims at expanding and diversifying international trade in legally harvested tropical timber and promoting sustainable management of tropical timber-producing forests, while actively participating in relevant meetings and exchanging information with member countries as necessary, thereby appropriately implementing the ITTA. (MOFA, MAFF)

5-5-11 Facilitating activities by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

In order to facilitate incorporating scientific knowledge into policy-making process and strengthen science-policy interface, the government will actively participate in and contribute to the IPBES to develop the Platform as an effective and efficient framework based on scientific evidence, and will develop national structures for this purpose. (MOE)

Current status and target

Indicator	Current status	Target value
Number of experts dispatched to meetings of the IPBES	0 * No meetings held due to the COVID-19 pandemic	5 (2030)

5-5-12 Global Earth Observation System of Systems (GEOSS)

The government will promote international cooperation for establishing and developing the GEOSS, which provides earth observation data from satellite, ocean, land and others of each country for a wide range of users, as well as knowledge obtained by utilizing such data to contribute to policy making towards addressing global issues such as climate change, disasters and biodiversity through participating in the Group on Earth Observation (GEO). (MEXT)

Targets

Promote international cooperation for establishing and developing the GEOSS, a platform for sharing earth observation data and knowledge obtained by utilizing such data, to contribute to policy making towards addressing global issues such as biodiversity. The government will incorporate,

biodiversity-related efforts as a priority action item into the next GEO strategy.

5-5-13 Asia-Pacific Biodiversity Observation Network (APBON)

To promote more effective biodiversity conservation efforts in the Asia-Pacific region, the government will provide support for activities by observation networks for biodiversity monitoring in the region and strengthen regional cooperation through exchange of information on current status of each country. The government will make equivalent efforts for marine areas in the Asia-Pacific region (APMBON). (MOE, MEXT)

Target

Ensure that percentage of member countries or regions of the APBON, a forum to collect and provide biodiversity information, whose researchers participate in webinar, does not fall below 70%.

5-5-14 Asia-Pacific Network for Global Change Research (APN)

The government will promote to strengthen collaboration among policy makers in countries in the region by joint research with regional researchers, capacity development, organizing workshops and other actions through the APN. (MOE)

Target

Contribute to scientific capacity enhancement in the Asia-Pacific region in collaboration with expert groups on biodiversity including through support for research. Together with this, strategically address ecosystems and biodiversity as a priority area and promote informing relevant meetings and participation by staff in the meetings.

5-5-15 Participation in meetings related to the CBD

- **Participation in meetings related to the CBD**

  Through participation in meetings related to the CBD, the government will contribute to the conservation and sustainable use of biodiversity at the global level by facilitating the effective implementation of the Convention, sharing Japan's knowledge and various efforts.

  (MOE, MOFA, MEXT, MHLW, MAFF, METI)

Current status and target

Indicator	Current status	Target value
Percentage of meetings (Official meetings requiring registration of delegates) related to the CBD in which the Japanese delegation participated	100%	100%

- **Dissemination of results of the Conference of the Parties (COP) to the CBD and its related meetings**

  The government will provide the public with information on status of discussions at the CBD-

COP and the Subsidiary Body for Scientific, Technical and Technological Advice (SBSTTA) and other relevant meetings, thereby promoting cooperation with public in implementation of the Convention. (MOE)

Target

After the closure of each CBD-COP which is held approximately every two years, report the results of discussions, and prepare/make publicly available documents and other materials that summarize the results of the COP.

- **Dispatch experts to international conferences and other meetings**

  To contribute to international discussions on biodiversity, the government will identify, support, and train national experts in biodiversity area, such as by dispatching them to meetings related to the CBD and to international organizations. (MOE)

Current status and target

Indicator	Current status	Target value
Number of experts dispatched to meetings of the IPBES	0 * No meetings held due to the COVID-19 pandemic	5 (2030)
Number of experts dispatched to expert meetings related to conventions on biodiversity	0 * No meetings held due to the COVID-19 pandemic	3 (2030)

5-5-16 Appropriate implementation of the CBD

The government will support the activities of the secretariat of the CBD, whose objectives are the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilization of genetic resources, and will implement the Convention appropriately by actively participating in meetings related to the Convention and actively exchanging information as necessary with relevant Parties. (MOFA)

Current status and target

Indicator	Current status	Target value
Promotion of development of international rules toward achieving the objectives of the CBD (Number of decisions adopted by the CBD-COP)	35 decisions (FY2022)	38 decisions (FY2030)

5-5-17 Japan Biodiversity Fund

The government will promote international cooperation to assist developing countries in achieving the GBF adopted at the CBD-COP15. (MOE)

Current status and target

Indicator	Current status	Target value
Cumulative number of organized meetings on capacity building and other matters which are hosted by the secretariat of the CBD and are supported by the Japan Biodiversity Fund	―	5 (2030)
Cumulative number of countries that participate in meeting on capacity building and other matters hosted by the secretariat of the CBD and implement revision of their NBSAPs	―	170 (2030)
Number of developing countries supported by the COMDEKS (Community Development and Knowledge Management for the Satoyama Initiative) through the Japan Biodiversity Fund	―	10 (2028)

5-5-18 Implementation of the Cartagena Protocol on Biosafety to the CBD

The government will support activities of the Secretariat of the Cartagena Protocol on Biosafety to the CBD, whose objective is to ensure an adequate level of protection in the field of safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biodiversity, and also will actively participate in meetings related to the Protocol and actively exchange information as necessary with relevant Parties, thereby implementing the Protocol appropriately.

(MOFA, MOF, MEXT, MHLW, MAFF, METI, MOE)

Current status and target

Indicator	Current status	Target value
Development of decisions toward achieving the objectives of the Cartagena Protocol (Number of decisions adopted by the Conference of the Parties serving as the Meeting of the Parties to this Protocol)	14 decisions (FY2022)	18 decisions (2030)

5-5-19 Implementation of the Nagoya Protocol to the CBD

The government will support activities of the Secretariat of the Nagoya Protocol to the CBD, whose objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation of biodiversity and the sustainable use of its components, and will actively participate in meetings related to the Protocol, actively exchange information as necessary with the relevant Parties, and implement the Protocol appropriately.

(MOFA, MEXT, MHLW, MAFF, METI, MOE)

Current status and target

Indicator	Current status	Target value
Development of decisions toward achieving the objectives of the Nagoya Protocol (Number of decisions adopted by the Conference of the Parties serving as the Meeting of the Parties to this Protocol)	12 decisions (FY2022)	16 decisions (2030)

5-5-20 Tripartite Policy Dialogue on Biodiversity

At the Tripartite Policy Dialogue on Biodiversity, the government will promote sharing knowledge and other efforts among the three countries towards the implementation of the GBF. (MOE)

Current status and target

Indicator	Current status	Target value
Number of the Policy Dialogue organized	Once per year	Once per year

5-5-21 The Ramsar Convention, conservation and wise use of the Ramsar sites and public awareness

The government will promote the conservation and wise use of flora and fauna inhabiting the Ramsar sites and will also, in terms of further improving quality of the Ramsar sites, keep track of the current status of all the registered Ramsar sites and update the Ramsar Information Sheets (RISs). Therefore, the government will, in collaboration with relevant ministries and agencies, local governments, local communities and residents, NGOs, experts, youth and others, promote monitoring and synthesizing information on the Ramsar sites, wetland restoration, sharing of good practices, and public awareness activities including wetland education and other efforts.

Furthermore, for wetlands that are clear to meet the criteria of wetlands of international importance and by designating Ramsar sites, it would facilitate conservation and other efforts by local community, the government will promote designation of such wetlands after local communities agree with its designation and the requirements for the designation are met. In addition, especially in the Asia-Pacific region where waterfowl migrating to Japan are identified, the government will promote surveys on the current status of wetlands, support the selection of candidate Ramsar sites and enhance awareness-raising activities, in order to implement the Ramsar Convention in the Asia-Pacific region while promoting international cooperation for conserving migratory birds and wetlands. (MOE, MOFA, MAFF, MLIT)

Current status and target

Indicator	Current status	Target value
Number of updated RIS of national Ramsar sites	12 (2022)	53 (2030)

5-5-22 Implementation of the Ramsar Convention

The government will support activities by the secretariat of the Ramsar Convention, whose objectives are to promote the conservation of wetlands of international importance and diverse flora and fauna, including waterfowl inhabiting such wetlands, while implementing the Convention appropriately by actively participating in relevant meetings and exchanging information as necessary with relevant Parties. Furthermore, based on the recommendations by the Convention, the

government will, in consultation with relevant ministries and agencies, local governments, NGOs, and other organizations, prepare a national report to be submitted.

(MOFA, MAFF, MLIT, MOE)

Current status and target

Indicator	Current status	Target value (Intermediate target)
Area of the Ramsar sites designated in Japan	155,174 ha (FY2022)	200,000 ha (2030)

5-5-23 Implementing bilateral conventions and agreements for the protection of migratory birds

Regarding bilateral conventions and agreements for the protection of migratory birds concluded with the United States of America, People's Republic of China, Australia, and Russia, the government will organize meetings with each country about every two years and will exchange information based on this framework. In addition, the government will, in cooperation with those countries, strengthen measures for protecting migratory birds and promote research on the ecology of migratory birds, such as their migratory routes, and by conducting joint surveys and other actions on species in strong need of conservation as necessary. The government will also conduct cooperation for the protection of migratory birds and other species with Republic of Korea, based on the Japan-Korea Environmental Conservation Cooperation Agreement. (MOE, MOFA)

Target

Implement activities including surveys on migratory birds and organizing of expert workshops in Japan, in order to hold bilateral meetings with each country about every two years in accordance with bilateral conventions and agreements for the protection of migratory birds.

5-5-24 Promoting activities by the East Asian-Australasian Flyway Partnership (EAAFP)

The EAAFP is an international framework for the protection of migratory waterfowls and their important habitats, which facilitates coordination and cooperation among various stakeholders including relevant ministries, international organizations, and NGOs from different countries including Japan along the East Asian-Australasian Flyway. There are 34 Flyway Network Sites in Japan. The government will promote activities such as dissemination, research, training, and information exchange amongst these Sites. (MOE)

Current status and target

Indicator	Current status	Target value
Number of Flyway Network Sites in Japan	1 (FY2021)	5 (FY2030)

5-5-25 Convention on the Conservation of Migratory Species of Wild Animals (CMS)

The CMS implements activities including prohibition of hunting, and concluding agreements and memorandums of understanding for each species for the conservation of endangered migratory animals listed in the appendices of the Convention. Japan is not a party to this Convention since Japan has different views with regard to animals prohibited from being captured under the Convention. However, Japan is making efforts to conserve endangered migratory animals through concluding bilateral conventions and agreements on migratory bird species with neighboring countries, and by implementing other relevant conventions and agreements, and conducting measures. In addition to steadily implementing existing efforts, the government will continuously make efforts to collect information on the CMS and, where necessary, will give due consideration to responding to the Convention or relevant agreements and MOUs. (MOE)

5-5-26 Enforcement of regulations on trade in wild fauna and flora

Regarding the protection of wild fauna and flora, the government will actively participate in meetings related to the CITES and, where necessary, actively hold discussions and exchange information with relevant parties, in order to ensure that the measures are taken based on the concept of sustainable use that harmonizes resource use with conservation of ecosystems and the environment, while implementing the Convention in an appropriate manner. (MOFA)

Current status and target

Indicator	Current status	Target value
Promoting development of rules under the CITES by adopting resolutions and decisions in the COP of the CITES (Number of resolutions and decisions adopted by the COP)	248 (FY2018)	250 (2030)

5-5-27 Support for CITES Monitoring the Illegal Killing of Elephants (MIKE) Programme

The government will support projects for eliminating elephant poaching in Africa and improving monitoring capacity of relevant actors, including training of rangers and establishment of poaching monitoring posts, and enhance measures against illegal trade in wild fauna and flora, thereby facilitating Japan-led efforts to solve global environmental problems. (MOFA)

Current status and target

Indicator	Current status	Target value
Promotion of efforts including compliance and implementation of multilateral environment agreements in developing countries (e.g. support organizing meetings by the secretariat of the environment agreements, international organization and other entities and capacity building in developing countries, and projects aiming at	1 program (FY2022)	1 program (2030)

promoting compliance and implementation of environment agreements)		

5-5-28 Promoting sustainable fisheries and aquaculture in Southeast Asia

The government will make effort to strengthen cooperation with the ASEAN countries in the field of utilization of fisheries resources through promotion of international resource management and promotion of development of environmentally and safety-conscious aquaculture methods in the ASEAN region by funding and dispatching experts to the Southeast Asian Fisheries Development Center (SEAFDEC). (MAFF)

5-5-29 Contributing to international coral reef ecosystem conservation

In order to conserve coral reef ecosystems that have been severely degraded and lost internationally, the government will collect information and disseminate Japan's efforts by participating in international conferences such as the ICRI and through efforts by the International Coral Reef Research and Monitoring Center. Also, to contribute to coral reef conservation in the East Asia region, the government will conduct regional-scale analysis of coral reef monitoring data in East Asia region in the Global Coral Reef Monitoring Network (GCRMN), and develop an appropriate database by consolidating methods for management and use of each monitoring data collected for the regional-scale analysis for East Asia countries and regions in the GCRMN. (MOE)

5-5-30 Establishing a new international framework to address plastic pollution and promoting international cooperation towards the realization of the Osaka Blue Ocean Vision (Priority)

Towards the realization of the Osaka Blue Ocean Vision, Japan will lead the establishment of an effective and progressive framework involving many countries including major emitting countries, in developing an international legally binding instrument (treaty) on plastic pollution, including in the marine environment. Therefore, Japan will strengthen effectiveness of this framework through international cooperation such as harmonization of environmental monitoring methods for plastics and establishment of database, technical assistance for 3R and sound waste management, sharing knowledge through the Regional Knowledge Center for Marine Plastic Debris of ERIA, and capacity building. (MOE, MOFA, METI)

Current status and target

Indicator	Current status	Target value
Number of people trained for management of waste	17,000 (Aug. 2022)	10,000 (2025)

5-5-31 Active engagement in international discussions on the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004

Regarding the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004, which entered in force in September 2017, the government will actively engage in discussions at the IMO's Marine Environment Protection Committee to review the Convention. (MLIT, MOE)

5-5-32 Contributing to better implementation of the World Heritage Convention

The year 2022 marks the 50th anniversary of the official adoption of the World Heritage Convention at the 1972 UNESCO General Conference. As a World Heritage Committee member, Japan will contribute to the better implementation of the World Heritage Convention, leveraging Japan's knowledge and experience. (MOFA)

5-5-33 Cooperation in UNESCO's science field projects in the Asia-Pacific region

With respect to science field projects in the UNESCO such as Biosphere Reserves (BR) and UNESCO World Geoparks programs, the government will promote international cooperation by sharing Japan's knowledge and experience, and enhancing its function for networking through efforts including support for networking meetings, mainly in the Asia-Pacific region. (MEXT)

5-5-34 Multilateral efforts by the NITE

As a multilateral initiative of NITE, the Asian Consortium for the Conservation and Sustainable Use of Microbial Resources (ACM) was established in 2004 by 12 countries, including Japan, Korea, China, and Indonesia, with the aim of conservation and utilization of microbial resources. NITE will continue to implement human resource development, exchange of conserved microbial resources, technical information and rules for transfer of genetic resources, and other efforts by building a network with ACM member organizations and expanding and strengthening the network by increasing the number of participating countries/institutes. (METI)

5-5-35 Appropriate implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR)

The government will appropriately implement the ITPGR, to which Japan acceded on October 28, 2015. Specifically, Japan will cooperate in accordance with Article 1.1 of the Convention, which refers to sustainable use of plant genetic resources for food and agriculture in harmony with the Convention on Biological Diversity, in particular, through the Project for Restoration of Pastureland by Effective Usage of Wild Forage Plants based on Traditional Knowledge of Nomadic Mongolians and other projects. (MOFA, MAFF)

5-5-36 Implementation of the United Nations Convention to Combat Desertification (UNCCD)

The government will support the activities of the secretariat of the UNCCD, whose objective is to implement and promote measures with international cooperation in order to address ongoing

desertification of global concern, while actively participating in meetings related to the Convention and exchanging information with relevant parties as necessary, as well as implementing the Convention in an appropriate manner. (MOFA, MOE)

Current status and target

Indicator	Current status	Target value
Number of rules and other documents (including decisions) adopted by the UNCCD-COP	36 (FY2022)	40 (2030)

5-5-37 Disseminating information on national parks through the Asia Protected Areas Partnership (APAP)

The government will disseminate both nationally and internationally Japan's advanced efforts in national parks, such as protection and management systems developed jointly with various local entities and measures to attract visitors, and promote sharing and dissemination of information on protected areas such as national parks and OECMs among countries through the APAP, thereby raising level of conservation and management in each country. (MOE)

5-5-38 Promoting and deploying sewage systems in overseas

The government will synthesize and integrate all the know-how of Japan's industry, academia, and government in areas ranging from planning and construction to management and operation of sewerage systems, and will widely promote sustainable sewerage systems overseas, thereby promoting international cooperation to contribute to conservation of water quality in Areas of Public Waters. Specifically, the government will promote international development in the field of sewerage by holding intergovernmental conferences and seminars, implementing training programs for developing countries, undertaking overseas projects for validating the Japan’s sewerage technology, and conducting overseas activities on its deployment through public-private partnerships by the Japan Global Center for Urban Sanitation (GCUS). (MLIT)

Current status and target

Indicator	Current status	Target value
Number of seminars, intergovernmental dialogues and other events organized in Japan or in other countries	11 (FY2022)	11 (FY2023)

Annex: 30by30 Roadmap and Fundamental Background Information on This Strategy

This Annex includes the 30by30 Roadmap, published in April 2022, which outlines the process toward achieving the "30by30 target," one of the pillars of Basic Strategy 1 of this Strategy, as well as basic information for reference when reading this Strategy.

