

# Basic Approach for Considering Biodiversity Valuation Methods



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Biodiversity Policy Division, Nature Conservation Bureau,  
Ministry of the Environment, Government of Japan

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## 1. Introduction

- The Biodiversity Policy Division, Nature Conservation Bureau, Ministry of the Environment (hereinafter referred to as the “Division”) launched the Committee on the Valuation of Biodiversity in September 2025. The Committee is currently working to deliberate approaches for the quantitative valuation of biodiversity and natural capital based on the characteristics of Japan’s natural environment, with a view toward mechanisms such as biodiversity value-related trading schemes aimed at expanding private-sector resource mobilization for biodiversity conservation.
- Valuation serves as an effective tool for visualizing the significance and contribution of various measures and initiatives toward realizing nature positive as set forth in the Kunming-Montreal Global Biodiversity Framework. On the other hand, there is also criticism that, depending on the method, measures and initiatives may not lead to nature positive, but rather result in biodiversity loss. We must recognize that such valuation itself entails risks. Building on past lessons (see 3. (4)), we aim to develop evaluation methods that avoid greenwashing and lead to substantial nature positive outcomes.
- This document “Basic Approach for Considering Biodiversity Valuation Methods” (hereinafter referred to as the “Basic Approach”) was compiled by the Division based on the discussions at the aforementioned Committee. It will serve as the basis for future considerations when conducting concrete examinations of valuation methods (metrics, foundational data, etc.) advanced by the Division, and when working on the trial of valuation methods in the Nationally Certified Sustainably Managed Natural Sites.
- Based on the characteristics of pristine nature and secondary nature unique to the Asian monsoon region, including Japan, the Basic Approach outlines the points to be emphasized and considered in each phase of (1) Requirements to be met for valuation and (2) Towards the utilization of valuation (see 4. (1) and (2)).
- It should be noted that the Basic Approach is merely the first edition compiled based on ongoing discussions. It will be further enhanced in accordance with the progress of discussions and international trends, aiming to be utilized in collaboration with a wide range of stakeholders involved in valuation and implementation (designers and operators of evaluation methods and their utilization schemes, corporations and financial institutions utilizing the schemes, on-site managers, administrative agencies, and local organizations).

## 2. Background (Domestic and international trends in biodiversity valuation)

- To achieve nature positive, conventional nature conservation alone is not enough. We must transform society and the economy as a whole to contribute to the conservation of biodiversity by coordinating with policies across various fields such as climate change countermeasures and resource circulation. Transitioning to nature positive requires additional and large-scale resource mobilization, including mobilization by the private sector. Biodiversity credits are gaining international attention as one of the means.
- Under these circumstances, the formulation of international norms—such as the High-Level Principles of the International Advisory Panel on Biodiversity Credits (IAPB) and the State of Nature (SoN) metrics by the Nature Positive Initiative (NPI)—are underway. Overseas, there have been a series of moves toward the marketization of biodiversity credits. However, standardization has not necessarily progressed, as international definitions for key concepts have not yet been established.
- Furthermore, it has been pointed out that current international evaluation methods cannot appropriately assess the value of secondary nature unique to the Asian monsoon region, including Japan's *satochi-satoyama*. This means that, depending on future international trends, there is a risk that the market for biodiversity credits will be developed without properly reflecting the ideas of how to evaluate the value of secondary nature.
- The government of Japan has been advocating the importance of secondary natural environments both domestically and internationally. Specifically, we proposed the Satoyama Initiative and secured the adoption of the Resolution X.31 “Enhancing biodiversity in rice paddies as wetland systems (the ‘Rice Paddy Resolution’)” at the Ramsar Convention. Building on this, it is also necessary to present valuation methods for these secondary natural environments.
- Within the private sector in Japan, there is an accelerating move to evaluate and manage the nature-related risks and opportunities in their business activities, such as through the framework of the Taskforce on Nature-related Financial Disclosures (TNFD). Amid this trend, there is a growing interest in nature positive, primarily driven by the private sector, as evidenced by the certification of 569 Nationally Certified Sustainably Managed Natural Sites (as of the end of March 2026).
- To have the private sector maintain and continue these activities even after the Nationally Certified Sustainably Managed Natural Sites certification is obtained, it is crucial for national and local governments to set quantitative targets regarding the value of biodiversity maintained

and uplifted by these initiatives. It is important to visualize the contribution level of the activity of each stakeholder toward the targets. However, there are not sufficient evaluation methods and necessary data for target setting in Local Biodiversity Strategies and Action Plans (LBSAPs) or for visualizing the level of contribution to the targets.