1 30by30 Roadmap

At the G7 Cornwall Summit in June 2021, prior to the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF) in December 2022, the G7 countries, including Japan, stressed their commitments to achieving the 30by30 target. In response to the commitments, a roadmap and specific measures to achieve the 30by30 target in Japan were synthesized and published in April 2022 by the Committee of the Ministries on the National Biodiversity Strategy of Japan. This Roadmap summarizes this Strategy from the perspective of the 30by30 target.

2 Explanatory Note on Importance of Biodiversity and Ecosystem Services

This section includes the updated section on the importance of "biodiversity" and "ecosystem services" in the National Biodiversity Strategy of Japan 2012-2020. It provides basic information for reference when reading this Strategy.

3 Grand Design for National Land for a Society in Harmony with Nature

This is an excerpt from the section on "grand design for national land in a society in harmony with nature" in the National Biodiversity Strategy of Japan 2012-2020.

It describes, from a long-term perspective of at least 100 years, the basic stance and vision for realizing a "society in harmony with nature", which has been set out as the desirable state since the Second National Biodiversity Strategy of Japan developed in 2002, taking into consideration the time required for natural ecosystems to change.

1 30by30 Roadmap

At the G7 Summit in June 2021, prior to the GBF adopted at the 15th Conference of the Parties (COP15) to the Convention on Biological Diversity (CBD) held in December 2022, the G7 countries including Japan stressed their commitments to achieving the 30by30 target. In response to the commitments, the Committee of the Ministries on the National Biodiversity Strategy of Japan made decision on the 30by30 Roadmap on March 30, 2022, describing the roadmap and detailed measures for achieving the 30by30 target in Japan, and published the roadmap on April 8, 2022. The government decided to incorporate this Roadmap into the next Biodiversity National Strategy in order to establish a clearer national policy.

The Roadmap summarizes this Strategy from the perspective of the 30by30 target.

Summary of 30by30 Roadmap

Key messages

- **By 2030, conserve at least 30% of land and 30% of sea**
- **Halt biodiversity loss, and recover connection between human and nature**
- **Supporting and integrated approach ensuring healthy ecosystems, for the NbS (Nature-based Solutions) leading to simultaneously address economic, social, and environmental issues at local level.**

The objective of this Roadmap

To present timeline, process as well as specific measures to achieve the 30by30 target.

Key measures and each specific target for achieving 30by30 target

- **Expansion of protected areas including the National Parks and other areas, and enhancement of quality of their management**
- **Areas contributing to biodiversity conservation other than protected areas (OECMs)**
- **Visualization of importance of biodiversity and effectiveness of conservation actions**

Cross-sectional efforts for supporting and promoting key measures

30by30 Alliance/ Economic methodology/ Sustainable finance/ others

Expected roles of respective entities

The national government, local governments, businesses, research institutes, researchers and academic organizations, private organizations, and citizens of the country

Implementation of interim evaluation

Clarifying and assessing effective areas through “Visualization”, specifying concrete measures for achieving the 30by30 target in terrestrial area, and other

Background and measures towards achieving the 30by30 target

Ecosystem services underpinning our society have been **degrading over the last 50 years**.

Therefore, it is **urgently required to take actions towards "Nature-Positive" to halt biodiversity loss and put it on the path to recovery.**

Amid such a situation, **the target conserving at least 30% of land and 30% of sea by 2030 (30by30)** was discussed in international communities.

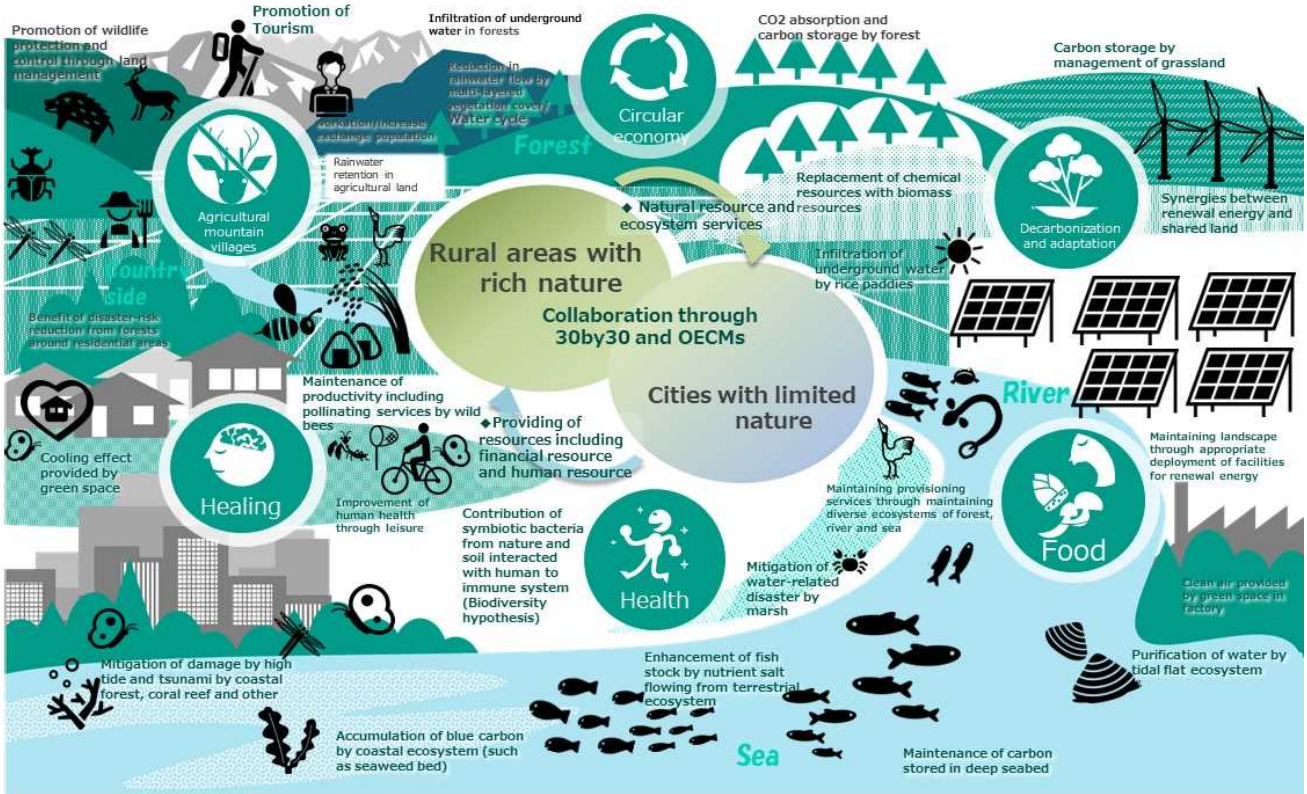
In order for our country to achieve this target, Japan will take the following measures through **unifying the power of the national government, local communities, businesses, and each individual**.

- **Expansion of protected areas such as national parks and improvement of quality of their management** ※
- **Recognition and management of OECMs**

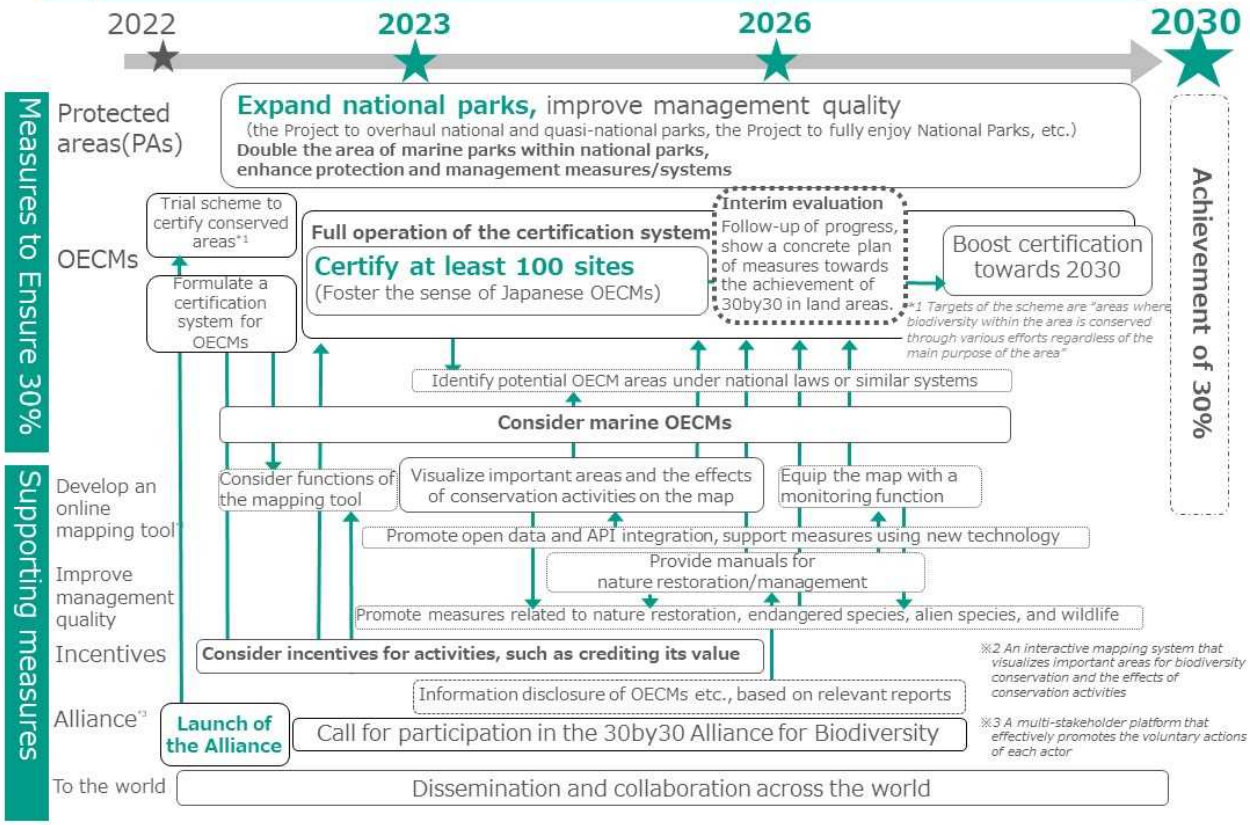
※ OECMs : Other Effective area-based Conservation Measures

Desirable state of local areas after achieving 30by30

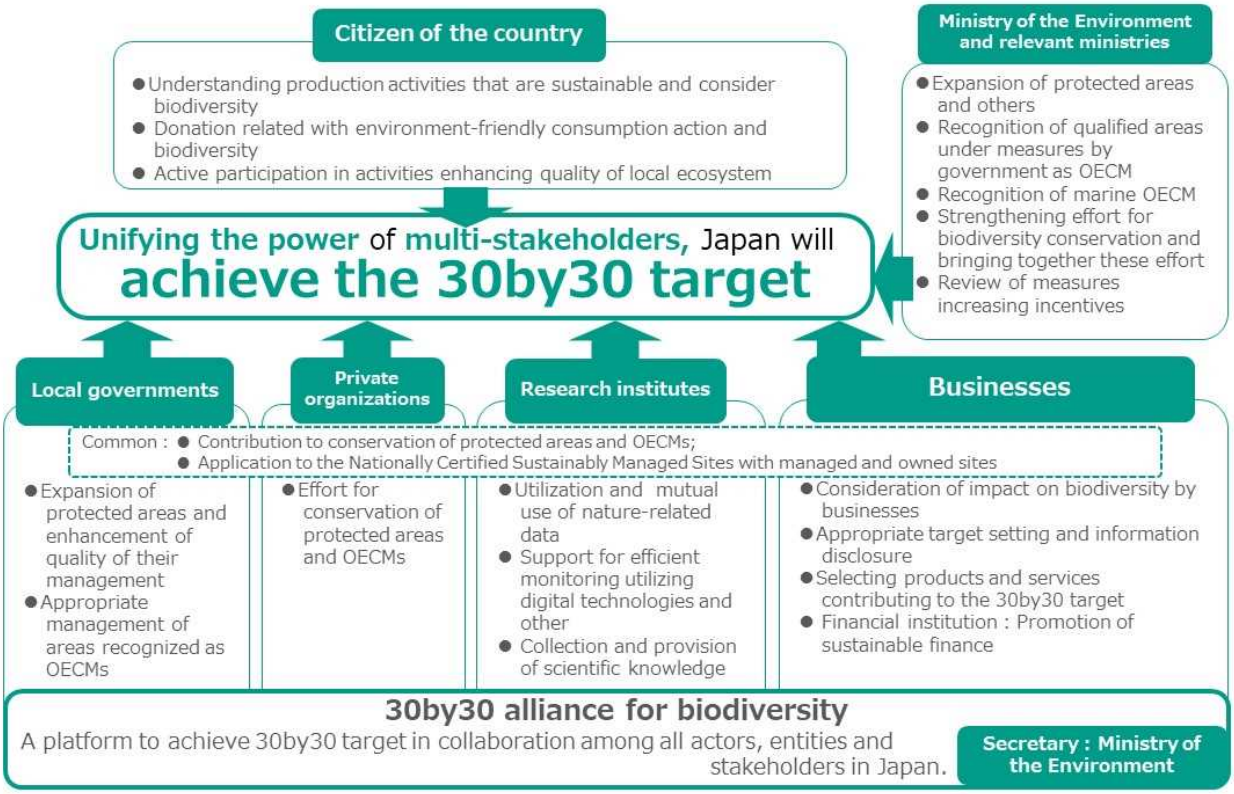
- Nature-based solutions for issues -



The connection between Key Measures and cross-sectional efforts



Multi-stakeholder engagement



Content

1. Key Messages ····· **218**

2. Objective of the Roadmap ····· **219**

3. Key Measures for Achieving 30by30 Target ····· **219**

(1) Expansion of protected areas and improvement of quality of management 219

(2) Certification and management of areas other than protected areas that contribute to biodiversity conservation (OECMs) 220

(3) Visualization of importance of biodiversity and effects of conservation activities 222

(4) Efforts for enhancing the quality of ecosystems so that ecosystems will be interconnected and function in a healthy manner 222

(5) Collaborations with efforts for decarbonization, circular economy, organic farming, open green spaces in urban areas and other efforts. 223

4. Cross-Sectional Efforts for Supporting and Promoting Key Measures ····· **223**

(1) Promoting utilization and mutual use of related data.....223

(2) Engagement by various stakeholders (promoting active efforts by businesses and other actors, behavioral change on consumption and others, incentives for local community-based efforts) 224

(3) Promotion of creation of mechanisms for incorporating 30by30 into business management, and sustainable finance and other.....224

(4) Efficiently monitoring using digital technology and other effort 225

(5) Promoting communication at international level and international cooperation 225

5. Expected Roles ····· **225**

Role of national government 225

Role of local governments.....226

Role of businesses 227

Roles of research institutes (including universities, museums), researchers, and academic organizations.....227

Role of private organizations.....228

Role of citizens of the country 228

6. Implementation of Interim Evaluation ····· **228**

7. Background of 30by30 Target ····· **228**

(1) International landscape 228

(2) Significance of conserving at least 30% in terms of biodiversity conservation 229

(3) Significance of conserving at least 30% in terms of synergy with climate actions 230

(4) Achievement of targets according to characteristics of Japan's natural environment 230

8. NbS Benefits Anticipated from Achievement of the 30by30 Target ····· **232**

(1) Decarbonization/adaptation measures: restoration of nature contributing to CO_2 absorption/sequestration, disaster risk reduction....232
(2) Circular economy: Sustainable production of biomass resources as plastic substitutes....233
(3) Agricultural mountain villages: Prevention of damage by wildlife, control of infectious diseases, and abundant benefits....233
(4) Food: Promoting environment-friendly and sustainable agriculture....234
(5) Health, tourism, healing, excitement, and local community revitalization: Interactions with nature that ease away fatigue, enhance human's immunity system, and support healthy lifestyles and vibrant communities 234
9. Timeline and process ····· 236

1. Key Messages

All individuals, businesses, communities, and society as a whole depend on **"ecosystem services", which are the benefits provided by the natural environment.** This applies not only to food, clothing, and housing, but also to our society and economy. This is why the natural environment is viewed as "**natural capital**[7]." What makes the natural environment as stable capital is the wide range of differences (i.e., "biodiversity") and connections among organisms. A "**healthy ecosystem**[8]" with the differences and the connections enhances the resilience and redundancy of natural capital.