- Meanwhile, the Methodological Assessment of the Impact and Dependence of Business on Biodiversity and Nature's Contributions to People (Business and Biodiversity Assessment), a report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), was approved in February 2026. The report requires the businesses to take various actions to address their impacts and dependencies on biodiversity. One such action is the measurement and monitoring of the impacts and effects of business operations on biodiversity.
- Given this backdrop, it is necessary for the national government to present basic approach and technical foundations regarding biodiversity valuation methods while public interest remains high.

### **3. Subjects of valuation and points to consider**

#### **(1) What we aim for**

- Properly evaluating the value of pristine nature and secondary nature unique to the Asian monsoon region, such as *satochi-satoyama*
- Developing methods that are internationally applicable, based on international discussions such as the High-Level Principles by the IAPB and the SoN metrics by the NPI
- Advancing private sector initiatives based on the above two points. This will facilitate appropriate evaluation of biodiversity and its utilization, as well as integration of such practices into the social economy, which should secure and advance the conservation of biodiversity over the long term.
- Particularly, in anticipation that the outcomes of biodiversity conservation activities, such as activities at Nationally Certified Sustainably Managed Natural Sites, may lead to biodiversity value-related trading schemes, conservation activities should be conducted with a long-term perspective and based on target settings that reflect ideas described in the Basic Approach. Ultimately, they should lead to the conservation and restoration of Japan's nature, which is rich in biodiversity.

#### **(2) Subjects of valuation**

- The primal subject of valuation should be the state of biodiversity. The value of biodiversity is

quantified and scored from both qualitative and quantitative aspects. The state that changes depending on the outcomes of the activities should be included. It should be noted that the term “valuation” here does not refer to the economic valuation of ecosystem services in the Economics of Ecosystems and Biodiversity (TEEB), where ecosystem services are converted into monetary values. Although the values of biodiversity cannot be comprehensively quantified, in this context, the quality and quantity of biodiversity are quantified using certain evaluation methods according to their uses and purposes, and the resulting figures are positioned as the values.

- Ecosystem services may be included in future valuation, but initially, biodiversity will be the subjects as stated above.
- Although the utilization for the Nationally Certified Sustainably Managed Natural Sites is intended as the starting point of utilization scheme based on the valuation, we envision a wide range of future applications in areas such as contribution, compensation (offsetting), and insetting. These applications could range from voluntary to mandatory and encompass regional target setting, biodiversity value-related trading schemes, business evaluation, and project requirements.
- In future discussions, we will also clarify the uses and purposes of valuation, ecosystem services, and management costs.

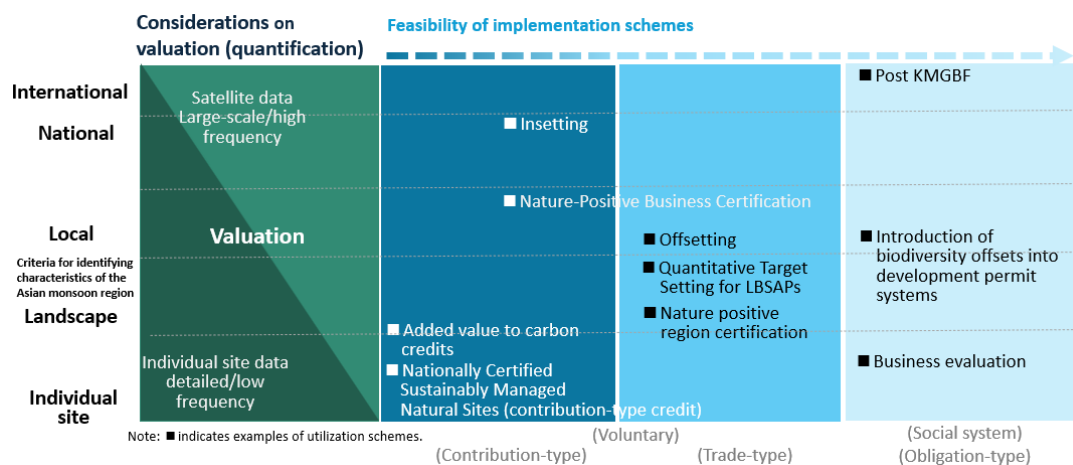


Figure 1. Overall picture of considerations on valuation

### (3) Important points for valuation of the natural environment in Japan

- Located to the east of the Eurasian Continent, Japan has an elongated national land stretching from north to south with complex terrain, a long coastline, many islands, and numerous river systems. Additionally, influenced by seasonal winds, the country has distinct four seasons. The nation also experiences many natural disturbances such as volcanic activity, earthquakes, and

typhoons, which cause immense damage to people. At the same time, from a long-term perspective, these phenomena have played a crucial role in shaping Japan's natural environment. Possessing these characteristics, the land and surrounding marine areas of Japan are home to a variety of ecosystems. Natural forests and natural grasslands are mainly distributed in areas difficult for human intervention, such as mountainous regions, while secondary forests, secondary grasslands, artificial forests, and agricultural lands account for the majority in plains, hills, and low-relief mountainous areas. Various aquatic ecosystems are also found, including rivers, lakes, and marshes in inland waters, as well as tidal flats, seagrass beds, and coral reefs in marine areas. Thus, valuation methods must take these diverse ecosystems into account.