However, it has been suggested that, while society has become richer materially due to the exploitation of natural capital in a way that exceeds nature's ability to recover, **ecosystem services have been deteriorating over the past 50 years.** For us to obtain ecosystem services sustainably, urgent actions toward **"nature-positive"** are required to halt biodiversity loss occurring on a global scale and to put the planet on a path to recovery. On the other hand, the concentration of population in cities and changes in lifestyles and structure of industry **have weakened the connections between people and nature**[9]. As a result, fewer people are now able to directly recognize the benefits of nature in their daily lives and livelihoods and thus this crisis cannot attract enough attention of the public.

Under these circumstances, the goal to effectively **conserve at least 30% of land and 30% of sea** as healthy ecosystems by 2030 was proposed to halt biodiversity loss and restore the connection between people and nature. This is the so-called **30by30 target**.

To ensure healthy ecosystems, it is imperative to not only to take conservation measures focusing on species that are easily visible to people, but also to conserve ecosystems including the inorganic environments such as water, air and light as well as invisible microorganisms, on area-based measures[10], and to effectively manage and develop connection among these ecosystems. Japan thus identifies the **expansion of protected areas such as national parks, improvement of the quality of their management**, and the **establishment and management of Other Effective area-based Conservation Measures (OECMs)** as key measures to achieve the 30by30 target. These efforts must

[7] Natural capital means the stock of renewable/non-renewable natural resources (e.g., plants, animals, air, soils, minerals) on Earth. (Source: Atkinson and Pearce 1995; Jansson et al. 1994).
[8] In this Roadmap, natural capital is positioned as an ecosystem where plants and animals that need to exist can live and grow, depending on their historical development from the past, their relationships with humans, etc.
[9] Here, spiritual connections are also included along with physical ones, found in ecosystem services.

be promoted through collective efforts by **the national government, local communities, businesses, and individual citizens.**

Recently, the concept of **Nature-based Solutions (NbS)** has been garnering international spotlight. For example, even in the context of climate change, healthy ecosystems can act as a sink for greenhouse gases (GHGs). Healthy ecosystems are crucial to apply the NbS. Aiming for achieving the 30by30 target constitutes a **foundation and integrated approach** to ensuring a healthy ecosystem for the application of **NbS that leads to simultaneous solutions to local economic, social, and environmental issues.** This also directly linked to **"Local SDGs (the Circular and Ecological Economy)",** which is the practice of the Sustainable Development Goals (SDGs) at a regional level.

The 30by30 target is a biodiversity target that is internationally recognized as a fundamental and comprehensive target with clear numerical values. While the state of nature is difficult to measure with a single indicator, the 30by30 target has a feature that **contributions by diverse actors** toward its achievement **can be visualized.**

By achieving the 30by30 target in Japan, a global goal that each and every one of us can participate in, let us pass on to future generations a society in which sustainable and prosperous lifestyles as well as physical and mental health are protected.

2. Objective of the Roadmap

This Roadmap sets out the path and concrete measures that Japan should take to achieve 30by30 target by 2030, focusing on core actions and measures.

3. Key Measures for Achieving 30by30 Target

(1) Expansion of protected areas and improvement of quality of management

Currently, 20.5% of terrestrial areas[11] and 13.3% of marine areas[12] have already been designated as protected areas.

For terrestrial areas, effort will be made with a view to increase the area of national parks and other areas from the current level through expansion and so on. In particular, based on the follow-up to the Project to Overhaul National and Quasi-National Parks (announced in 2010),

[11] In this Roadmap, this term is mainly used to mean terrestrial areas including inland waters.
[12] In this Roadmap, the term is mainly used to mean coastal and open ocean areas.

which indicated candidate sites for new designation and large-scale expansion of national and quasi-national parks, efforts will be made to continue designation and expansion with a focus on areas that have not yet been designated or expanded. In addition, those candidate sites for new designation or expansion of national and quasi-national parks will be re-evaluated based on the latest data on ecosystems and utilization. Furthermore, the upgrading of the zonal classification which aims to enhance management quality **(Initiative 1-1)**. Focusing on candidate sites selected in this project, actions will be taken to progressively proceed with efforts for designations and large-scale expansions by 2030 such as Hidaka-sanmyaku Erimo Quasi-National Park and surrounding areas, through coordination with relevant organizations. In addition, efforts will be made to reexamine national and quasi-national parks, and strength their reviews by 2030. If needed, the government will proceed to incorporate surrounding areas into national and quasi-national parks, or their zonal classification will be upgraded **(Initiative 1-2)**.

For marine areas, the government will aim at doubling the area of Marine Special Zones in national parks by 2030, particularly in coastal areas that play an important role from the perspective of landscape and utilization and that contribute to the conservation of biodiversity **(Initiative 1-3)**.

As for national parks and other areas, while working with a wide range of stakeholders, the government will make efforts to form a positive cycle of protection and use of nature through the Project to Fully Enjoy National Parks and other projects and to further develop protection and management measures and management systems such as nature restoration, conservation of endangered species, alien species control, wildlife protection and control **(Initiative 1-4)**.

(2) Certification and management of areas other than protected areas that contribute to biodiversity conservation (OECMs)

The government aims to achieve 30by30 target mainly by OECMs. To enable this, in 2022, the government will initiate pilot schemes to certify areas in which biodiversity conservation is being promoted through efforts of private sector and the like as “Nationally Certified Sustainably Managed Natural Sites” (tentative name) **(Initiative 2-1a)**, and establish the schemes **(Initiative 2-1b),** implement certification, and list them in the World Database on Other Effective area-based Conservation Measures (WD-OECM), excluding any overlap with existing protected areas **(Initiative 2-1c)**.The areas where biodiversity is being conserved

through various efforts by businesses, private organizations, individuals, and local governments, regardless of their original purpose, are subject to the certification of Nationally Certified Sustainably Managed Natural Sites. Those areas include not only the sites managed by private organizations for biodiversity conservation, such as the national trust, bird sanctuaries, and biotopes, but also the sites where biodiversity is conserved as a result of management, such as watershed protection forests managed by corporations, *satochi-satoyama* and lands for forestry operation, corporate sites and urban green spaces, forests used for research and environmental education, lands and riverbanks for disaster prevention and mitigation, grasslands for experiments and training, and other types of areas. The sites can also include coastal tidal flats. To ensure that the 30by30 target represents the diversity of ecosystems in Japan, the government will secure as many sites as possible to be certified as Nationally Certified Sustainably Managed Natural Sites, especially in terrestrial areas, to achieve the target.

In 2023, the government will aim at certifying over 100 sites in Japan as Nationally Certified Sustainably Managed Natural Sites in advance **(Initiative 2-2)**, and will continue to promote the efforts. For this purpose, in FY2022 and beyond, in conjunction with the efforts described in 3.(4), the certification of Nationally Certified Sustainably Managed Natural Sites will be accelerated through the implementation of projects to verify certification, collective certification and collaborative agreements with organizations (**Initiative 2-3**), promotion of efforts through the alliance described later in 4.(2) and other efforts.

Since forests, rivers, ports, urban green spaces and others managed in accordance with government systems are also critical for ensuring ecological networks and providing ecosystem services, the government will, in collaboration with relevant ministries and agencies, review and list areas which may be recognized as OECMs, and organize those to be categorized as OECMs (**Initiative 2-4**). Specifically, regarding what areas and to what extent the target can be achieved by listing them as OECMs, the government will organize appropriate typologies according to the characteristics of Japan's national land, while taking into account the results of the “visualization” described in 3.(3) below (**Initiative 2-5**).

While 13.3% of the marine areas have already been designated as protected areas, additional conservation is required for the remaining approximately 17%. In this regard, the relevant ministries and agencies are working together to consider the listing of marine areas that

contribute to biodiversity conservation as a result from sustainable industrial activities as OECMs, and will organize the relevant sites **(Initiative 2-6)**.

(3) Visualization of importance of biodiversity and effects of conservation activities

To realize a society that can deliver the benefits as described later in 8, it is not sufficient to simply achieve the coverage of 30% target. While wilderness areas such as mountain ranges forming the backbone of Japan continue to be protected as protected areas, it is also vital to secure biodiversity-rich areas closer to people, such as *satochi-satoyama*, and in urban areas. Japan has relatively intensive collection of information on the distribution of living organisms, and will continue to promote visualization of the importance of biodiversity and effects of conservation activities, utilizing macroecology and digital technologies. First, within the next few years (by 2024), the government will provide maps which cover the entire terrestrial areas, including distant mountainous areas, hilly and mountainous areas, and urban areas to visualize the current status of biodiversity and areas that are effective in terms of conservation (**Initiative 3-1**). In addition, Japan will develop updateable systems (**Initiative 3-2a**), and further add or integrate necessary functions by developing mechanisms to track the effectiveness of conservation activities as needed by linking monitoring functions with maps (**Initiative 3-2b**).

(4) **Efforts for enhancing the quality of ecosystems so that ecosystems will be interconnected and functioning in a healthy manner**

Areas conserved through efforts in (1) and (2) represent the backbone for ensuring healthy ecosystems. For the sound function of ecosystems, it is simultaneously imperative to enhance the quality of the natural environment in conserved areas and in surrounding areas. Particularly, in order to benefit from ecosystem services in daily life, it is important to enhance the quality of natural environments, not only in wilderness, but also in places where people live and work (e.g., *satochi-satoyama*, cities).

In this context, for the areas listed in (1) above, the government will engage with the wide range of stakeholders and make efforts to establish a virtuous cycle of protection and utilization of nature under the Project to Fully Enjoy National Parks, and will improve protection and management measures and management systems, including nature restoration, endangered species conservation, alien species control, and wildlife protection and control (**Initiative 1-4, aforementioned**), thereby further improving the quality of natural ecosystems. The government will manualize the management methods for the nationwide promotion of efforts whose

conservation effectiveness has been confirmed through the management activities of Nationally Certified Sustainably Managed Natural Sites in (2) above (**Initiative 4-1**). These manuals will be disseminated to the managers of Certified Sustainably Managed Natural Sites and those seeking certification in the future (**Initiative 4-2**). As for areas managed under government schemes and other, the government will make efforts to ensure that the functions of the areas for biodiversity conservation are sustainably demonstrated through appropriate management based on the relevant schemes, and that these functions for biodiversity conservation are improved where necessary (**Initiative 4-3**). Moreover, while proactively utilizing various public and private fund, the government will implement diverse efforts for conservation of the natural environment, such as Ecosystem-based Disaster Risk Reduction (Eco-DRR), nature restoration, conservation of endangered species, alien species control, wildlife protection and control, and *satoyama* management, in both conserved areas and their surrounding areas. At the same time, manuals and information will be provided to support these efforts (**Initiative 4-4**).

(5) Collaborations with efforts for decarbonization, circular economy, organic farming, open green spaces in urban areas and other efforts

To further promote the efforts in this Roadmap, it is required to facilitate the introduction of nature-based solutions in collaboration with various interrelated measures implemented at the regional level similar to efforts for biodiversity conservation.

For this purpose, in coordination with efforts for the Certified Sustainably Managed Natural Sites, the government will provide managers of the sites and those seeking certification with the following information: Decarbonization Leading Areas; the Circular and Ecological Economy; resource circulation of plastics; environmentally friendly agriculture such as organic farming; urban green spaces; ecological networks such as rivers, and green infrastructures. Furthermore, given that there may be a trade-off between promoting renewable energy and conserving biodiversity, information on environmental considerations will also be provided to avoid irreversible impacts on biodiversity (**Initiative 5-1**).

4. Cross-Sectional Efforts for Supporting and Promoting Key Measures

(1) Promoting utilization and mutual use of related data

To contribute to promote the utilization and mutual use of data such as visualization described in 3.(3) of the Key Measures, the government will promote data linkage and provide information through developing open data and API linkage for the various data that is owned by each actors

including relevant agencies such as the Ministry of the Environment, local governments, research institutes, and private organizations.

(2) Engagement by various stakeholders (promoting active efforts by businesses and other actors, behavioral change on consumption and others, incentives for local community-based efforts)

The government will encourage voluntary efforts made by each stakeholder through the 30by30 Alliance for Biodiversity, consisting of businesses, local governments, private organizations and other actors. The government will disseminate information on Japan's efforts to achieve the 30by30 target both nationally and internationally by establishing a platform website for the alliance, while promoting match-making between actors engaged in conservation and entities wishing to support such conservation efforts.

In addition, to promote the conservation and use of the natural environment in national parks and other areas, the government will establish a cooperation and collaboration system among a wide range of stakeholders, such as relevant national government agencies, local governments, regional organizations, park management organizations, businesses, nature conservation organizations, and researchers.

Moreover, to raise awareness on importance of ecosystem conservation and promote concrete behavioral changes, the government will review and promote actions including crowdfunding, donations, and biodiversity-friendly consumption behavior to enhance efforts to achieve the 30by30 target, utilizing knowledge of behavioral science such as nudges and digital technology.

Furthermore, the government will collaborate with the Forests, Countryside, Rivers and Sea ambassadors and supporting companies in the "Project on Connecting and Supporting Forests, Countrysides, Rivers and Seas."

(3) Promotion of creation of mechanisms for incorporating 30by30 into business management, and sustainable finance and other

To promote OECMs, the government will visualize the environmental value of the Nationally Certified Sustainably Managed Natural Sites, and discuss mechanisms to strength incentives, such as methods to financially support certification and their maintenance.

From the perspective of sustainable finance, the government will actively participate in international discussions on target setting and information disclosure, including the post-2020 global biodiversity framework, to ensure that the efforts by businesses and other entities to meet the 30by30 target are properly evaluated by financial institutions both in Japan and abroad. In addition, the government will prepare guidelines on actions towards achieving the 30by30 target for businesses and financial institutions, and implement model projects.

Moreover, the government will make efforts to build a social value in which businesses working on conservation activities are recognized and appreciated.

(4) Efficiently monitoring using digital technology and other effort

The government will reduce the cost of surveys and monitoring, and promote labor-saving measures by applying new technologies such as satellite imagery, drones, and environmental DNA analysis technology. In addition, utilizing the open data obtained in 4.(1), the government will consider providing new services such as VR that could contribute to conservation and protection.

(5) Promoting communication at international level and international cooperation

Through the Conference of the Parties to the Convention on Biological Diversity, the Satoyama Initiative, and the Asia Protected Areas Partnership (APAP), the government will communicate the efforts to achieve the 30by30 target (including the scheme for Nationally Certified Sustainably Managed Natural Sites), raise awareness on these efforts in international communities, and continue international cooperation through such measures as the Japan Biodiversity Fund (JBF).

5. Expected Roles

Role of national government

The Ministry of the Environment will expand protected areas such as national parks and improve the quality of their management, as well as urge relevant ministries, agencies, and local governments to make similar efforts **(Key Measure 3.(1))**. The Ministry will establish OECM schemes and implement pilot projects, certification, and so on for the Nationally Certified Sustainably Managed Natural Sites (**Key Measure 3.(2)**), as well as examine and implements visualization (**Key Measure 3.(3)**), data linkage and others (**Cross-Sectional Effort 4.(1)**) and

supporting measures such as economic incentives (**Cross-Sectional Effort 4.(3)**). The ministry will promote support through providing manuals and information on efforts to improve the quality of ecosystems by their interconnecting and functioning (**Key Measure 3.(4)**).

Relevant ministries and agencies will work to expand protected areas and take other actions where appropriate (**Key Measure 3.(1)**), and based on the progress of the Nationally Certified Sustainably Managed Natural Sites and progress in visualization (**Key Measure 3.(3)**), through coordinating with the Ministry of Environment and examining areas that may fall under OECMs in areas managed under their jurisdiction, organize the appropriate ones as OECMs in stages. In addition, through appropriate management and other actions based on the scheme, they will make efforts to ensure that functions for biodiversity conservation are continuously demonstrated and, where necessary, those functions will be enhanced (**Key Measure 3.(2), Key Measure 3.(4)**). Moreover, they will also make effort to organize OECMs for marine areas (**Key Measure 3.(2)).**

For efforts contributing to biodiversity conservation such as environmentally friendly agriculture including organic farming, securing green spaces in urban areas, and ecological networks including rivers, relevant ministries and agencies will enhance measures to coordinate with measures of the Ministry of the Environment. At the same time, they will promote green infrastructures that contribute to biodiversity conservation (**Key Measure 3.(5)**).

Furthermore, the Ministry of the Environment will lead cross-cutting efforts that support and promote key measures, in collaboration with related ministries and agencies as necessary ((**Cross-Sectional Efforts 4.(1) to 4.(5)**).

Role of local governments

Local governments will expand and improve the management quality of protected areas such as relevant national and quasi-national parks (including areas designated as prefectural natural parks, prefectural nature conservation areas, and other areas based on prefectural ordinances) (**Key Measure 3.(1)**). At the same time, they will promote application of areas which may be qualified as the Nationally Certified Sustainably Managed Natural Sites (**Key Measure 3.(2)**), utilizing visualization (**Key Measure 3.(3)**), and will promote appropriate management (**Key Measure 3.(2)**). In addition, when such areas are listed as OECMs based on the national scheme and other, local governments will promote the appropriate management of the areas (**Key Measure 3.(2)**).

In addition, they will also implement various efforts not only in conserved areas but also in the surrounding areas (**Key Measure 3.(4), Key Measure 3.(5)**).

Furthermore, they will contribute to the utilization and mutual use of nature-related data they possess (**Cross-Sectional Effort 4.(1)**) and encourage local stakeholders to undertake voluntary efforts to achieve the 30by30 target (**Cross-Sectional Effort 4.(2)**).

Role of businesses

Businesses contribute to the conservation of protected areas and OECMs while giving consideration to the impact of their business activities on biodiversity (**Key Measure 3.(1), Key Measure 3.(2)**). Furthermore, for lands that they manage or own, businesses will actively apply for certification of such land as the Nationally Certified Sustainably Managed Natural Sites in order to contribute to the 30by30 target, and will endeavor to set targets on and disclose information appropriately (**Key Measure 3.(2), Cross-Sectional Effort 4.(3)**).

In addition, businesses will encourage consumers to engage in environmentally-friendly consumption by offering products and services that contribute to the 30by30 target (**Cross-Sectional Effort 4.(2)**). Financial institutions will work to promote sustainable finance, taking into account such efforts by business corporations (**Cross-Sectional Effort 4.(3)**).

Furthermore, in the context of discussion on biodiversity in the international framework, businesses will actively disseminate information on their efforts on the 30by30 target and OECMs in collaboration with the government, so that their efforts on the 30by30 target and OECMs will be appropriately evaluated both nationally and internationally (**Cross-Sectional Effort 4.(5)**).

Roles of research institutes (including universities, museums), researchers, and academic organizations

Research institutes, researchers, and academic organizations will contribute to the conservation of protected areas and OECMs (**Key Measure 3.(1), Key Measure 3.(2)**), and actively apply for certification of land they own or manage as the Nationally Certified Sustainably Managed Natural Sites (**Key Measure 3.(2)**). They also contribute to the utilization and mutual use of nature-related data (**Cross-Sectional Effort 4.(1)**) and collect and provide information on efficient monitoring using digital technology (**Cross-Sectional Effort 4.(4)**), and provide a wide range of scientific knowledge on the 30by30 target.

Role of private organizations

Private organizations will contribute to conservation of protected areas and OECMs (**Key Measure 3.(1), Key Measure 3.(2)**) and actively apply for certification of land they own or manage as the Nationally Certified Sustainably Managed Natural Sites and implement appropriate management of the land (**Key Measure 3.(2)**), utilizing visualization (**Key Measure 3.(3)**).

In addition, private organizations will facilitate the sharing of information among entities through assessing the efforts of the national government, local governments, businesses, individuals, and other entities, and communicate information such as the 30by30 target to the public in a manner that can be easily understood, and will make recommendations based on their own professional abilities **(Key Measure 4.(1), Key Measure 4.(2)).**

Role of citizens of the country

Citizens of the country will contribute to achieving the 30by30 target by deepening their understanding of sustainable and biodiversity-conscious production activities, and by biodiversity-conscious consumption behavior, biodiversity-related donations, and actively participating in various local activities to improve the quality of ecosystems (**Cross-Sectional Effort 4.(2)**).

6. Implementation of Interim Evaluation

After developing this Roadmap, the government will identify and verify effective areas for biodiversity conservation by establishing a visualization mechanism and provide specific details on achievement of the 30by30 target for terrestrial areas. In addition, the government will follow up to the progress of respective measures, including quantitative assessments wherever possible, to ensure achievement of the 30by30 target.

7. Background of the 30by30 Target

(1) International landscape

The Aichi Biodiversity Targets that were adopted in 2010 called for area-based targets of conserving at least 17% of terrestrial and 10% of marine areas by 2020. Japan has achieved its

target by designating 20.5% of terrestrial and 13.3% of marine areas as protected areas in compliance with laws and regulations by 2020[13].

Currently, more ambitious targets for area-based protection and conservation are being considered to halt loss of biodiversity, as it is currently degrading at a global scale, and to put it on a path to recovery. Together with protected areas based on laws and regulations, the OECMs proposed in the Aichi Biodiversity Targets are also regarded as a critical area-based conservation approach to achieve the target.

During the G7 Summit held in Cornwall, UK in 2021, G7 countries adopted the G7 2030 Nature Compact, stressing their commitments to conserve at least 30% of their land and sea by 2030, according to national circumstances and approaches.

Similar area-based conservation targets were proposed in the draft Post-2020 Global Biodiversity Framework, which will be a new global target set to replace the Aichi Biodiversity Targets, and are likely to be adopted as the one of the main targets for 2030.

(2) Significance of conserving at least 30% in terms of biodiversity conservation

One of the examples of international scientific findings available at this time suggests that existing protected areas are required to be expanded to 33.8% of the total land area in order to protect the majority of terrestrial mammal species in the world. Some studies also report that 26 to 28% of the world's terrestrial area must be conserved to protect amphibians, birds, mammals, and other species around the world. For oceans, a review of 144 existing studies, for example, revealed that a majority of these reviewed studies concluded that over 30% of the oceans need to be protected, and that, on average, 37% of the world's oceans need to be protected.

Based on scientific findings in Japan, one of the reported studies says that if Japan's protected areas were effectively expanded from the current 20.5% to 30% of the national terrestrial area, the risk of extinction could be reduced by 30%. The same study emphasizes that conservation measures for habitats of endangered species that are distributed in *satoyama*, urban

[13] Terrestrial areas include natural parks, nature conservation areas, wildlife protection areas, protected areas such as habitats, protected forests, green corridors, etc., for which GIS data are available. Marine protected areas include natural parks, offshore seabed nature conservation areas, wild protection areas, protected water surfaces, common fishery right areas, designated marine areas, and coastal fisheries resource development areas.

areas, and other privately owned lands are important. This study also indicates that activities by farmers, forestry operators, individuals, and businesses to conserve surrounding nature will be a key for Japan to pass biodiversity on to future generations.

In this way, aiming for conserving over 30% of terrestrial and marine areas is crucial for the conservation of biodiversity.

(3) Significance of conserving at least 30% in terms of synergy with climate actions

At the 26th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26) held in Glasgow, UK in 2021, the Glasgow Climate Pact was adopted as a holistic document that provides directions and positive political messages for climate actions. The document emphasizes the importance of protecting, conserving, and restoring nature and ecosystems. Over 140 countries, including Japan, participated in the Glasgow Leaders' Declaration on Forests and Land Use, which reaffirms commitments to accelerate the conservation and restoration of forests and other terrestrial ecosystems.

Additionally, in NDCs (nationally determined contributions) based on the Paris Agreement, numerous countries addressed the absorption of CO_2 by marine ecosystems and coastal wetland ecosystems (blue carbon). Currently, although only two countries, the United States and Australia, have actually incorporated blue carbon into their national GHG inventories, it is expected that incorporating emission reductions and absorption through blue carbon will be significantly advanced. On the other hand, NbS is said to have the potential to provide about 30% of the cost-effective mitigation measures that are required by 2030 to stabilize warming below 2°C.

As such, biodiversity and ecosystem conservation are recognized broadly throughout the international community as an integral part of the climate change agenda.

(4) Achievement of targets according to characteristics of Japan's natural environment

To achieve the 30by30 target, Japan needs to make efforts and implement measures according to the unique characteristics and challenges of the natural environment in the country, as described below.

As most part of Japan is situated on the continental margin and an island arc with multiple plate boundaries, Japan hosts diverse habitats for organisms owing to the following factors: Japan stretches approximately 3,000 km from north to south in the mid-latitude region between 20°N and 45°N; there are large elevation differences from coasts to mountains and rapid rivers with steep slope; Japan comprises thousands of islands of varying sizes; and Japan has four distinct seasons due to seasonal winds.

Forests that are home to diverse wild plants and animals cover two-thirds of the country, and most of the mountain ranges forming the backbone of Japan is designated as national and quasi-national parks. These forests represent a key component in conservation of biodiversity as the cornerstone of the ecological network.

Satochi-satoyama is a mosaic of diverse ecosystems that include farmlands, pond reservoirs, woodlands, grasslands and other ecosystems. They are said to account for about 40% of the national land area[14]. This *satochi-satoyama* has a unique ecosystem that includes species adapted to environments, such as floodplains, disturbed through moderate human intervention in agriculture and forestry activities. While a large portion of *satochi-satoyama* has been used as production sites in the past, due to declining social and economic demands on its natural resources, the maintenance and management of *satochi-satoyama* has become an issue in the situation of a declining and aging population.

Water systems such as rivers, lakes, marshes, and spring ponds, which cover about 4% of the country's land area, form a backbone of Japan's ecological network. Moreover, valuable ecosystems remain in urban areas that have developed on floodplain plains.

Marine areas, from the deep sea to coastal and *satoumi* areas, host a variety of species such as marine mammals, seabirds, fish and the other taxonomic groups. Japan's marine areas have a diverse environment owing to ocean currents such as the Kuroshio, Oyashio, and Tsushima Warm Currents, as well as owing to the archipelago stretching extensively from north to south. Japan also has a long and complex coastline spanning approximately 35,000 km, and there are diverse ecosystems such as tidal flats, seaweed beds, coral reefs, sandy beaches, sand deposits,

[14] Overlap with area of forests, rivers, etc.

reefs, seagrass beds, and mangrove forests each with rich biota. All of these ecosystems need to be conserved.

8. NbS Benefits Anticipated from Achievement of the 30by30 Target

(1) Decarbonization/adaptation measures: restoration of nature contributing to CO_2 absorption/sequestration, disaster risk reduction

Understanding the role of natural ecosystems is critical to addressing climate change issues, given the significant role they play in the material cycles of the Earth.

According to the Workshop Report on Biodiversity and Climate Change jointly released by experts from Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and Intergovernmental Panel on Climate Change (IPCC), reduction in deforestation and forest degradation can contribute to reduction in anthropogenic GHGs. The amount of reduction is expected to reach 0.4 to 5.8 Gt CO_2 e/year. Ecosystems such as salt marshes and seagrass beds that have sediment bottoms in coastal areas are called as blue carbon ecosystems. As knowledge is being accumulated, recently there has been a growing interest in such ecosystems as a new CO_2 sink. The Special Report on Oceans and Cryosphere released by the IPCC in 2019 also evaluated that the climate change mitigation potential of blue carbon (on-site carbon sequestration through coastal wetland plant ecosystems) around the world would be about 0.5% of worldwide GHG emissions, and thus the assessment of the effectiveness of blue carbon is currently underway.

Other studies, for example, indicate that terrestrial ecosystems are estimated to absorb about 23% of the total annual amount of carbon dioxide emitted by human activities, and the oceans and marine ecosystems are estimated to absorb about 26%.

In this way, conservation and management of terrestrial and marine ecosystems promises to further promote the sustainability and expansion of their function as CO_2 sinks and reservoirs. Moreover, it is also expected to contribute to active use of ecosystem services, such as provision of woody biomass and recharging water as sources for power generation, as well as to prevent CO_2 emissions derived from fossil fuel through utilization of the carbon credit system.

In relation to natural disasters, it is recognized that forests have a function in preventing slope failures and retarding basins have a function in controlling floods. The achievement of

the 30by30 target is therefore expected to have a positive effect on disaster risk reduction efforts against natural disasters, including weather-related disasters, which are predicted to become more severe and frequent due to climate change.

(2) Circular economy: Sustainable production of biomass resources as plastic substitutes

Most of the fossil fuels, such as petrochemical naphtha which is raw material for plastic products, consumed in our country are imported, and we depend on these fossil resources in foreign countries in our daily lives. In the meantime, while most of *satochi-satoyama* in Japan has been maintained and conserved over years by human's intervention in nature, and has supplied natural resources such as timber, bamboo products, and charcoal. Now, most of *satochi-satoyama* areas are being abandoned and the biodiversity in these areas is being degraded. Recently, new biomass-derived materials such as cellulose nanofibers, which are lighter and more flexible than steel plates, are being developed. These new materials are expected to replace fossil resource-derived materials, such as plastics. Moreover, efforts for circular use of heat and energy generated from biomass resources also become active. Such efforts to promote sustainable use of local biomass resources promise to enhance local economic circulation and encourage management of *satochi-satoyama*.

(3) Agricultural mountain villages: Prevention of damage by wildlife, control of infectious diseases, and abundant benefits

Damage to agricultural crops, caused by excessively increased populations of wildlife such as Sika deer and wild boars, totaled approximately 16.1 billion yen in FY2020, and has reduced motivation of people to engage in farming. The increase in population and distribution of Sika deer raises concerns about the spread of tick-borne infectious diseases. It is said that there is exceptionally high risk of ticks and infectious diseases being transmitted to human habitats by raccoons, a designated invasive alien species that is expanding nationwide. Changes in the way people interact with nature, such as the reduction of firewood and charcoal forests and thatch, have led to a decrease of the places where wild vegetables and mushrooms can be collected. Especially in *satochi-satoyama* areas that serve as border areas with the backcountry, proper intervention in areas that have been devastated by succession in environment due to abandonment or lack of management is expected to prevent excessive increase in populations of certain plant and animal species, as well as to help maintain an appropriate distance between people and wildlife and the natural environment, thereby enabling people to enjoy rich products of local nature.

(4) Food: Promoting environment-friendly and sustainable agriculture

Agriculture, based on diverse natural resources, is heavily dependent on ecosystem services. As seen in the case that surrounding biota supplies natural enemies to suppress pests, it has been suggested that utilizing ecosystem functions as much as possible and promoting natural pest control actions would improve productivity by reducing damage caused by pests and ensure agricultural sustainability. Flower-visiting insects constitute an indispensable component of the production of fruit trees, fruit vegetables and other. According to some reports, Japanese agriculture benefits from the pollination services from wild bees and other insects, which are worth about 330-billion-yen in total. In addition, it is indicated that urban gardens and other areas may contribute to ensure pollinator insects in nearby agricultural lands. It is expected that environmentally friendly agriculture fosters a diversity of organisms, and that these ecosystem services will be sustained and further enhanced by improving connectivity between nature, cities, and rural areas.

(5) Health, tourism, healing, excitement, and local community revitalization: Interactions with nature that ease away fatigue, enhance human's immunity system, and support healthy lifestyles and vibrant communities

Tourism aiming to enjoy abundant nature in national parks and other areas as well as interaction with nature are attracting interest both in Japan and abroad. National parks alone are reportedly visited by over 300 million people annually, with nature contributing to the physical and mental well-being of people. Moreover, it is reported that tourism spending is estimated to exceed 1 trillion yen per year, contributing to regional revitalization. Amid increased interest in nature and health in the wake of the COVID-19 pandemic, there is also growing enthusiasm for adventure tourism and outdoor-related businesses, resulting in an increase in the market size of the industry. These require that rich nature is ensured by area-based measures.