- A characteristic of the Asian monsoon region, including Japan, is that it possesses extensive secondary natural environments formed and maintained by ongoing and periodic human intervention (e.g., plowing, weeding, pond draining, and thinning, which are carried out in agriculture and forestry). It is thus particularly important to appropriately evaluate the values of these secondary natural environments.
- The secondary natural environments of the Asian monsoon region have the following characteristics.
  - Secondary natural environments are cultural landscapes formed and maintained through human activities and interventions such as agriculture and forestry. Consisting of environmental elements such as paddy fields, ponds, waterways, secondary forests, artificial forests, farmlands, and grasslands, they serve as areas to obtain food, timber, and other resources.
  - Highly mosaic landscapes have been formed and maintained, driven by detailed land use according to topographical and hydrological conditions, as well as the coexistence of vegetation at various successional stages resulting from forestry practices.
  - As many animal and plant species depend on grasslands, bright forest floors, and open, shallow water bodies, moderate levels of human intervention maintain a wide variety of species. Many species that require multiple types of environments (e.g., dragonflies and damselflies, which spend their larval stage in water) inhabit or grow in secondary natural environments. The animals and plants inhabiting or growing in these environments in Japan include many endemic species and threatened species.
  - However, in these natural environments, the hot and humid climate of the Asian monsoon region causes vegetation to recover and regenerate rapidly. Therefore, if human intervention stops, as seen in abandoned farmlands, the mosaic landscape is lost, making it impossible to maintain high biodiversity. This indicates that ongoing human intervention is essential.

- Given the above, the following can be listed as key points of valuation methods of the secondary natural environments.
  - i. Setting spatial scales capable of capturing the characteristics of mosaic environments
  - ii. Setting evaluations and time scales that appropriately consider the management costs for forming and maintaining successional stages and intervened environments
  - iii. Setting targets that incorporate local livelihoods, lifestyles, and traditional cultures directly connected to human intervention into nature.

#### **(4) Lessons learned from existing biodiversity offsets and carbon markets**

- Lessons learned from the existing biodiversity offsets and carbon markets point out that inappropriate offsets and credits may pose risks to the environment and society. Unlike carbon, values of biodiversity are localized, and therefore, it has been noted that the cross-regional biodiversity offsets should not be easily accepted. It is essential to develop evaluation methods that prevent greenwashing and contribute to substantial nature positive. Furthermore, it is important to take measures in line with the mitigation hierarchy, such as avoiding and minimizing impacts, as well as restoring and recovering functions on-site.
- Also, unlike in the case of carbon, the values of biodiversity are difficult to evaluate using a single indicator, and thus comprehensive assessments are necessary. However, for market trading, valuations using simple and manageable indicators are required. Therefore, consideration of evaluation methods must take their specific purposes into account, while keeping in mind the trade-off relationship between the appropriate biodiversity valuation and its market applicability.

## **4. Basic perspectives of valuations**

### **(1) Requirements to be met for valuations**

The following are the requirements that must be met when conducting a valuation from two perspectives: effective and robust valuations and data handling. Although it may be difficult to satisfy all of the items with certain valuation methods, we will proceed with the consideration of valuations while accommodating these as much as possible.

#### **i. Perspective of effective and robust valuations**

##### **1) Appropriate evaluations of the state of biodiversity**

- In principle, evaluations must be based on quantitative and verifiable methods.

- Evaluation methods should be continuously updated in response to new findings and technological advancements. Individual evaluation results should be comparable before and after the method update.
- Consideration must be given to metrics and indicators constituting the evaluation method in order to avoid excessive evaluation costs. Specifically, they should be structured hierarchically so that evaluation items can be selected according to the intended use and purpose.