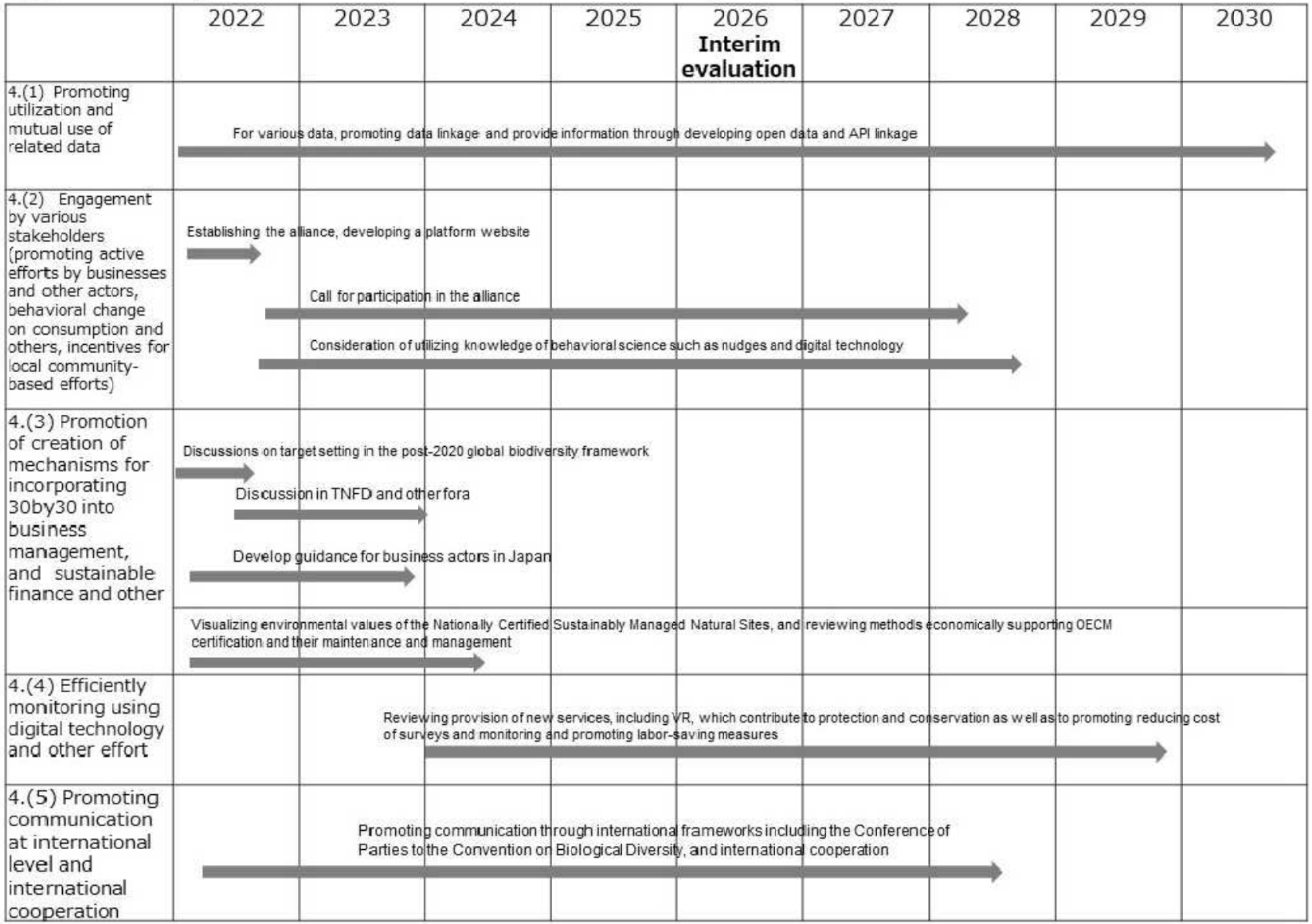
Forest bathing can be beneficial for enhancing psycho-physical well-being. Some believe that interactions with nature not only provide spiritual benefits, but also help increase diversity of human symbiotic microorganisms, maintain the equilibrium of the immune system, and prevent allergic diseases. There has been some progress in reflecting this point of view into empirical studies and policies. In Japan, *workation* (work-vacation) that utilizes the nature is attracting public interest, and is reported to be effective in increasing the population involved

and people settling down in the concerned area. In this way, it is expected to improve physical and mental health of people, well-being, as well as the revitalization of local communities.

9. Timeline and Process

(1) Timeline and process for each specific target of key measures for achieving 30by30 target

(2) Timeline and process of cross-sectional efforts towards achieving the 30by30 target



2 Explanatory Note on Importance of Biodiversity and Ecosystem Services

The following is the latest update of the descriptions in Part 1, Chapter 1, Sections 1 and 2 of the former National Biodiversity Strategy of Japan 2012-2020 (with some additions and deletions).

Chapter 1: Importance of Biodiversity

There are currently an estimated 30 million species on earth and our lives depend on the benefits provided by ecosystems made up of these diverse organisms. This chapter summarizes the importance of biodiversity through looking at the relationship between human lives and the benefits that we obtain from ecosystems where diverse organisms interact.

Section 1: What is Biodiversity

1 Origin of the earth and the birth of life

The earth was formed about 4.6 billion years ago. It is thought to be about four billion years ago that a protobiont was produced from organic matter in the primitive sea. It is believed that there was no oxygen in the atmosphere of the early earth, but with the emergence of blue green algae and other organisms that photosynthesize, the oxygen in the atmosphere began to increase, resulting in the composition of the atmosphere as it is now. An ozone layer surrounding the earth was then formed from the oxygen and it prevented harmful intense ultraviolet rays from the sun, leading to the creation of an environment that enabled life to emerge on the land. Then, plants got on shore to create ancient forests, where animals landed, resulting in the creation of terrestrial ecosystems. Thus, innumerable organisms and their interconnection formed the atmosphere and soil of the earth over a long period of time, and organisms in the next geologic age evolved in the environments created by the organisms in the preceding geologic age in sequence.

In the process, a variety of changes occurred in the environment. Species that could not adapt themselves to the changes became extinct, while many new species were developed through adaptation to new environments to create diverse species that we know of today.

2 Mass extinction and human activities

The present era is known as the age of the sixth mass extinction. Since the birth of the earliest form of life on the earth, the planet has undergone five major extinctions, during which a large number of organisms became extinct. Unlike previous extinction events, the current mass extinction is proceeding rapidly, and the main driver is thought to be the impact of human activities.

Humans have developed science and technology. However, even today, we are not able to revive species that has become extinct in the past. Nor can we recreate an identical ecosystem which has changed to an irreversible extent, exceeding its capacity to recover. For species with severely declining populations, it may be difficult to maintain naturally stable populations, even if population recovery efforts result in a steady increase. For example, the population of the red-crowned crane (*Grus japonensis*) inhabiting the eastern part of Hokkaido had once declined to a few dozen due to overexploitation and the development of wetlands. The population has then recovered to over 1,500 through feeding and habitat protection. However, it is reported that the genetic lineages remain at a very low level. The population of Anatidae such as white-fronted geese (*Anser albifrons frontalis*) also declined significantly due to hunting in the Meiji Period (1868-1912). Although the population is recovering through protection, their wintering areas are limited and they are no longer distributed over a wide area as they used to be.

As seen in the examples above, there are many things in nature that humans still do not understand and cannot control. In addition, the global population, which was four billion in the 1970s, has reached eight billion. According to the United Nations (UN) future population estimates, the population is expected to exceed 10 billion by the end of the 21st century. Therefore, there is more need than ever to share the earth's limited resources among all of us. Some ecosystems are already in irreversible condition due to development and overuse. We need to understand that we can continue obtaining benefits from ecosystems only by sustainably conserving ecosystems and utilizing ecosystems within their capacity to recover rather than pursuing short-term productivity and efficiency. Based on this understanding we need to continue thinking about ways to maintain the irreplaceable web of life which has been nurtured over time in the long history of the earth and take action accordingly.

3 What is biodiversity?

The CBD defines biodiversity as the variability among living organisms from all sources. It states that biodiversity includes diversity at three levels: within species (genes), between species and of ecosystems.

Diversity of ecosystems means the existence of various types of ecosystems in different areas including tidal flats, coral reefs, forests, wetlands and rivers. A variety of environments exist on earth ranging from tropical zones to polar zones, and from coastal/oceanic areas to mountainous areas. Ecosystems have historically developed through adaptation to the environment in each area. In general, the types of ecosystems are distinguished from each other based on natural environmental units and

differences in physical appearances. However, they do not necessarily have clear boundaries and are interrelated through the circulation of organisms and substances in many cases. There are also attempts to consider mosaic landscape as one unit, such as *satochi-satoyama* landscape which is made up of various ecosystems including secondary forests, planted forests, agricultural land, reservoirs, and grassland, in order to consider the relationships between humans and the environment in local areas from an ecological standpoint.

Diversity of species refers to the occurrence of various animals, plants, fungi, bacteria, and so on. About 1,750,000 species have been identified in the world and there are estimated 30 million species on the earth when including undiscovered species. The Japanese archipelago extends from north to south and has a complex topography. It has a humid climate, plenty of rain and four distinct seasons. These natural conditions allowed over 90,000 already identified species, or the estimated over 300,000 species when including undiscovered species. Biotas found in Japan characteristically have a large percentage of endemic species which cannot be found elsewhere. When considering the conservation of biotas in Japan, it is important to conserve species endemism rather than solely focusing on the number of species and the population size. For example, the Ogasawara Islands were inscribed as a natural World Heritage site in June 2011 in recognition of the various speciation processes, including land snails, which indicated unique evolution processes. However, even on the Ogasawara Islands which is recognized as a globally important area, alien species such as black rats (*Rattus rattus*), green anoles *(Anolis carolinensis*) and bishopwoods (*Bischofia javanica*) have been introduced and are causing problems by invading the habitats of endemic species unique to the Ogasawara Islands.

The genetic diversity refers to the gene-level differences between individuals or between populations, although they belong to the same species. For example, the patterns on Asian lady beetles (*Harmonia axyridis)* and on the shells of Japanese littleneck clams (*Ruditapes philippinarum*) vary. This is due to the genetic differences. Japanese rice fish (*Oryzias latipes*) and Japanese woodland primroses (*Primula sieboldii*) are known to have different genetic populations in different areas. Japanese rice fish can be broadly divided into northern and southern Japan populations based on the genetic differences. The population in northern Japan was described as a new species in 2011. It is also known that the population in southern Japan can be further divided into multiple local populations based on genetic differences.

The present biodiversity is the result of these differences at various levels of nature, which have been passed down through a long evolutionary history. When conserving biodiversity, it is important

to conserve differences in ecosystems and biotas that are unique to each area.

Section 2: Biodiversity that supports life and livelihoods

1 What are ecosystem services?

The environment of the earth and the biodiversity that supports it have great value in themselves, as they are irreplaceable and were created over a long history of diverse life, including humans.

Our lives are supported by benefits we obtain from ecosystems in which diverse organisms interact, such as food, water and a stable climate. These benefits are known as "ecosystem services." In the Millennium Ecosystem Assessment (2005) conducted on the initiative of the UN, ecosystem services were classified into four categories: "provisioning services," which provide food, water, timber, fiber, resources for the development of medicines; "regulating services," which include water purification, climate regulation, natural disaster prevention and damage reduction, and pest control formation of by natural enemies; "cultural services," which provide spiritual and religious values, aesthetic values such as natural landscape, recreational spaces; and "supporting services," which include nutrients cycle, soil formation, supplying oxygen through photosynthesis.

In the market economy, it is difficult to see the value of ecosystem services, except for those traded on the market. However, ecosystems, biodiversity and natural resources which provide ecosystem services need to be viewed as natural capital and conserved at an appropriate cost to ensure that they are used sustainably without degradation. Therefore, efforts are being made to evaluate and visualize the value of ecosystem services.

When looking at the relationships between biodiversity and ecosystem services, there are cases where ecosystem services do not necessarily appear to have a direct connection with biodiversity, as can be seen in the example of efficient production of food using a single species of crop. However, maintaining biodiversity enables us to obtain provisioning services for various uses such as ornamental plants and medicines. Ecosystems with high biodiversity can provide superior regulating services such as pest control. Many cultural services including the provision of recreational spaces have an important connection with biodiversity. Therefore, in order to make it possible for us and future generations to continue benefiting from various ecosystem services, it is important to maintain and restore biodiversity which is the source of the ecosystem services.

When looking at the relationships between ecosystem services, pursuing the improvement of an

ecosystem service results in the synergy and therefore the improvement of other ecosystem services in some cases. In other cases, two ecosystem services have a trade-off relationship where one ecosystem service improves while the other ecosystem service deteriorates. For example, securing green spaces in urban areas leads to the improvement of multiple ecosystem services such as absorption of carbon dioxide (CO_2) and provision of recreational spaces for urban residents. On the other hand, cutting down mangrove forests and developing shrimp farms and other purposes could result in loss of fish breeding grounds and the degradation of various ecosystem services such as the absorption of CO_2 and the conservation of the seacoast, although it produces short-term commercial profits. Therefore, when considering the conservation and sustainable use of biodiversity through ecosystem services, it is also necessary to consider the relationships between different ecosystem services. Ecosystems have various functions which are important for maintaining biodiversity including the provision of habitats for organisms and it is necessary to ensure that these functions are not lost.

The following explains the importance of promoting the conservation and sustainable use of biodiversity using specific examples of ecosystem services.

2 Biodiversity that supports life and livelihoods

(1) Atmosphere and water produced by organisms (supporting services)

Oxygen, which is essential for our survival, accounts for about 20% of the earth's atmosphere. This is not found on any other planet. Oxygen has been produced through the photosynthetic activity of blue-green algae and various plants over several billions of years.

Plants use solar energy for primary production, which supports food chains. Fertile soil is produced from the decomposition of dead animals and leaves by soil microbes such as bacteria. The water conservation function of forests and the supply of nutrients play significant roles in the circulation of water indispensable for maintaining life and nutrients such as nitrogen and phosphorus that are essential for the sea abounding in living organisms. The temperature and humidity are regulated by circulation of the atmosphere and transpiration by plants which constitute forests and other ecosystems. Thus, the environment which all life forms including humans rely on is maintained based on the above-mentioned natural material circulation.

(2) Basis for human life (provisioning services)

Resources such as food and timber

Resources such as rice, vegetables, fish and meat we eat, timber used for housing and cotton and hemp used for clothing are provided from fields, forests, and the sea through agricultural, forestry, fisheries and other activities in Japan, or through importation.

Japan is rich in fresh water and fertile soil, and a variety of agricultural products, including rice, are produced in the country. These agricultural products are grown through interaction with beneficial insects, pests and other various organisms. For example, spiders live on various insects including pests on farmland and support agricultural production. There are diverse organisms on agricultural land and we produce agricultural products in relation to these organisms.

Food gathered from the forests is also important. In the past, the Japanese used to live by utilizing abundant benefits from forests such as mushrooms, edible wild plants and nuts. Today, with changing lifestyles, the food collected from forests is not as vital for our diet as it used to be. However, forests are still a treasury of foodstuffs which characterize Japanese culture, as they are cultivated by local climates.

Since prehistoric times, seafood has been a precious foodstuff which supported the diet of Japanese people. Characterizing the food culture of Japan are the many varieties of fish, shellfish, squid, octopus, seaweed, and other natural blessings that can be harvested from the oceans, seaweed beds and tidal flats in the coastal areas, rivers and lakes.

From the Hokuriku and Tohoku regions to Hokkaido, every year, salmonids migrate to the rivers from the sea. In many rivers in various parts of Japan, *Ayu* sweetfish (*Plecoglossus altivelis*) are seen swimming up the streams in spring. Most cultured eels and tuna are artificially raised using caught glass eels and small-sized tuna rather than being raised on farms throughout the process from the ovum collection from cultured parent fish, hatching, to adult fish production. Therefore, their aquaculture also largely relies on nature. To ensure a stable supply of fishery resources from oceans, rivers, and other places, it is essential that biological diversity is rich and healthy, in addition to having fish stocks in a healthy condition. We must use biological resources in a sustainable manner, while conserving biodiversity.