## **2) Setting targets and presenting the framework for target setting**

- Setting clear targets makes it easier to share a vision of the desired direction for the natural environment. It also helps grasp the progress of the initiatives and the amount of effort required to achieve the targets. Therefore, when setting targets, it is necessary to specifically consider a state of biodiversity that should be aimed for and how to achieve it. Particularly, appropriate reference sites should be selected. Furthermore, it should be noted that target setting may vary depending on the scope of the targets (from individual sites to municipal and national levels).
- Within the same target, it is necessary to use methods that enable comparison of evaluation results as much as possible. Careful consideration should be given to the replaceability between ecosystem types and regions, especially when use for compensation (offsetting) is assumed. While ecosystems of low distinctiveness can be replaceable, changes to ecosystems that deviate from the original local ecosystems or to extreme vegetation should be avoided.
- Targets must be set based on the characteristics of the entire national land and regions. Careful consideration should be given especially to ecosystem types in successional stages, such as *satochi-satoyama*, a characteristic environment of Japan, as well as the status of threatened species. Also, targets should be set with consideration for local livelihoods, lifestyles, and traditional cultures. When setting targets intended for restoration and recovery, care must be taken not to create situations that deviate from the region's original natural environment. (See 4) below)
- Attention should also be paid to ensure that the targets contribute to better community development from the perspectives of Nature-based Solutions (NbS) and green infrastructure, by leveraging the region's natural characteristics, while also contributing to disaster risk reduction (See 4) below).
- It should be noted that the effort required to maintain, restore, or create the value of biodiversity varies depending on the ecosystem type and target settings. The evaluation should take this fact into consideration. (See 5) below)

## **3) Addressing uncertainty (Safety factors and buffers)**

- Predicting future changes in ecosystems involves uncertainty. Thus, appropriate and justifiable

safety factors and buffers should be set where necessary.

- Measurements inherently involve uncertainty. Attention must be paid to the treatment of measurement errors, ensuring they are properly disclosed.
- In the evaluation method, it is necessary to appropriately treat the impacts on the value of biodiversity caused by external factors that are not directly related to the activities, as well as the degradation of value due to climate change.
- If there is a risk of leakage (an unintended increase in negative impacts on biodiversity outside the scope of activities), such impacts must be taken into consideration.

#### **4) Emphasis on a long-term perspective (Maintaining the values across generations)**

- To maintain the value of biodiversity over the long term, activities must be selected with an appropriate time scale based on the characteristics of the ecosystem.
- Targets must be set based on the characteristics of the entire national land and regions. Careful consideration should be given especially to ecosystem types in successional stages, such as *satochi-satoyama*, a characteristic environment of Japan, as well as the status of threatened species. Also, targets should be set with consideration for local livelihoods, lifestyles, and traditional cultures. When setting targets intended for restoration and recovery, care must be taken not to create situations that deviate from the region's original natural environment. (Restated)
- There may be a time lag in the response of biological species to environmental changes (also referred to as "extinction debt"). Special consideration must be given to these phenomena, by, for example, continuously monitoring changes in the status of threatened species.

#### **5) Additionality and setting appropriate baselines**

- To ensure that additionality can be reliably verified, it is essential to set baselines that allow comparison against targets or outcomes. The baselines must be robust and highly reliable.
- When evaluating types of activities that are categorized into maintenance, restoration, and creation of biodiversity values, designing must allow setting of appropriate baselines that would not lead to overestimation or underestimation.
- It should be noted that the effort required to maintain, restore, or create the value of biodiversity varies depending on the ecosystem type and target settings. The evaluation should take this fact into consideration. (Restated)

#### **6) Spatial perspective: Setting the scale and size**

- Scale and size must be taken into consideration so as to maintain biodiversity values according

to ecosystem types. Proper care should be taken in designing, such as the clarification of scale-dependent evaluation methods.

- When evaluating the biodiversity of a site, attention must be paid to the surrounding environment. This is because development pressures around the site may threaten the maintenance of a sound environment in the future. Also, small sites are susceptible to the influence of their surroundings, and if the area around a small site has a favorable environment, the site's value could be overestimated.

## **7) Spatial perspective: Ecological networks, watershed unit, mosaic structures, etc.**

- It is essential to build evaluation methods that take into account positive impacts on connectivity and continuity with external ecosystems, such as ecological networks and watersheds, so that the role (significance and importance) of individual sites can be shown more explicitly.
- Furthermore, the evaluation method must appropriately consider the mosaic structure of ecosystems that make up secondary nature, such as *satochi-satoyama*.

## **ii. Perspective of data treatment**

### **1) Principles**

- Data must be verifiable.
- Continuous data acquisition must be emphasized.
- The update frequency and accuracy of the data must be corresponding to the evaluation methods.
- The mechanism must improve evaluation results in accordance with the improvement of frequency and accuracy of the data.
- However, it should be noted that in situations where on-site observation cannot be easily done, such as on the seabed in offshore areas, the absence of on-site data does not necessarily imply the absence of biodiversity value.

### **2) Emphasize on on-site data**

- At the scale of individual site, it is important to recognize that estimated data (such as remote sensing data) may deviate from actual natural conditions. Thus, acquisition of measured data must be emphasized.
- The data on number of species, forest structure, and the presence of alien species indicate the condition of ecosystems and habitats. It should be noted that there are currently limitations in assessing these data based solely on remote sensing or remote data.