Wood has long been used for a variety of purposes in Japan since ancient times. Traditional architectures including Horyuji Temple, which is listed as a cultural World Heritage site, are

built of wood. Timber has been an essential material for our housing facilities. Wood was also an indispensable material for people's lives, because various tools including farm equipment were also made of wood. Thus, in Japan, people have long been utilizing the forest-rich environment to create "wood culture," where wood is incorporated into our life in varied ways in accordance with its type and properties.

Even today, large amounts of timber are used to build housing. In recent years, technological development is progressing in addition to the streamlining of building standards, and efforts to construct high-rise buildings with wood structures are spreading. Timber is being rediscovered as an important element to create living spaces for relaxation. In some regions, its value as a source of heating fuel and renewable energy is being reassessed. In addition, a large volume of wood is used to produce paper. For our daily lives, we have always needed wood, which is one of the benefits from forests that have been an important component of biodiversity.

Animal fibers such as silk and wool and plant fibers such as cotton and hemp are used for clothing and other various purposes in accordance with their characteristics.

Japan imports about 60% of its food and wood from overseas. Therefore, we live on the benefits arising from the utilization of global biodiversity. Globally, biodiversity loss is progressing as seen in land degradation due to resource-extractive production activities including excessive cultivation and grazing; deforestation and forest degradation caused by excessive logging; illegal logging and forest fires; and decrease in marine biological resources due to overfishing. Therefore, each of us should become aware that our consumption, supported by natural resources of foreign countries, is based on the loss of biodiversity in the exporting countries and recognize that our life is supported by many lives of various organisms. It is then important for us to make conscious efforts in our daily lives to ensure the sustainable use of biodiversity along with its conservation overseas as well as in Japan. In an era where global biodiversity loss is a concern, it is necessary for us to realize that the importation of a great part of our food, wood and other resources means the importation of large quantities of substances such as nitrogen. For example, excess amounts of nitrogen cause eutrophication of inland waters and the sea. There are also cases where some plants whose growth is facilitated by the accumulation of nitrogen exterminate other plants, which causes changes in the composition of plant communities. Therefore, it is necessary for Japan to strive to achieve the sustainable use of the natural environment and resources from the international perspective, by

incorporating material balances including nitrogen cycle into the efforts.

Utilization of the functions and shapes of organisms

- **Medicines**

The functions and shapes of organisms are characteristic to individual species. These properties are inherited by the next generations. Genetic information encoded in the DNA of individual species has been created in four billion years of organic evolution. We use information on the functions and forms of a diverse range of organisms, supported by their long histories, in many ways in our daily lives.

One of the familiar examples of the use of organisms' functions by humans is in medicines. Traditionally a variety of organisms including plants have been used as medicines. For instance, aspirin was synthesized from a component of willow bark that had an analgesic and antipyretic effect. Ingredients of oseltamivir phosphate (marketed as Tamiflu) used for influenza treatment are synthesized based on shikimic acid which was extracted from star anise (seeds of *Illicium verum*) which is used as a spice for Chinese cooking. Components and enzymes in fungi and bacteria are used as ingredients for new drugs, beauty products, functional food, and others as well as playing important roles in the progress in biotechnology which contributes to the development of these products. Some of the currently unused biological resources have potential to create important value as a result of developments in science and technology in the future. The conservation of diverse organisms means that various future possibilities for their uses can be passed down to future generations.

- **Selective breeding**

The main foodstuffs which support the Japanese diet include rice, wheat, soybeans, corn, beef, pork and chicken. These are the result of historical advances in agriculture, involving the selection and hybridization of numerous wildlife species that are useful to humans. Such selective breeding has improved production efficiency and enriched people's lives. However, selective breeding has the effect of enhancing uniformization (species concentration). Although this seems to be the opposite process to conserving diversity, selective breeding requires sound maintenance of rich genetic resources of closely related wildlife species in order to broaden the choice available for selective breeding. In addition, genetic resources for further improvements have to be available for times when uniformized crops and livestock fail to adapt to changes in the environment in the future. For example, it is known that only a single variety of potato was

cultivated in Ireland in the early 19th century. Due to a lack of genetic diversity, all the potato plants failed in blight epidemics which occurred for several years starting in 1845, leading to a famine. On the other hand, the traditional practice of cultivating a mixture of multiple varieties of potatoes in the Andes where potatoes originated, and this spared the region from the total failure of potatoes through a specific blight epidemic. Biodiversity is important because it provides the foundation for efficient and effective agricultural production.

- **The utilization of shapes and functions**

Living organisms, which have evolved and adapted to various environments over an extended period of time, have many excellent functions that are far beyond the technologies available to humans. Silk spun from the cocoons of silkworms is excellent in breathability and hygroscopicity, and has a soft touch as well as being able to filter out UV rays. Worn-out silk goods naturally decompose and add no burden to the ecosystem. Any textile synthesized chemically with advanced technology cannot achieve the exact functions of silk.

There are cases where problems faced by humans can be solved or epoch-making innovations in technology can be achieved by mimicking or getting inspiration from the shapes and functions found in nature. This is called “biomimicry,” meaning mimicking organisms. Simple examples of biomimicry include: the shape of the nose cone of the Japanese high speed trains Shinkansen (bullet trains) with a low air resistance which was designed after the shape of a common kingfisher’s bill; and a stain-resistant paint finish method which was developed by mimicking the surface structure of a lotus leaf.

Therefore, rich biodiversity possesses of a lot of hidden functions and abilities of organisms and is a treasury of resources for future potential technological development.

(3) Supporting cultural diversity (cultural services)

Wisdom and tradition of Japan that has coexisted with nature

Japan is an island country and warm and cold currents flow in its neighboring seas. It has four distinct seasons and the humid climate brings about plentiful rainfall. Numerous animals live and a variety of plants grow in Japan. Since ancient times, Japan has been called “Toyoashihara-no-mizuho-no-kuni,” a country abundant in vigorous rice plants with green reeds growing on watersides. In the country where all life grows richly, Japanese people have nurtured a culture in which humans live in accordance with the changing seasons. On the other

hand, we are also forced to always live with the fear of natural disasters such as earthquakes, volcanic eruptions and landslides.

Thus, in the face of the rich but sometimes violent natural environment, Japanese people have cultivated a wide range of knowledge, techniques, characteristic arts which use the beauties of nature as motifs for example, rich sensitivity, a sense of beauty as well as diverse cultures, which adapt to nature instead of conflicting with nature. Through this process, it is thought that our traditional view of nature was formed where we value life in harmony with nature.

For example, in Japan, people have developed dry fields, paddy fields, reservoirs, grassland for agricultural production. When they did, they also built a guardian shrine dedicated to numerous gods which was placed in a grove, based on their awe for nature. This idea of leaving some nature without using up all the resources and people's devout attitude towards nature are reflections of Japanese people's attitude of living in harmony with nature. Similarly, in the utilization of *satochi-satoyama* landscapes, there are local rules and systems which prevent people from overexploiting the areas. Even today, when people pick edible wild plants, many of them set aside a portion of the edible wild plants untouched so that the plants will grow back again in the following years. In order to build a society in harmony with nature which provides us with benefits but becomes a major threat at times, we need to learn from and share the traditional wisdom and view of nature where people have awe and respect for nature and a great deal of importance is placed on finite nature and limited resources.

Local climates with rich local characteristics

There is a word "*fudo*" in Japanese which means local characteristics created through the integration of nature and culture. These local characteristics are closely related with its specific biodiversity and have nurtured diverse food cultures, crafts, performing arts and so on. For example, food culture is created by cooking vegetables, fish, mushrooms and other various ingredients produced in the local area using recipes that are suitable for the area. *Zoni*, a traditional food in Japan, also varies from region to region in terms of ingredients, cooking methods, even the shape of the *mochi* (rice cake). A variety of fermented food products have developed in Japan due to its high temperature and humid climate. Pickles, *narezushi* (fermented sushi), miso, soy sauce, and sake are all produced from complex combinations of microorganisms, climate, water and ingredients suitable for the local characteristics. Today,

mass production of food and large-scale distribution of food products are prevailing and this has led to the progressing loss of traditional techniques and knowledge as well as a decrease in the population of endemic organisms that are to be supplied as foodstuffs. This in turn results in ongoing loss of traditional food cultures representing local characteristics.

In the cities, more residents are eager to enjoy nature in the immediate environment and to participate in activities to experience nature in areas with rich biodiversity. More children grow up without opportunities to have contact with nature in their daily life and therefore do not know how to live with nature. Some also point out that growing up without any experience of playing in nature or intimately contacting with nature contributes to causing mental instability in children. Such current urban environments make it ever more important to offer children opportunities to have contact with rich nature and learn from nature, in order to help the healthy growth of children who will lead the next generation.

As seen above, we should fully understand that cultural diversity supported and nurtured by rich biodiversity is a basis for our good life which provides us with mental benefits and that it has served as an indigenous asset which deepens culture in each local area, as well as contributing to the sustainable development of local communities.

(4) Our life secured by nature (regulating services)

Our life is secured by sound ecosystems. For example, conservation of natural forests and appropriate management of planted forests including the promotion of thinning, conversion to broad-leaved forests and employing long rotation management, facilitate the management and conservation of diverse and healthy forests which provide habitats to many animals and plants. Creating rivers that are rich in living organisms and conserving riparian forests contributes to preventing mountain disasters and soil run-off and ensuring safe drinking water throughout the basin. Rich forests also mitigate damage caused by torrential rain and heavy winds, while coral reefs serve as natural breakwaters which protect land from high waves in typhoons as well as preventing coastal erosion. In the past, when large-scale civil engineering technologies were not available, people used to utilize land in accordance with the natural terrain. Developing residential environments in line with the natural landscape using the past wisdom is an important way to ensure safety more efficiently.

Absorption of greenhouse gases (GHGs) by forests and oceans also plays an important role

in regulating the climate. The forest-absorbed GHG amount is said to have peaked around 2003-2004 due to the aging of forests and other factors, and is currently on a downward trend. In order to increase carbon absorption, besides appropriate thinning, it is important to increase usage of carbon-storing timber, and to establish young forests that grow rapidly by reforestation of elite trees and other means. As for marine areas, the annual carbon absorption (not fixation) by seaweed beds is projected to be about 4.7 million ton-years equivalent of carbon dioxide.

From the standpoint that agriculture is an activity of not only producing food but also creating habitats and rearing environments for diverse organisms, promoting the environmentally appropriate use of agricultural chemicals and fertilizers as well as actively introducing environmentally friendly agriculture including organic farming will contribute to ensuring safe food products in addition to the conservation of biodiversity. The conservation of biodiversity containing soil microorganisms and endemic natural enemies in agricultural surroundings will elicit pest-control potential in agro-ecosystems. As can be seen from the examples shown above, it can be said that ensuring safety of our lives by promoting practices which value biodiversity give us the advantage of enhancing economic investment efficiency, particularly when looking at the long-term cost effectiveness over generations.

Biodiversity is an irreplaceable asset developed over a long period of time by diverse life forms including humans. We will need to strive to control the outbreaks of organisms which may cause significant changes to the original ecosystems in local areas and organisms that are hazardous or harmful to humans. It is necessary to understand that biodiversity is based on an extremely complex balance of interrelationships between diverse organisms, of which humans are yet to discover the whole picture, and that biodiversity contains currently unused species which may become useful in the future as well as species which have the potential to create important value. Above all, we must never forget the significance of any species coexisting on earth with humans after a long period of evolution , recognizing the intrinsic value of the species even if they are hazardous or harmful to humans.

3 Grand Design for National Land for a Society in Harmony with Nature

The following is an excerpt from Part 1, Chapter 3, Section 2 of the former National Biodiversity Strategy of Japan 2012-2020 (hereafter referred to as the "2012-2020 Strategy").

Section 1: Grand design for national land in a society in harmony with nature

1 Basic approaches set forth in the "Centennial Plan"

The forest of the Meiji Shrine, where a rich forest ecosystem can now be seen, used to be neglected land with no forest on it. One hundred years ago, people envisioned the creation of the forest we see today and worked towards the development of the forest so that it would grow into a rich mature forest over the next 100 years. As can be seen in this example, for the conservation and sustainable use of biodiversity, it is also important to take a long-term perspective of at least 100 years, based on the time required for natural ecosystems to undergo repeated disturbance and recovery, or to lose, degrade, adapt and recover to anthropogenic environmental change. Therefore, a grand design for national land in a society in harmony with nature is provided below as a common vision for the next 100 years to be shared by society, so that various parties engaged in the conservation and sustainable use of biodiversity can make efforts from a long-term perspective. It is also necessary to implement individual efforts by considering the fact that the time scale for recovery is different depending on the ecosystem and location.

Firstly, the basic approaches to creating a "grand design for national land in a society in harmony with nature" for 100 years into the future are explained in the "Centennial Plan" below.

Centennial Plan

(1) With the recognition of the benefits and threats derived from nature, ecosystems on national land, which have been damaged or destroyed over the past 100 years with the increasing population, shall be restored in the next 100 years when the population will decrease, by greatly changing human involvement with nature. This means not only conserving areas important for biodiversity conservation, but also a shift from the unilateral exploitation of natural resources and destruction of nature to making positive contributions to nature.

(2) In a situation where national land can be used more flexibly due to the decline in the total population, local resources shall be utilized to the upmost extent possible for the purpose of achieving autonomous development of local areas through the creation of characteristic and attractive local areas based on endemic nature and culture. The maintenance and development

of mutually beneficial relationships between local areas shall be aimed at regarding supply of and demand for ecosystem services.

(3) National land use reorganization is underway in the face of some areas being unable to maintain the current national land management level due to the decrease and aging of the working population in the primary sector, and in the face of conversion to intensive urban structures and increased investment in the maintenance/updating of social infrastructure. In implementing such national land use reorganization, ecological land management focusing on the development of safe and secure land in harmony with the nature shall be implemented, in addition to prioritizing and streamlining the investment needed for national land management.

(4) Steady improvement of the quality of nature throughout the country shall be aimed at. Since it takes a long period of time for various efforts to become effective, adaptive approaches are essential. In order to address the issues of wildlife damage to agriculture and forestry, the conservation and utilization of *satochi-satoyama* areas, the conservation of *satoumi* and the sea in general and the securing of biodiversity in urban areas, a better balance between humans and nature shall be restored step by step by obtaining a social consensus.

(5) In order to conduct adaptive conservation and management by flexibly reviewing the efforts and the methods in response to changes in the natural environment and socioeconomic circumstances over 100 years, it will be necessary to have accumulated scientific data which back up decisions. It will also be necessary to take into consideration the possibility of changes in international social circumstances, changes in people's awareness and behavior and the possibilities of new biodiversity-related socioeconomic systems and institutional frameworks being implemented.

Towards the realization of the grand design, the main direction for the national policies to be carried out by 2020, which is the target year for the short-term goal of 2012-2020 Strategy, is described in Basic Strategies in Chapter 4, Section 1 of the 2012-2020 Strategy and specific policies and measures which were set in line with the basic strategies are described in Action Plan in Part 3 of the 2012-2020 Strategy.

The grand design will not be changed significantly over the 100 years. However, when revising

the national biodiversity strategy once every five years or so, the relationship between the grand design and the direction of efforts stated in the basic strategies will be reviewed if the situation at that time requires it. In the review to be conducted in 10 years time, the need for revisions will be considered in accordance with changes in the natural environment and socioeconomic circumstances.

2 The overall picture of the grand design for national land

The overall picture of the "grand design for national land in a society in harmony with nature" includes the following five elements:

(1) The National Biodiversity Strategy and Action Plan of Japan 2023-2030 and local biodiversity strategy and action plans (LBSAPs) will be formed by focusing on interconnections and hierarchical relationships between various spatial ranges of ecosystems at the global, national, local, and watershed levels. Based on these, ecological networks that interconnect and appropriately lay out habitats around large protected areas in accordance with the ecological characteristics of each organism will be formed throughout the country. Water systems including rivers and wetlands that connect forests, agricultural land, urban areas, as well as coastal areas, especially roadside green spaces in urban areas and green spaces that have been conserved, restored or created will be positioned as key elements of ecosystem networks in the national land.

(2) Although some species living on islands and in alpine zones that are vulnerable to the effects of global warming will be at higher risk of extinction, the overall risk of species extinction nationwide will be lowered. This will be achieved by effectively protecting animals and plants with a monitoring system established nationwide, which will lead to the number of species moving to a lower rank on the Red List exceeding the number of species moving to a higher rank on the Red List. There will be no additional expansion of risk posed by alien species because of the following developments: the dependence on overseas natural resources will decrease due to population decreases and effective utilization of domestic resources; the check system for unintentional introduction of alien species at the borders will be improved; systematic efforts to control alien species based on set priorities will advance in various parts of Japan; appropriate rearing management for pets will be thoroughly practiced; and efforts for the eradication of alien species will be made in priority areas for biodiversity conservation.

(3) Agriculture, forestry and fishery activities as well as the procurement of raw materials by

business entities will be performed in a sustainable way in consideration of the impact on biodiversity. Thus, more domestic natural resources will be used effectively in a manner consistent with biodiversity conservation efforts, such as the protection of locally endemic rare species.

(4) The development of transboundary ecological networks will progress centering on the Asia-Pacific region, such as the conservation and restoration of wetlands visited by migratory birds and the networking of marine protected areas. The negative impacts on global biodiversity caused by Japan will be reduced by decreasing its dependence on overseas natural resources including the importation of pet animals and progress in the sustainable use of marine resources through international cooperation.

(5) The conservation and sustainable use of biodiversity will be incorporated in various social systems, and there will be established international cooperation for supporting resource producing countries, economic measures such as aid provided through funds, and CSR activities by business entities. Education on biology and nature will be well developed. People will enjoy the richness of biodiversity while voluntarily participating in biodiversity conservation and restoration activities, making contributions to support the activities and selectively purchasing biodiversity-friendly goods and services. Through these actions, a new lifestyle in a society in harmony with nature will be established.

3 A grand design in accordance with national land characteristics

When viewing the characteristics of the natural environment in Japan at the national land level, Japan is an island arc extending over about 3,000 km from north to south in the middle-latitude area 20 degrees north to 45 degrees north, to the east of the Eurasian Continent. The archipelago is horizontally divided into several different zones. Climate zones range from the subtropical to subarctic zones. Vegetation is mainly classified into subtropical evergreen broad-leaved forests (the Ryukyu Islands and the Ogasawara Islands), warm temperate evergreen broad-leaved forests (the central part of Honshu and southward), cool temperate deciduous broad-leaved forests (from the central part of Honshu to the southern part of Hokkaido) and subalpine evergreen coniferous forests (Hokkaido), from south to north. Alpine plants have been established in areas above the tree line. Japan is divided into several geographical zones in terms of both its flora and fauna. It is also classified by biogeographical borders such as Watase's Line and Blakiston's Line. Biodiversity in Japan has been formed by the platform of nature characterized by the above-mentioned features and many years of nature's activities

and human activities accumulated on the platform. In the grand design for national land in a society in harmony with nature, it is necessary to take into consideration the relationships between biotas and human activities while also understanding that the land is classified into several zones based on differences in topography, geology, climate, vegetation and biotas.

Japan's national land is broadly classified into terrestrial areas and marine areas. Terrestrial areas are further classified into: natural mountain areas; *satochi-satoyama*/rural areas including areas where planted forests prevail; and urban areas, based on different biotas and human activities. River/wetland areas connect these areas through water systems including river systems.

Marine areas are dominantly affected by terrestrial areas. They are divided into coastal areas where the terrestrial area and the marine area lying along the coastline should be considered as one incorporated area, and oceanic areas which extend from the offshore waters to the ocean. In island areas, it is desirable to consider the terrestrial area and the coastal area as one incorporated area, because an island provides home to various natural environments in a limited space which creates unique ecosystems existing in a delicate balance.

Therefore, in the grand design for national land in a society in harmony with nature, national land and sea areas classified into the below-listed seven categories will be considered as the basic units.

It is important to note that, even if some areas are classified in the same area category, they would have local differences in terms of climate, vegetation zones and human activities: for example, areas in the same category in Hokkaido and Okinawa would have different natural environments and different types of agriculture and fisheries. When looking at topography, urban areas situated in a valley and a floodplain have different surrounding environments. Therefore, it is necessary to keep in mind that areas classified in the same category are not the same nationwide and rather have differences derived from natural environments and human activities, when implementing efforts towards the realization of the grand design for the national land.

(1) Natural mountain areas: Areas with relatively high level of wilderness
(2) *Satochi-satoyama*/rural areas (including areas where planted forests dominate): Areas located between (1) and (3)
(3) Urban areas: Areas where human activities are concentrated
(4) River/wetland areas: Water systems which are the core connectors of different areas in

ecological networks

(5) Coastal areas: Terrestrial and sea areas lying along the coastlines

(6) Oceanic areas: Vast sea areas surrounding the coastal areas

(7) Island areas: Islands located in the coastal areas and oceanic areas

When implementing efforts towards the realization of the grand design for national land, a blueprint which shows how to connect areas of different categories will also be needed. Although land is used in mosaic patterns in Japan and how areas of different categories are located varies depending on the local area, one way to look at the connection between areas of different categories would be to consider a watershed sphere as one group of areas which includes a watershed and surrounding areas. Based on this idea, the connection between areas of different categories will be considered by aiming at ensuring the diversity of national land and its tolerance to environmental changes, through: utilizing people, goods and resources within the watershed sphere; conserving and recovering a healthy hydrologic cycle, a sound substance cycle and ecosystems; enabling the sustainable supply of water, energy and food; and establishing a society resistant to disasters, and so on.

The following explains the grand design for each of the seven categories of areas, which make up each watershed sphere.

(1) Natural mountain areas:

Current status

Natural mountain areas are areas with relatively high level of wilderness, which include mountainous backbones and receive less human intervention overall. These areas function as the foundation when considering biodiversity in Japan. They contain pristine nature, core habitats for large mammals such as bears and the Japanese serow (*Capricornis crispus*), and birds of prey with a large home range such as the golden eagle (*Aquila chrysaetos japonica*) and mountain hawk eagle (*Spizaetus nipalensi*) as well as catchment areas. Much of the natural vegetation (consisting of natural forests and natural grasslands), which currently accounts for nearly 20% of Japan's total land area, is distributed in natural mountainous areas. Natural mountain areas are distributed widely on ridges in central Honshu and Hokkaido. In regions where natural vegetation remains only in limited areas such as high mountain areas like the Chugoku Region, areas with relatively high level of wilderness such as secondary forests which are left to succession are categorized as natural mountain areas.

Large communities of natural vegetation that are representative and typical of a local area, established in accordance with the local climatic conditions, remain in natural mountain areas. Therefore, natural mountain areas constitute some of the most important core areas which are vital for the future survival of typical local animals and plants.

Once vegetation is lost through topographical alteration in steep areas, its recovery is difficult in many cases. In particular, alpine and special rocky ecosystems are vulnerable even to small-scale human activities due to the severe environmental conditions. As the habitat of the Sika deer expands and their population increases, their impacts on forest ecosystems are becoming serious, including the decline of understory vegetation and resulting bare land. The impacts of the progressing global warming on alpine plant communities are also a concern in the subalpine and alpine zones.

Direction to be pursued

- Conserve natural mountain areas covering a reasonably large land area in each region.
- Ensure that human activities such as mountain climbing will not cause irreversible changes to ecosystems by prioritizing nature in principle when managing the areas.
- Implement appropriate management of the Sika deer and control their impact on forest ecosystems.

Descriptions of the desirable future for the areas

As some of the core areas in the ecological networks on national land and important areas for the survival of typical animals and plants in each area, natural mountain areas are managed by prioritizing nature in principle.

Substantial areas of natural mountain areas are established through efforts to improve the quality of nature, for example by letting secondary forests adjacent to natural forests go through succession to a certain extent, so that the secondary forests will be converted into natural forests. The success rate for the breeding of birds of prey such as the golden eagle and the mountain hawk eagle is increased. In Western Japan, substantial areas are covered by secondary forests that have been left to succession to a certain extent. For example, Asiatic black bears (*Ursus thibetanus*), whose habitats have been fragmented in the past, are able to feed on nuts from trees in forests remote from human settlements. The population of Sika deer is maintained at a size which does not cause irreversible changes to ecosystems. Through these

efforts, substantial areas of natural mountain areas are conserved in each region, as areas which receive small effects from human activities and provide the main habitats for large mammals.

In high-mountain areas which are isolated from other remote mountain areas by surrounding lowland, the composition and distribution of endemic species and relict species change due to the effects of global warming. However, the areas continue to be conserved, for example by excluding alien species, and monitored, so that the areas do not become subject to anthropogenic effects other than global warming.

Climbers enjoying exploring mountains are given entry permission before entering a vulnerable or overused area, and they follow the rules as they enjoy mountain walking, while giving consideration to nature so as to minimize their impacts on nature in remote mountain areas.

The vegetation in mountain areas damaged by people stepping on them due to overuse in the past are restored with the cooperation of volunteers. In areas where the natural regeneration of forests is difficult due to lush bamboo grass and in artificially converted areas, auxiliary human intervention is added to enable restoration and it results in the areas having rich forests with high levels of biodiversity.

(2) *Satochi-satoyama*/rural areas (including areas where planted forests dominate):

Current status

Satochi-satoyama/rural areas (including areas where planted forests dominate) are located between natural mountain areas with relatively high level of wilderness and urban areas where human activities are concentrated. *Satochi-satoyama*/rural areas (including areas where planted forests dominate) cover a vast area of land containing areas where planted forests dominate as well as having rural areas covered with paddy fields.

Characteristic types of nature have formed through various human interventions over many generations in *satochi-satoyama*/rural areas. This category of areas contains secondary forests, planted forests, agricultural land, reservoirs and grassland, which surround human settlements.

The natural environment which contains a mixture of secondary forests, paddy fields, waterways and reservoirs provide habitats for diverse organisms including many endemic

species and threatened species. Such environments found in suburban areas are becoming more valuable as places for urban residents to enjoy nature at a handy distance from their home. At the same time, *satochi-satoyama*/rural areas are places for living and production activities for humans. Thus *satochi-satoyama*/rural areas have a lot of characteristics and they are subject to various values and rights.

In *satochi-satoyama*/rural areas, the diverse biota and rich culture based on the biota have formed as a result of organisms adapting to traditional management methods unique to each local area, including water management methods for paddy cultivation and secondary forest/grassland management methods. Along with natural mountain areas, *satochi-satoyama*/rural areas have played an important role in supporting the diverse biota in Japan.

With the changes in resource utilization caused by the energy revolution and the modernization of agriculture from 1960s, the area of unmanaged or unused secondary forests increased and the area of secondary grassland significantly decreased. The area of abandoned farmland also increased from around 1980s. With these changes, there are expanding habitat distributions and populations of medium and large mammals including bears, Sika deer, wild boars (*Sus scrofa*) and Japanese macaques (*Macaca fuscata*), and damage to living environments for humans, agriculture and forestry is also expanding. As the human population decreases and the aging of the population progresses, interaction between humans and nature in *satochi-satoyama*/rural areas in general are expected to reduce in the future.

Direction to be pursued

- Promote efficient conservation activities by assessing the future changes in the natural environment and social circumstances in different parts of *satochi-satoyama*/rural areas, such as areas closer to remote mountains and areas closer to urban areas.
- Achieve better harmony between humans and nature through the revitalization of sustainable agriculture and forestry which puts more importance on biodiversity.
- Promote the establishment of appropriate relationships between humans and wildlife, for example by developing buffer zones.
- Promote the revitalization of rural districts through vigorous and effective utilization of local natural resources and the discovery and creation of new value, including the utilization of local areas for ecotours and the utilization of biomass resources.
- Promote support for conservation activities and the creation of systems through which the

community as a whole, including urban residents and businesses, can support conservation activities.

Descriptions of the desirable future for the areas

In areas where agricultural land prevails, farming is conducted by utilizing the circulation function of nature and by employing production methods which put more importance on the conservation of biodiversity. Various organisms thrive on agricultural land including paddy fields. When maintaining infrastructure for agricultural production, the reservoirs and ridges between paddy fields are managed in a way so that rich biodiversity can be maintained and the ecological connection between paddy fields and rivers are ensured. As a result, animals and plants which have been maintained through farming since long ago live in our backyard. Around agricultural land, children enjoy catching insects and picking flowers. Students from local schools study living organisms together with farmers, by making use of ecosystems on healthy agricultural land. Through these activities, a rich connection between people within their communities are nurtured. Some parts of abandoned agricultural land are converted to wetlands and biotopes. Others are managed as agricultural land. This is enabled by the revitalization of domestic agriculture through the popularization of environmentally friendly agriculture including organic farming which nurtures diverse organisms. In areas where advanced efforts for biodiversity conservation have been made, people live surrounded by various forms of life, including red-crowned cranes, Oriental white storks (*Ciconia Boyciana*) and crested ibises (*Nipponia nippon*) feeding and flying elegantly in the sky. In areas near the urban areas, *satochi-satoyama/*rural areas are the source for various animal and plant species and form ecological networks. The areas also provide places for residents to experience nature.

Only a limited area of secondary forests is maintained in the previously employed manner. In areas which have been selected for vigorous management, secondary forests are maintained as bright and accessible forests which offer children places to explore. In the forests, native species such as great purple emperors (*Sasakia charonda*) and Japanese rhinoceros beetles (*Trypoxylus dichotomus*) are common species. The forests provide seasonal scenery including young leaves coming out in spring and colored leaves in the autumn. Parts of bamboo forests which have expanded over large areas are restored as natural forests and secondary forests. There are families digging bamboo shoots in well-managed bamboo forests. Wood harvested through the *satoyama* management process is utilized within the local area as logs for growing shiitake mushrooms and other wild delicacies and as biomass resources for producing pellets.

In planted forests, the problem of delayed thinning is solved and the biodiversity conservation function of the forests is enhanced through conversion of coniferous plantation into broad-leaved forests or the introduction of long rotation management, depending on the characteristics of the location. Various forest management and conservation activities are implemented in accordance with the local need for enhanced public benefit functions and changes in demand for wood. Wood continuously harvested from planted forests including thinned logs and wood waste is utilized effectively. In *satochi-satoyama* areas which are managed in the above-mentioned manner, secondary forests, planted forests and agricultural land are combined in an integrated manner. Here, a mixture of various types of ecosystems is restored through diverse land use and the utilization of resources as well as cooperation and collaboration between various parties including urban residents. Secondary grassland once broadly distributed is managed continuously throughout the country for the utilization of grass as biomass. Many wildflowers are blooming and butterflies are flying on the grassland where currently rare animal and plant species are commonplace. Beautiful landscapes are maintained in *satochi-satoyama*/rural areas, which attract more urban residents moving to the areas and more tourists visiting the areas from overseas. This creates vital local areas also with the contribution of popularized ecotourism. Through these developments, the value of *satochi-satoyama* areas is recognized by broad members of the society and *satochi-satoyama* areas are maintained partly by public and private funds as well as volunteers. In the relationships between people and rich biodiversity where natural resources are fully utilized, traditional knowledge and techniques for utilizing biodiversity which have been developed in each area are handed down to children, and local endemic characteristics closely connected with local culture and climates are valued.

Medium and large mammals including bears, Sika deer, wild boars and Japanese macaques are no longer come down to agricultural land and human settlements frequently, as a result of the following countermeasures: habitat improvements through the development of diverse forests including the conversion of coniferous plantation into broad-leaved forests; the establishment of open buffer zones at the borders between forests and agricultural land or human settlements; removal of farm produce, fruits, and others left around human settlements which become food for wildlife particularly in winter; control countermeasures such as chasing off wildlife by the entire community; and control on the wildlife population through appropriate hunting.

(3) Urban areas:

Current status

Human activities are concentrated in urban areas, where land use is intensive and concentrated high environmental impacts are observed. Cities rely on other areas for food and many other ecosystem services. Therefore, they have close relationships with other areas through the utilization of ecosystem services. Green spaces in cities such as forests and grassland are precious places for urban residents to experience nature, in addition to providing habitats for living organisms in cities. However, as urban districts expanded, distribution ranges of many commonly found species such as larks and fireflies retreated to suburban areas. As a result, only limited types of organisms can now be seen in urban areas, such as those that can survive in small populations in the isolated vegetated spots remaining in cities such as woodland on slopes, groves around temples, shrines and houses, as well as those that succeeded in adapting to artificial environments such as crows and starlings. Nowadays, there are only a small number of fish species living in the moats, rivers and waterways that have historically been integrated in urban environments. In some of these urban waters, pet animals such as red eared sliders have been released and also alien plants are vigorously growing. The demand for experiencing nearby nature and participating in biodiversity conservation activities is rapidly increasing in and around residential areas. However, there is an increase of numbers of children who do not know how to live with nature and adults who cannot teach children how to live with nature, because there are only small areas of green space with low biodiversity in their living environment.