### **3) Data treatment**

- The spatial scales and data providers of data used for valuation vary in a wide range—from measured data, which are principally based on on-site observation, to estimated data, which can be obtained remotely. Thus, the characteristics including accuracy and reliability also vary. For example, estimated data using satellites have an advantage in terms of the cost needed for evaluation and can be applied to wide spatial scales. However, data such as the number of species, which indicates the condition of ecosystems and habitats, cannot be easily obtained with satellite observation. While measured data are important for capturing the characteristics of individual sites and enhancing evaluations, they present cost issues. Also, depending on the collection method, the accuracy and reliability of the data may not be guaranteed, or safety management issues may arise in some cases. As shown above, data should be selectively stored and shared based on proper understanding of its advantages and disadvantages, as well as appropriate usage methods.
- In addition, various data that can be used for evaluation have already been prepared by the national and local governments, universities, research institutions, and private sectors. Use of these existing data should be considered to conduct appropriate evaluations with reduced costs.
- Furthermore, while traditional biological surveys based on visual observation and capturing of wildlife were costly, technological breakthroughs have been significantly reducing these costs. For example, AI-based image and audio analyses allow species identification with much lower costs. These technological advancements should be utilized in data collection.
- Base data should be disclosed as open data to the extent possible, and consideration should be given to data standardization.
- The rights of data owners, including researchers, conservation organizations, and local communities, should be observed.

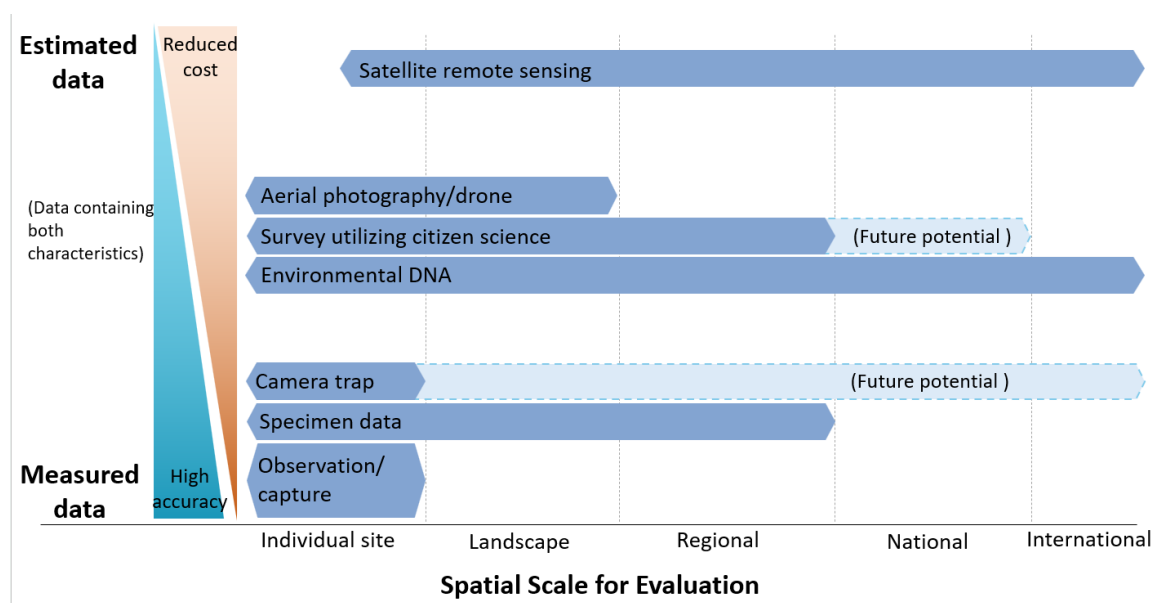


Figure 2. Research methods and data that can be used for valuation

Note: For methods and data that can be used for evaluation, characteristics, including applicable spatial scales, accuracies, and costs, are organized in the chart.