Direction to be pursued

- Promote the development of urban areas that are rich in nature, water and greenery as an integrated effort with surrounding communities.
- Develop ecological networks through connecting green spaces in an effort to ensure biodiversity in cities.
- Ensure fields and opportunities for experiencing nearby nature in people's daily lives.
- Establish socioeconomic activities and consumption activities which are sustainable when looking from a global perspective.

Descriptions of the desirable future for the areas

Well-developed public transportation systems are operating along well-grown thick roadside

trees, in compact urban districts with small populations where energy efficient, long-lasting buildings are constructed. There are giant trees growing even in cities and seafront areas through the development of green spaces large enough to be called forests, such as the Meiji Shrine forest, by utilizing currently unused or underused land. Birds of prey are seen flying slowly around giant trees. Small spaces that allow urban residents including children to easily interact with living organisms are created in various parts of the city, by utilizing springs and other natural features. The roadside trees and the green spaces are contributing to mitigating global warming and the heat island phenomenon, as well as the creation of pleasant landscape in urban areas.

The following measures are taken to restore biodiversity: conserving, restoring and creating forests and waterside areas in cities, centering green spaces in hilly areas and areas along terrace cliffs, rivers, spring areas and coasts; securing wind paths and healthy hydrologic cycles; and networking healthy ecosystems. In suburban areas which have more room due to population decreases, rich ecosystems recover through the natural regeneration of forests and natural restoration of wetlands. Biodiversity is monitored mainly by citizens.

Green spaces with woodlands and forests expand over various terrains. There are biotopes filled with living organisms in schools, kindergartens, and nurseries. Children grow up playing on the soil and explore nature even in urban areas. Ties among local communities including children strengthen through vigorous cooperation between adult residents in managing the forests and other green spaces. Green spaces are also secured on land owned by private business operators such as companies, to provide hubs for ecological networks.

Conservation activities are conducted vigorously in small paddy fields in the valleys of suburban areas, where people enjoy farming on jointly managed agricultural land and children are shouting for joy as they play in the water and catch fish.

As for food and wood consumed by urban residents, more people select products produced in consideration of the conservation and sustainable use of biodiversity or products produced in the environs of their residence. It becomes the norm for such products to be sold with added value. They are extensively promoted at festivals held in large parks, connecting urban consumers and suburban farmers. Cities with rich greenery and water become vibrant as major tourist sites with their excellent landscapes.

(4) River/wetland areas:

Current status

Water is vital to numerous living organisms on the earth. Rivers and other water systems including lakes, wetlands and springs are the vital platform for biodiversity. Water systems constitute a core part of the ecological network which covers national land by connecting forests, agricultural land, cities, coastal areas, and so on. Soil and nutrients generated in watershed areas, as well as pollutants emitted through various land uses are carried downstream through the network and salmonids and eels swim upstream from the sea through the network.

Water systems are vital as habitats for aquatic life such as fish, waterbirds and many other forms of life. Wetlands, in particular, wetlands are rich in biodiversity and have the capacity to store water, purify water, regulate floods water and mitigate extreme local climatic conditions. They are also vulnerable ecosystems that are easily affected by human activities.

Wetlands in riverside floodplains and floodplain forests have been developed and used for agricultural land or building land for a long period of time. River ecosystems have been severely affected by improvements to rivers to prevent disasters such as flooding and by changes in land use in watershed areas, which resulted in a lower flow rate, modified or fragmented routes for hydrologic cycles, reduced the supply of sand and gravel, diminished natural disturbance and water contamination. Ecosystems in natural lakes have also been greatly affected by landfilling and draining for land reclamation, the modification of lakeshores, alteration of water levels, water pollution, eutrophication and the invasion by alien species. Many threatened species live in the waterside environment: for example, about one third of water plant species growing in Japan are designated as threatened species. On the other hand, there are cases where *Ayu* sweetfish are seen swimming up rivers which had once lost their populations, through the improvement of the river environment, including water quality.

Direction to be pursued

- Conserve and restore the habitats of diverse species at the watershed level, while also paying attention to the connection with the sea. This will be achieved by conserving/restoring diverse river areas that are safe, secure and in harmony with the natural environment, maintaining a large water volume, restoring the original variability of rivers and by connecting the upstream and downstream parts of rivers as well as connecting waters within each watershed area.

- Establish domestic and international ecological networks centering on river/wetland areas.
- Improve water quality so that people can have contact with a variety of aquatic life and secure healthy hydrologic cycles including groundwater and spring water.
- Restore rivers and lakes that characterize Japan where rich ecosystems and local history, culture and life are in good harmony.

Descriptions of the desirable future for the areas

With progress in the conservation of the natural river banks and floodplains around rivers including wetlands and floodplain forests, as well as other efforts to restore nature, the shapes of rivers are formed through natural disturbances, such as floods, occurring in river areas, which lead to the creation of diverse river areas. Diverse river ecosystems are found in the river areas and floodplain forests made up of willow and plants endemic to dry riverbeds such as *Aster kantoensis* grow in the river channels. Estuaries are inhabited by organisms endemic to brackish waters such as bivalve clams (*Corbicula japonica*) and damselflies (*Mortonagrion hirosei*). Rapids and pools are formed in the streams and there are also river beds suitable for organisms to find food and breed. Thus rivers provide excellent habitats for fish and other aquatic life. Various technologies are utilized to maintain the variability of the river.

In backwaters ("*wando*") in rivers and in the surrounding wetlands, floating-leaved plants such as the *Nuphar japonica* and the *Nymphoides peltata* as well as submerged plants such as pondweed (*Potamogeton crispus*) grow thickly, providing crucian carp (*Carassius auratus langsdorfii*) and other fish with places to live and lay eggs. Living organisms are able to move between rivers, surrounding wetlands and agricultural land. Many organisms which used to be common in such landscapes including catfish and crucian carp are seen moving between rivers and paddy fields. The integrated flow of water from the upstream areas of rivers through to the estuaries and coastal areas is secured, and a large water volume and good water quality are maintained through healthy hydrologic cycles within each watershed area. These result in the maintenance of rich water area ecosystems where *Ayu* sweetfish and gobies can be seen swimming up rivers.

Through the improvement in the quality of water flowing into rivers due to reduced pollutants in watershed areas, clear water is flowing all the way from the headwater point through to the estuary. With regard to lakes, there are improvements to the water quality, progress in the restoration of the water level variability and alien species control measures.

Migratory birds fly over from the Asia-Pacific region to lakes and wetlands with improved water quality, paddy fields filled with water even in winter, and tidal flats in estuaries. Thus, the network of stopovers for migratory birds is secured at home and abroad.

With the increased percolation of rainwater in urban areas and the improved water environment on agricultural land, waterways and springs which used to be a common sight are restored and sound hydrologic cycles are secured and integrated into people's lives. Beautiful watersides and rich nature in each local area create river area scenery characterizing Japan where local history, culture and life are in good harmony. Native fish nurtured by the healthy hydrologic cycles provide locally characteristic foodstuffs, which are used in the daily diet. In the summer, there are children shouting for joy as they vigorously play in rivers where the water quality has been improved.

(5) Coastal areas:

Current status

Coastal areas are the places where the terrestrial area and the sea area are in contact and interact with each other. Coastal areas contain brackish waters in estuaries where seawater mixes with fresh water, complex and varied coastlines and shallow sea areas which extend in front of the coasts, including tidal flats, saline wetlands, seagrass beds and coral reefs. They are closely related to people's lives through recreational uses and various industries including fisheries. They are also home to rich biodiversity. On the coasts, there are animals and plants unique to each type of terrain such as sandy beaches, cliffs and tidal flats. Natural environments in seaside vegetation zones and on shores play a central part in the ecological network which covers the national land.

Tidal flats, saline wetlands, seagrass beds and coral reefs are distributed in shallow sea areas. Shallow sea areas have various important functions as habitats for diverse organisms, including marine resource species, as places that improve water quality, and as places for people to experience nature. However, shallow sea areas are receiving strong impacts from activities on inland areas such as the inflow of pollutants, nutrient matter and fresh water carried from watershed areas, in addition to direct impacts from coastal area developments. The rivers' ability to transport mud and sand plays an important role in the formation of sandy beaches and tidal flats. Coastal areas are vulnerable to natural disasters such as tsunamis, high water as well as coastal erosion, as can be seen from the serious damage to the Pacific coastal areas mainly

in the Tohoku Region caused by the tsunami which occurred following the Tohoku Region Pacific Coast Earthquake.

In coastal areas, there are areas called "*satoumi*", where there have been human interventions while remaining in harmony with natural ecosystems in order to conserve biodiversity and to achieve high bioproductivity. *Satoumi* areas have historically had close relationships with our life and culture. For example, *satoumi* areas contain areas where fishermen have been conserving biodiversity through voluntary joint management and sustainably utilizing components of biodiversity to harvest marine products. They also contain areas where ecosystems have been conserved through collaboration between various parties for the restoration of seagrass beds, collection of marine litter and other activities.

Direction to be pursued

- Restore the connection between people and the sea and the rich biotas that are inherent in coastal areas where the land is in contact with the sea.
- Restore coastlines so that people can approach and enjoy them, through prioritizing the conservation of existing shallow sea areas including tidal flats, saline wetlands, seagrass beds and coral reefs and the conservation of natural coastlines, as well as through the restoration and creation of habitats for diverse organisms.
- Promote sustainable fisheries based on appropriate resource management.
- Revitalize sustainable fisheries in coastal areas through efforts for forest development in upstream areas, water quality improvement, and so on.
- Promote the conservation and restoration as well as the sustainable use of coastal areas which are safe, secure and in harmony with the natural environment, through the restoration of coastal disaster prevention forests.
- Establish marine protected areas appropriately and improve the management based on scientific knowledge to achieve above objectives.

Descriptions of the desirable future for the areas

Although remaining habitats in coastal areas such as important tidal flats, saline wetlands, seagrass beds and coral reefs are severely affected by increased sea water temperatures and sea levels caused by global warming, coastal ecosystems of tidal flats, seagrass beds and coral reefs maintain their richness while receiving natural disturbances such as typhoons. This is achieved through the improvement of habitat environments by making the following efforts:

accumulation of data; efforts to conserve healthy ecosystems; efforts to restore coastal ecosystems based on scientific knowledge by fully taking into account environmental conditions such as the depth of water, tidal currents and bottom sediments; the establishment and appropriate management of marine protected areas based on scientific knowledge. In tidal flats throughout the country, there are various kinds of marine life including shellfish such as the Japanese littleneck clams and crabs such as the fiddler crab, shore birds are eating food and many people are observing the coastal wildlife, participating in surveys about coastal wildlife and enjoying collecting clams. In closed ocean areas such as deeply indented bays, the appropriate balance of nutrients is ensured and there are improvements to problems which cause deterioration of coastal environments including accumulated sludge, the generation of oxygen-deficient water masses and marine litter. Rich fishing grounds are conserved through forests in upstream areas being maintained properly with support from fishermen and other interested people. Coastal areas which nurture rich life continuously supply plenty of diverse kinds of seafood to people. In addition, healthy ecosystems are maintained in coastal areas through humans living in harmony with nature, for example, seals are seen swimming in the northern sea and dugongs (*Dugong dugon*) in the southern sea. The inhabitation of the Japanese horseshoe crab (*Tachypleus tridentatus*) is ensured in Western Japan by securing the continuity of ecosystems starting from sandy beaches, through tidal flats and seagrass beds to the bottom of the sea. The inhabitation of amphidromous organisms such as the mitten crab is ensured by securing the continuity of rivers, coastal areas through to the sea. A vision how *satoumi* should be in each area is set and efforts are made to realize the vision through the participation and cooperation of stakeholders.

Although the coastlines are affected by rising sea levels due to global warming, the natural coastlines are conserved and sandy beaches are maintained with mud and sand carried down through rivers from the mountains with no interruption in between. Sea turtles come ashore, little terns (*Sterna albifrons sinensis*) breed and coastal plants grow well on the sandy beaches. With the cooperation of Asian and other countries, people enjoy bathing in the sea from clean beaches free of litter and waste.

(6) Oceanic areas:

Current status

Oceanic areas are a backbone structure that supports the biodiversity of Japan, since it has an EEZ (extending from offshore to the broad ocean) that is about 12 times larger than Japan's

total land area. The ocean covers for about 70% of the earth's surface. It is a huge stock of water in the hydrological cycle, and is closely linked to the formation of the global climate with its enormous heat energy. It also functions as a huge carbon sink in the carbon cycle, stabilizing the earth's atmosphere. Japan is an island nation surrounded by the sea, and therefore its terrestrial climate, the distribution of land animals and plants, as well as ecosystems are greatly influenced by the sea.

The sea near Japan has varied oceanic structures. The Oyashio current flowing in the north and the Kuroshio current flowing in the south carry cold and warm water masses along with living organisms from remote areas. The Sea of Japan which used to be isolated at one point in its geohistory and the 8,000 m deep Japan Trench are also adding to the complex oceanic structures, enriching the marine biodiversity of Japan.

Direction to be pursued

- Promote the conservation of animals that migrate over long distances in the light of the international coordination effort.
- Organize general marine data including data about fishery resources, secure genetic diversity, and promote sustainable fisheries based on the ecosystem approach and optimal resource management, through international cooperation, where necessary.
- Strengthen efforts to eliminate and prevent marine pollution through international collaboration.
- Establish marine protected areas appropriately and improve the management based on scientific knowledge to achieve above objectives.

Descriptions of the desirable future for the areas

Habitat is improved for marine mammals, seabirds, sea turtles and fishes that migrate over long distances in their life cycles through the followings: conservation activities and the sustainable use of marine animals in cooperation with the Pacific nations and other countries involved; and the establishment and appropriate management of marine protected areas based on scientific knowledge and techniques to avoid by-catch are also improved and implemented. In marine areas where the bountiful living organisms inhabit, sustainable fishing is widely practiced in conformity with scientifically established rules including catch limit and with the measures for the conservation of biodiversity, through the framework of Regional Fisheries Management Organizations in the light of international coordination where necessary.

International cooperation efforts to eliminate and prevent marine pollution such as marine litter, harmful chemical substances and spilled oil, which affect marine ecosystems, are ongoing.

(7) Island areas:

Current status

In addition to the four main islands, Hokkaido, Honshu, Shikoku and Kyushu, Japan is believed to have over 6,800 large and small islands. There are 400 islands that are inhabited by humans. Since islands are surrounded by the sea which limits the movement of organisms, there are cases where native biota which can no longer be observed in neighboring areas still remains in the limited space of an island. In addition, some of the islands, including the Ogasawara Islands and the Nansei Islands, have developed distinctive biotas over a long period of time being isolated by the sea. Unique finely balanced ecosystems have formed in small areas of these islands. Therefore, island areas are vulnerable areas that are easily affected by destruction of habitats and invasion of alien species. Since there are many endemic species with a very limited distribution range in island areas and they are vulnerable to anthropogenic effects, many of the species living in island areas are designated as threatened species.

Direction to be pursued

- Promote the conservation of distinctive ecosystems and endemic biotas through the protection and reproduction for rare species and the control of alien species.
- Promote the development of prosperous communities based on their uniqueness.

Descriptions of the desirable future for the areas

In island areas, invasive alien species are eradicated and endemic animal and plant species as well as native animal and plant species inhabit comfortably including the Tsushima leopard cat (*Prionailurus bengalensis euptilurus*) in Tsushima, the Iriomote Cat (*Prionailurus bengalensis iriomotensis*) on Iriomote Island, the Amami rabbit (*Pentalagus furnessi*) in Amami, the Okinawa rail (*Gallirallus okinawae*) in Okinawa and *Melastoma tetramerum* var. *tetramerum* in Ogasawara. Their distinctive ecosystems and endemic biotas are thoroughly studied and recognized as irreplaceable local assets. Some islands are widely recognized as global assets. The invasion of alien species from outside the islands is checked at the borders. Ecotours are conducted actively while taking every care for the environment and while utilizing the

characteristic nature and culture of the areas. For example, tourists are divided into small groups to participate in nighttime surveys of endemic species. Thus there are ongoing efforts to create well-developed communities that nurture the distinctive nature and culture of the islands.

The habitats and egg-laying/breeding grounds for sea turtles, seabirds including the short-tailed albatross (*Diomedea albatrus*) and the common murres (*Uria aalge inornate*), and marine mammals including seals are conserved without excessive interference by humans as vital areas for the conservation of biodiversity.