Table. Examples of surveys and databases applicable for valuation

| Method                                 | Subject             | Examples of surveys and databases                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Satellite remote sensing               | Environment         | <ul style="list-style-type: none"> <li>Land cover map</li> <li>Satellite vegetation map (National Survey on the Natural Environment)</li> </ul>                                                                                                                                                                                                               |
| Aerial photography/drone               | Environment/Species | <ul style="list-style-type: none"> <li>Monitoring Sites 1000 (Anatidae survey, drone only)</li> </ul>                                                                                                                                                                                                                                                         |
| Environmental DNA                      | Species             | <ul style="list-style-type: none"> <li>ANEMONE</li> </ul>                                                                                                                                                                                                                                                                                                     |
| Survey utilizing citizen science       | Species             | <ul style="list-style-type: none"> <li>Ikimono Log, Biological Information Collection and Provision System</li> </ul>                                                                                                                                                                                                                                         |
| Camera trap                            | Species             | <ul style="list-style-type: none"> <li>Snapshot Japan</li> <li>Monitoring Sites 1000 (<i>Satochi-satoyama</i>)</li> </ul>                                                                                                                                                                                                                                     |
| Specimen data                          | Species             | <ul style="list-style-type: none"> <li>Science Museum Net</li> </ul>                                                                                                                                                                                                                                                                                          |
| Observation/capture                    | Species             | <ul style="list-style-type: none"> <li>Monitoring Sites 1000</li> </ul>                                                                                                                                                                                                                                                                                       |
| Surveys incorporating multiple methods | Environment/Species | <ul style="list-style-type: none"> <li>Digital national land information</li> <li>National Census on River Environments</li> <li>Nationally Certified Sustainably Managed Natural Sites monitoring</li> <li>Environmental assessment survey</li> <li>National Survey on the Natural Environment</li> <li>Prefectural Red List Survey</li> <li>GBIF</li> </ul> |

■ : National/local governments    ▲ : Universities/research institutions    ● : Private sector    Underline: Database

#### 4) Handling of information on rare species

- It is important to appropriately handle the disclosure or non-disclosure of information that requires careful attention from the perspective of biodiversity conservation (e.g., data on the location of threatened species) in accordance with the Guidelines for the Development and Dissemination of Biodiversity Information Related to Natural Environmental Information

(Biodiversity Center of Japan, Nature Conservation Bureau, Ministry of the Environment, March 2023).

## **(2) Toward the utilization of valuation**

When considering valuation, it is necessary to keep the utilization scheme in mind—in addition to the valuation itself. Thus, this section summarizes the points to note when applying valuation from the perspectives of ensuring safeguards, certainty, and transparency within the utilization scheme.

### **i. Safeguards of utilization scheme**

#### **1) Thorough implementation of the mitigation hierarchy (sequential steps in order of avoidance, minimization, on-site restoration, and compensation)**

- In addition to cases assuming utilization for compensation (offsetting), in cases assuming contribution as well, the utilization scheme of valuation should first require its users to formulate strategies and plans aimed at nature positive, and to use the scheme as an integral part of those strategies. The users must also be required to strictly adhere to the mitigation hierarchy (i.e., the sequential steps in order of avoidance of biodiversity loss, minimization, on-site restoration, and compensation).
- A system should be established for users to disclose compliance with the mitigation hierarchy associated with their activities.

#### **2) Setting irreplaceable sites (to avoid easy compensation)**

- When assuming its application for compensation (offsetting) in particular, vulnerable ecosystems and habitats, and protected areas should in principle be set as irreplaceable sites and the utilization scheme must be designed and operated accordingly.
- Also, measures must be taken to prevent easy substitution or other trade between ecosystem types or regions where like-for-like equivalence is not guaranteed. For example, it is necessary to clearly indicate the ecosystem types and geographic boundaries to which valuation can be applied. On the other hand, from the perspective of securing a certain market size, it is also important to design and operate utilization schemes that allow trades within the range where like-for-like equivalence is guaranteed.

#### **3) Addressing uncertainty (Safety factors and buffers)**

- Because utilization schemes that involve future forecasts entail uncertainties, such schemes

should incorporate the effects of the safety factors and buffers set in the valuation (4. (1) i).

#### **4) Emphasis on a long-term perspective (Maintaining the values across generations)**

- To maintain the value of biodiversity over the long term, an appropriate time scale must be set based on the characteristics of the ecosystem.

#### **5) Emphasis on a spatial perspective**

- The design and operation must take into account the scale and size required to maintain the value of biodiversity, and explicitly define the minimum applicable size based on the characteristics of the utilization scheme.

#### **6) Consideration of leakage**

- Leakage may occur due to the utilization scheme. Accordingly, when leakage is confirmed or anticipated, it is necessary to collaborate with relevant stakeholders to reduce and mitigate the risk.

### **ii. Ensuring certainty and transparency**

#### **1) Durability, equity and fairness, inclusion, third-party audits, and governance**

- When on-site managers (NPOs, conservation organizations, business operators, etc.) generate biodiversity credits, durability must be ensured by requiring financial and technical capabilities, as well as evidence.
- The results of activities should be confirmed through regular audits by independent third parties (designers, operators, etc.).
- Transparency in the governance of on-site managers involved in biodiversity credit generation must be ensured with the involvement of stakeholders.
- It should be ensured that double counting of credits, etc. does not occur.
- False additionality caused by inappropriate baseline setting must be eliminated.

#### **2) Clarity and visualization**

- When designing and operating a utilization scheme, guidance should be developed and provided on evaluation methods and credits, so that users can be supported in setting targets and indicators corresponding to the evaluation methods.
- Users must comply with the guidance and conduct progress evaluations by properly monitoring the activities based on appropriate targets and indicators.

### **3) Consideration and contribution to the local community**

- When carrying out activities, it is important to respect and contribute to the livelihoods, lifestyles, and traditional culture of the local community.
- In case the surrounding local communities raise any concern on the activity, activity implementers should establish a system to acknowledge the concerns and make prompt response.

### **4) Consistency with international systems**

- The methods must be consistent with international frameworks such as the High-Level Principles of the IAPB. For example, the type of the biodiversity credit (i.e., “uplift,” “avoided loss,” or “maintenance”) must be explained.

## **5. Roles and expectations of stakeholders**

Cooperation with various stakeholders is essential for promoting valuation and its utilization. This section outlines the roles and expectations of each stakeholder. While it is important for stakeholders to fulfill their respective roles, organic cooperation of all parties is expected to further enhance the outcomes.

### **(1) Designers and operators of utilization schemes**

- Organizations involved in the designing and operation of valuation and utilization schemes should develop and verify the valuation methods based on the Basic Approach and publicly disclose the data underlying the valuation to the extent possible.
- When any issue arises, the system should be improved and reviewed to avoid biodiversity loss (PDCA).
- Through the above, contribution must be made to uplifting of the reliability of valuation and utilization schemes in Japan.

### **(2) Corporations and financial institutions**

- Toward integration of biodiversity conservation into socio-economic activities, corporations and financial institutions should take the value of biodiversity into account in their business decision-making (nature positive management and nature finance).
- They must contribute to the conservation of biodiversity in line with national and regional targets by actively applying valuation and utilization schemes and through public-private financial collaboration, preventive investment, and the purchase of credits.

### **(3) On-site managers (NPOs, conservation organizations, business operators, etc.)**

- On-site managers must contribute to the conservation of local biodiversity by giving appropriate consideration to the specific region in accordance with the utilization scheme, and by providing feedback based on on-site conditions.
- When applying valuations and utilization schemes, related information must be disclosed and shared with stakeholders, including local residents, and consensus must be formed when necessary.
- When carrying out initiatives, on-site managers must ensure that benefits are returned to the local community.

### **(4) Local residents**

- Local residents should recognize the value of community-based biodiversity and contribute to conservation of local biodiversity, while keeping a balance with their livelihoods, lifestyles, and traditional cultures.

### **(5) Administrative agencies**

- Local governments should identify regional issues and appropriately set quantitative targets related to biodiversity in their LBSAPs and other plans that allow diverse stakeholders to contribute collaboratively. They also should promote the development of foundational data. The national government should promote the development of foundational data and present basic approaches for valuation and its utilization.

## 6. Glossary

| Term                                       | Key section           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Valuation (of biodiversity)                | 1.<br>3. (2),<br>etc. | “Valuation (of biodiversity)” refers to measuring and quantitatively demonstrating the value of biodiversity (primarily its state and changes). Generally, methods such as metrics (which mathematically combine multiple measurement methods) tailored to specific ecosystem types and indicators/scores corresponding to utilization schemes are used. Quantification of the value of biodiversity is expected to advance the integration of biodiversity into the social economy, including resource mobilization and target setting for biodiversity conservation activities. |
| Utilization scheme                         | 1.<br>3. (2),<br>etc. | “Utilization scheme” refers to systems and mechanisms that utilize the valuation of biodiversity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Biodiversity value-related trading schemes | 1.<br>3. (2),<br>etc. | “Biodiversity value-related trading schemes” refer to a mechanism for trading the value of biodiversity after converting it into a tradable form (such as biodiversity credits) based on quantitative assessments. In the Basic Approach, the schemes include “contribution” and “compensation (offsetting).”                                                                                                                                                                                                                                                                     |
| Contribution                               | 1.<br>3. (2),<br>etc. | “Contribution” refers to certifying a contribution to biodiversity by purchasing credits or other instruments that represent the outcomes of conservation activities conducted by another entity.                                                                                                                                                                                                                                                                                                                                                                                 |
| Compensation (offsetting)                  | 1.<br>3. (2),<br>etc. | “Compensation (offsetting)” refers to purchasing credits to counteract the loss of biodiversity caused by one’s own development activities or other impacts. Compensation (offsetting) is intended to be implemented to compensate for significant residual negative impacts on biodiversity that remain even after appropriate measures have been taken in accordance. It must follow the mitigation hierarchy to first avoid, then minimize, restore, and only then compensate for residual negative impacts locally. (See also “Mitigation hierarchy.”)                        |
| Natural capital                            | 1.                    | According to the International Integrated Reporting Council (IIRC), “natural capital” is defined as “all renewable and non-renewable environmental resources and processes that provide goods and services on which the past, present, and future success of an organization is based”. Natural capital includes air, water, land, minerals, forests, biodiversity, and ecosystem health.                                                                                                                                                                                         |
| Biodiversity credit                        | 2.,<br>etc.           | “Biodiversity credit” refers to a certificate issued for biodiversity value-related trading schemes that quantitatively represent positive outcomes generated by biodiversity conservation activities. The outcomes eligible for credits must be actually measured, evidence-based, durable, and additional. Target 19 of the Kunming-Montreal Global Biodiversity Framework specifies biodiversity credit as one of the mechanisms to                                                                                                                                            |

| Term                                     | Key section  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |              | encourage resource mobilization for biodiversity. (See also “Activity,” “Durability,” and “Additionality.”)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Activity (for biodiversity conservation) | 3. (2), etc. | <p>“Activity (for biodiversity conservation)” refers to an activity to conserve biodiversity that generates state changes or outcomes subject to valuation. The Basic Approach broadly assumes activities that maintain already rich biodiversity (maintenance) and activities that attempt to restore or create biodiversity in areas where diversity has already been lost (restoration/creation).</p> <p>The High-Level Principles (HLPs) list “uplift,” “avoided loss,” and “maintenance” as positive outcomes represented by biodiversity credits. Uplift is considered as reduction of threats, avoided loss is considered as prevention of palpable and imminent threats, and maintenance is considered as prevention of an increase in threats over the medium to long term.</p> |
| Additionality                            | 4. (1), etc. | <p>In biodiversity credits, “additionality” means that credits are awarded only for outcomes that would not have occurred without the activity. This is necessary to prevent the issuance of credits for activities that do not actually yield outcomes.</p> <p>The HLPs define additionality as an essential element of credits, and HLP5 outlines specific considerations for satisfying additionality.</p>                                                                                                                                                                                                                                                                                                                                                                            |
| Baseline                                 | 4. (1), etc. | <p>In biodiversity credits, “baseline” refers to the expected state of the ecosystem if the activity had not taken place. It is crucial for verifying additionality.</p> <p>HLP6 requires setting a representative site or a hypothetical state/scenario (counterfactual) for comparison to ensure an appropriate baseline.</p> <p>For example, the state of an actual site facing a threat of a similar level with the site where the activity takes place, or the state of a site based on a scenario assuming such threats, is used as the baseline.</p>                                                                                                                                                                                                                              |
| Estimated data                           | 4. (1), etc. | <p>“Estimated data” refers to data where the state is estimated from acquired information using known information.</p> <p>Example: In the case of satellite vegetation maps, the vegetation of the observed area is estimated based on the known relationship between light wavelengths and vegetation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Measured data                            | 4. (1), etc. | <p>“Measured data” refers to data where the state is directly indicated with acquired information.</p> <p>Example: In the case of trail cameras, the captured images directly indicate that a sika deer was present.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Mitigation hierarchy                     | 4. (2), etc. | <p>“Mitigation hierarchy” refers to the priority order or hierarchy used when considering environmental conservation measures. Specifically, it is the principle of minimizing the negative impacts of development in the following order: avoidance, minimization, on-site restoration, and compensation. Avoidance is the highest</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Term       | Key section  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |              | priority, and compensation is the last option. This principle is also important in biodiversity credits. HLP2 requires compliance with the hierarchy in credit design and purchasing.                                                                                                                                                                                                                                                                                                                 |
| Leakage    | 4. (2), etc. | In biodiversity credits, “leakage” refers to an unintended increase in negative biodiversity outcomes outside the scope of the project activity. HLP8 requires the participants to consider leakage in credit design and project implementation. Generally, leakage occurs near the site where the activity takes place, but it can also occur in remote locations through global supply chains. Example: Stopping logging in a forest covered by credits can lead to new logging in a nearby forest. |
| Durability | 4. (2), etc. | In biodiversity credits, “durability” refers to the ability to ensure that biodiversity outcomes continue for a long, specified period. Durability is important for prevention of easy issuance of credits based on temporary outcomes. The HLPs define it as an essential element of credits. HLP7 requires participants to demonstrate that sufficient funds and techniques are available to ensure durability, and to explicitly specify the time period.                                          |

Note: This glossary explains the terminology used in this Basic Approach. While it refers to the IAPB High-Level Principles and their explanatory materials, the definitions are not necessarily established.